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Informal taxes and transfers in sub-Saharan Africa

A review and analysis of incidence in Rwanda

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Key messages

- Informal transfers and taxes are common and often have large population coverage in developing countries.
- The size and distributional impact of informal taxes and transfers have largely been ignored in fiscal incidence analysis.
- Rwandan survey data shows informal transfers and taxes have a small regressive effect.

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Acronyms

ASPIRE	Atlas of Social Protection Indicators of Resilience and Equity
CEQ	Commitment to Equity
FARG	The Genocide Survivors Support and Assistance Fund
FCDO	Foreign, Commonwealth and Development Office
ICTD	International Centre for Tax and Development
IFS	Institute for Fiscal Studies
MINECOFIN	Ministry of Finance and Economic Planning
NGO	non-governmental organisation
NISR	National Institution of Statistics of Rwanda
OECD	Organisation for Economic Co-operation and Development
PAYE	pay as you earn
PIT	personal income tax
PPP	purchasing power parity
RDRC	The Rwanda Demobilization and Reintegration Commission
RRA	Rwanda Revenue Authority
RSSB	Rwanda Social Security Board
RwF	Rwandan francs
SACO	savings cooperative
UNU-WIDER	United Nations University World Institute for Development Economics Research
VUP	Vision 2020 Umurenge Programme

Executive summary

This paper profiles and analyses informal taxes and transfer payments made by households, and considers their incidence, scale and distributional effects alongside formal state taxes and transfers. Focusing on Rwanda, it looks at the effect on household welfare levels and income distribution through an analysis of fiscal incidence and progressivity of informal taxes and transfers alongside government-based formal taxes and transfers. The paper is in two main parts. The first part considers definitions of informal taxes and transfers and how these can be incorporated into fiscal incidence analysis in developing countries as put forward by the Commitment to Equity (CEQ). The second part uses Rwandan household survey data to estimate the effect of informal taxes and transfers alongside official social protection and taxation policies. The scale of informal transfers is found to be very large – over 95% of households give and receive them. The scale of some informal taxes is also large. Overall, the combined effects of informal taxes and transfers are regressive, compared to a flat or slightly progressive effect of formal fiscal taxes and transfers.

1 Introduction

It has been long recognised that informal obligations and relationships play a considerable role in household economic welfare in developing countries. Fiscal analysis and tax–benefit simulations in high-income countries rarely take any informal exchanges and obligations into account when considering major contributions to 'redistribution'. However, there is increasing recognition that, in low- and lower-middle income countries, informal payments of tax to local leaders and informal organisations play an important role in the provision of public goods – particularly at local level. However, an appreciation of how these payments represent an analogous set of taxes and transfers has not been incorporated into the analysis of fiscal incidence in developing countries (see Lustig, 2018, for example). This paper considers the incidence of informal taxes and transfers alongside their formal fiscal counterparts in Rwanda, and examines their combined impact on the redistribution of household monetary welfare and resulting living standards.

We have two main research questions:

- How do informal taxes and transfers alter our appreciation of the distribution of household income?
- How can they be accounted for in fiscal analysis, alongside state-run formal programmes of transfers and taxes, and what are their redistributive effects?

Household liabilities to pay informal tax and to make informal transfers to other households may be crucial in understanding how formal fiscal policy can expand into the household sector to raise tax revenue to meet the demand for increased services necessary for development. If informal obligations are considerable and persistent, increasing the burden of formal taxation may be unaffordable (Shome, 1995).

It is a stylised fact that direct income taxation of households in developing countries is difficult (Burgess and Stern, 1993), and that indirect taxation, such as consumption taxes, have a more prominent role in overall tax revenue. Similar difficulties face efforts to expand contributory social protection coverage into informal and non-monetary employment (in particular, subsistence agricultural production; Packard et al., 2019). Part of the issue for income-based taxation lies in the fundamental problem of identifying and quantifying 'income' for direct taxation and social security, especially for those in low-income activities and for those who are not formal employees of government or large companies. Issues also arise over 'crowding out', or the substitution of informal redistributive mechanisms by formal transfers and taxes (Cox and Fafchamps, 2008). Put simply, if households are already transferring money to meet the needs of family living elsewhere, or are paying into community-run insurance or savings and loan schemes, or are contributing in cash or kind to local leaders to help fund community public goods, their 'informal tax burden' may already be considerable, and may constrain any ability to pay formal taxes. Policy-makers may not be able to understand the context of and constraints on formal fiscal policy if they are unable to quantify these informal mechanisms. Indeed, they may assume a 'zero' direct tax burden where they see no direct formal taxation in place.

In fiscal incidence analysis, informal mechanisms may align with or contradict the redistributive outcomes of official taxes and benefits. A large part of the motivation behind this paper is to understand and illustrate potential effects on household inequality, poverty and overall equity. If one of the reasons for undertaking formal fiscal incidence analysis is to understand the redistributive effects on poverty and inequality, it will also be important

to appreciate the role of informal transfers for redistribution for the same outcomes.

The contribution of this paper is primarily a proof of concept: to illustrate how both informal taxes and transfers can be included in analysis of fiscal incidence and contribute to an improved understanding of household income distributions and redistributive effects of transfers and taxes. This means an ambitious synthesis across previously separate areas of literature and analysis: across informal transfers and taxes, and across formal and informal 'fiscal' analysis. As such, the paper is largely descriptive, and we leave issues of the drivers of behaviour surrounding informal transfers and taxes or of their consequences to later research. Similarly, we restrict our analysis of incidence to a simple descriptive arithmetic accounting across household income components and tax liabilities, following the methodology laid out by Lustig and Higgins (2018). Again, we leave some of the applied policy implications from our analysis and of detailed applied questions on Rwandan policy (the example country used in our analysis) to later research.

The paper continues as follows. The first part reviews the literature that informs our definition of informal taxes and transfers used in the analysis of income distribution and fiscal analysis. It contains a discussion of what informal mechanisms and obligations meet that definition, and why. The review also covers evidence on the incidence of informal taxes and transfers and collates updated evidence on incidence and values of informal transfers. The second part examines and explains the data on informal transfers and taxation in Rwanda. Our 'proof of concept' follows the approach laid down by Lustig and Higgins (2018) for fiscal incidence analysis in developing countries, but expands on such an approach to include identification and measurement of informal mechanisms (Evans and Salomon, 2019).

2 Methods, definitions and prevalence

2.1 Fiscal incidence analysis

We limit this paper to testing an approach to fiscal incidence analysis that incorporates informal taxes and transfers. This means that we largely address these issues from the point of view of current research and practice on fiscal incidence, and from micro-simulation analysis of formal taxes and transfers. These are two emerging and rapidly growing areas of applied policy research in sub-Saharan Africa, following the work of CEQ researchers (Lustig, 2018), United Nations University World Institute for Development Economics Research (UNU-WIDER) 'Southmod' (Decoster et al., 2019) and the Foreign, Commonwealth and Development Office (FCDO) 'TaxDev' initiative, under which ODI and the Institute for Fiscal Studies (IFS) provide tax policy advisory services and distributional and simulation-based analysis.

Other researchers are involved in deeper and more context-specific work on informal taxation in sub-Saharan African settings, in particular through the combination of anthropological and political science research by the International Centre for Tax and Development (ICTD) (van den Boogaard and Prichard, 2017). The recent expansion of literature on informal fiscal welfare has concentrated on informal taxation (ibid.; Olken and Singhal, 2011), but we further widen consideration to informal transfers because they will have additional significant effects on household economic welfare. Their payment by donor households can be considered alongside direct taxation as customary but obligatory payments which reduce 'net household income', a key measure for understanding the redistributive impact of fiscal incidence. The inclusion of informal transfers links to a much larger and longer-standing literature in development economics on informal transfers and 'risk sharing' mechanisms that reflect private but not market-based social protection practices. Our review across these broad literatures concentrates on what matters most to the empirical analysis of fiscal incidence and inter-household redistribution using household survey micro-data. We thus do not include much of the contextual richness of anthropological and political detail.

Our approach is grounded in analytically rigorous approaches to fiscal incidence of 'formal' state-based fiscal taxes and transfers. We add informal taxes and transfers as distinct elements contributing to existing analysis. We use the term 'formal' to denote state-based elements, and the term 'informal' to denote elements that are neither state- nor market-based. We adopt the approach outlined by Lustig and Higgins (2018) in the CEQ method of assessing formal fiscal impacts on inequality and poverty. This lays out the arithmetic accounting of both cash and in-kind services (for education and health) from government sources.

Figure 1 summarises our and the CEQ approach. We focus on the steps taken to identify formal and informal transfers as sources of 'gross income', and to then compute 'net disposable income' after deduction of formal and informal taxes and payments of informal transfers. We do not consider indirect taxation, price subsidies and the value of services in kind (the items beneath the orange dashed line in Figure 1). This limitation is a practical one to demonstrate the first-order impact of informal and formal taxes and transfers on disposable household incomes, whereas the full CEQ analysis of fiscal incidence includes subsidies and services. We agree

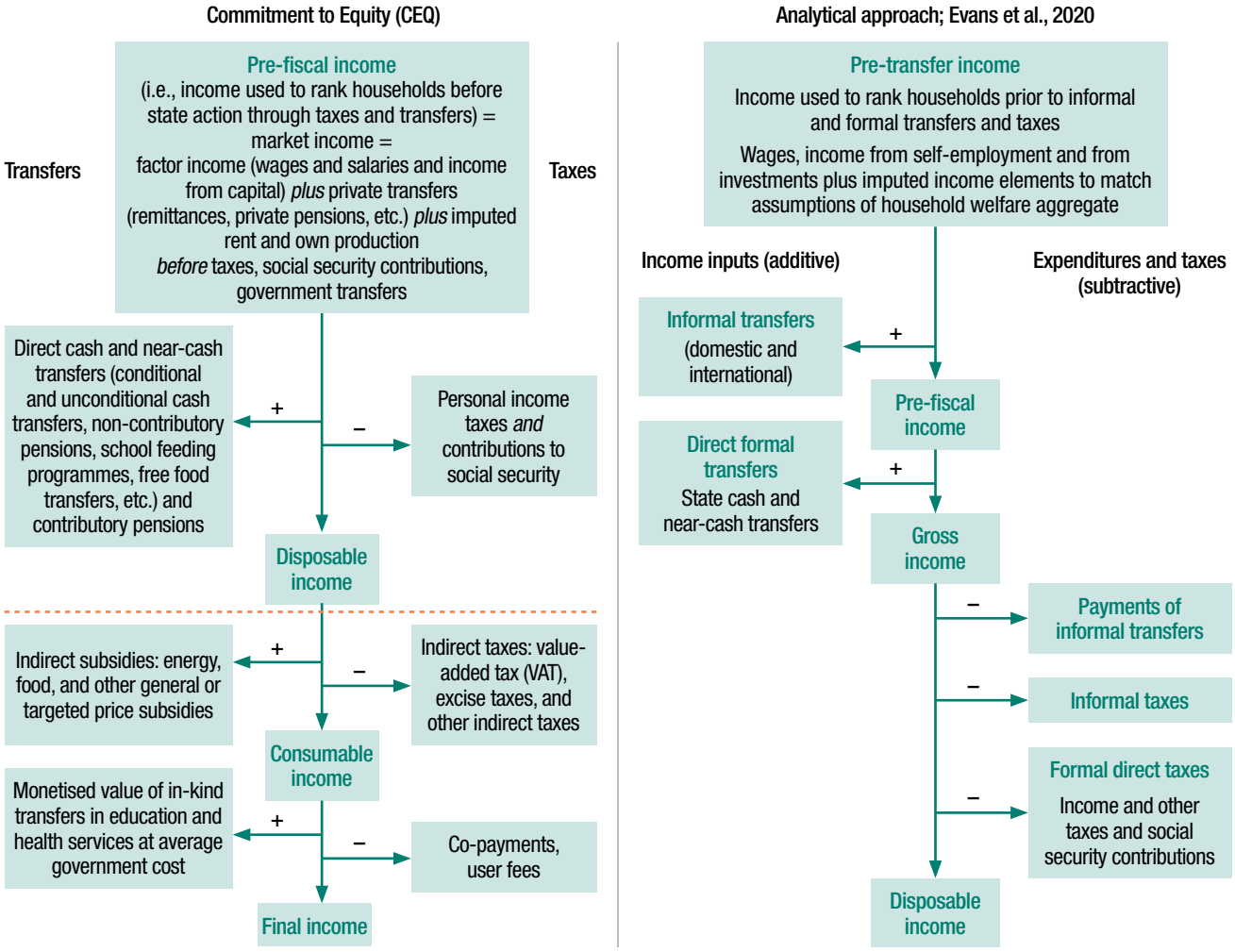
completely with the CEQ approach to capture these effects, but we do not discuss them further.

We allow informal sources of transfers and taxation to be *distinctly identified and separately reported* when computing gross and disposable incomes. This does not differ from CEQ methodology but, by separately identifying and accounting for informal taxes and transfers, we make the identification and accounting of these elements transparent.

Our starting point for the computation of fiscal inputs and outputs to household income is the position of the household before any transfer (formal or informal). This avoids ambiguity by allowing 'market income' and 'original income' as shown in Figure 1 to be equivalent. We add informal transfers as a separate element of pre-fiscal income in addition to standard economic definitions of income from factors of production: rental income, wages generated by labour, the interest created by capital and profits from entrepreneurial ventures tend to be blind to the presence of informal transfers, which are received by very large numbers of households in low- and middle-income countries (Cox et al., 2006). These are separate from original (market) sources of income. Both the state and the family/community are involved in 'redistribution' above and beyond the original market distribution of income. However, 'informal redistribution' is potentially very important in societies with less expansive tax and benefit systems, and which rely on family- and community-based mechanisms that reflect obligations to reciprocity, and that respond to risk.

Our starting point is thus 'pre-transfer' *original income*: income solely from economic activity (working, investing, producing and rents), or what is sometimes termed market income. To this original income we then add income from informal and formal transfers separately.

Figure 1 Commitment to Equity (CEQ) income concepts and our analytical approach



Source: Lustig and Higgins, 2018

Informal transfers are from two sources:

- Inter-household payments in cash and kind (e.g. remittances and alimony/childcare payments).
- Payments from informal risk-sharing organisations (savings and loan cooperatives, 'Tontine' and other non-state, non-'market' community-based savings schemes.

Formal transfers are the same as those in the CEQ definition of additional income. Together, these transfers from formal and informal sources create 'gross income'.

We follow the CEQ approach by deducting direct taxes from gross income but, as in our approach to transfers, we separately identify and deduct two forms of informal taxes and expenditures:

- Expenditures on informal transfers
  - The inter-household transfer payments made from donor households
  - Payments into informal risk-sharing organisations.
- Informal taxes.

We then return to the CEQ sequential accounting approach and additionally deduct formal taxes and social security contributions (note that we make no differential adjustments for pension payments, as per CEQ methodology). Despite the differences in detail, the cumulative result is to replicate the final computation of 'disposable income' in the CEQ approach.

Figure 1 summarises our approach and compares it to that of CEQ (Lustig and Higgins, 2018). There are two important things to note. First, we are solely adding additional more granular steps into the computation of gross and disposable income. Second, our approach stops at the step of identifying 'disposable income' as we only analyse *direct taxes and transfers*.

2.2 Definitions

Having laid out our methodology, it is important to clearly define informal transfers and taxes, and to distinguish them from other forms of household income and expenditure, to appropriately assess their effect on redistribution. We aim to be consistent in our definition with other analysis of redistribution and fiscal incidence. This means that we use four guiding principles:

- We follow underlying economic principles on definitions of direct household taxation and transfers.
- We align definitions to reflect the computation of household monetary welfare in which 'non-consumption expenditures' for direct taxes and payments of transfers are subtracted in the computation of that welfare aggregate (Deaton and Zaidi, 2002).
- We identify sums transferred directly or indirectly between households that have redistributive consequences.
- We follow the sequential computational accounting for fiscal incidence outlined by CEQ methodology, as discussed in Figure 1.

2.2.1 Informal taxes

Informal taxation is not consistently defined in the literature. It is agreed that informal taxes are often 'local' in nature, but not part of either national statutory tax-raising activities or devolved powers to raise taxes by official local government bodies. Prud'homme (1992: 1) defined them as the 'mobilization of resources outside normal tax channels for the provision of public goods and services'. These included 'pinch' payments that official tax collectors took as personal rents, 'extortion' payments enabling individuals and companies to either waive regulatory fines or obtain regulatory benefits, and 'requisitions' informally demanded from companies to contribute to public goods. Prud'homme also considered informal taxes to be local payments to fund public services: gifts, contributions and donations. Tax-like payments can thus be made to both state and non-state actors – the informality lies in their extra-statutory nature.

ICTD defines informal taxes as

> All payments – whether cash or in kind, including labour time – that are made outside of the household and as a result of the exercise of political power, social sanction or armed force (as opposed to market exchange) (van den Boogard and Pritchard, 2017).

They include levies imposed by armed groups on goods and services (for instance at roadblocks or via border-related informal 'excises') as well as informal 'user fees' collected by staff in schools or health facilities.

These broad definitions do not reflect divisions in the public finance literature between tax and non-tax revenue, in which the latter covers receipts such as fees for education and public health, fines, profits from public sector undertakings and income, such as leasing public land, forests or mines (Dalton, 2003). User fees also do not fit the assumption that taxes tend to be for non-exclusive public goods rather than specific private goods or services (they are not the same as general taxes, as they are only paid by users of the service). General taxes are paid by both users and non-users of specific services, even where taxes are hypothecated. These arguments against including user fees/charges as 'informal taxes' are also supported in our mind by 'best practice' for fiscal incidence analysis, in which CEQ considers such payments as household-level spending that can be subtracted from the monetary value of in-kind services for health and education in the CEQ's definition of 'final income' – as summarised in Figure 1. Including user charges as 'informal taxes' in the computation of disposable income would thus lead to double counting in a full CEQ-type analysis of fiscal incidence that went on to consider in-kind services. For these reasons, we exclude user fees and other revenue payments from our approach to 'informal taxes'. We also exclude 'pinch' and 'extortion', which represent private rents and thus fall outside of our definition of taxation as based on funding of public goods.

We largely adopt Olken and Singhal's (2011: 2) definition: 'a system of local public goods finance coordinated by public officials but enforced socially rather than through the formal legal system'. But we depart from Olken and Singhal in two ways. First, we place user fees outside informal taxation, for reasons discussed above. Second, we additionally include religious taxation, which has a long history in European tax systems. These 'church taxes' have been incorporated into national taxation systems or operate in parallel to them in 13 countries in Europe, and have thus become part of 'formal' tax systems. In developing countries they are still prevalent, and especially so in Islamic states and communities, in the form of *Zaqat*. *Zaqat* are obligatory taxes on income and wealth and are one of the five pillars of Islamic faith. Customarily set at 1/40th (2.5%) on all income/wealth above a minimum amount, this can rise to one-fifth for some forms of assets and wealth. *Zaqat* can be a formal tax collected by the state, as in Sunni countries such as Libya, Malaysia, Pakistan, Saudi Arabia, Sudan and Yemen, but is never formalised through state institutions in Shia countries or communities, where payment is normally collected through mosques and imams. The obligation to pay *Zaqat* can alternatively be met by the direct giving of alms to the poor, or through donations to appropriate causes and organisations, rather than passing through religious institutions. Payments to family do not count, and thus *Zaqat* is distinct from 'inter-household transfers' discussed below, but may overlap with charitable donation.

Zaqat meets our definition of informal taxes because it is a tax on individual wealth/income; obligatory for all Muslims; based on redistributive principles; and has explicitly redistributive intent: it funds programmes for the poor. Analogous payments to Christian, Hindu, Buddhist and other religious organisations exist, but tend to be based less on religious obligation and more on the motivation to support specific religious infrastructure (churches and temples) and the priesthood, as well as charitable aims. The issue of 'charity' brings some ambivalence into how we consider differences between informal taxes and charitable giving. Considering charitable giving by households and individuals as an informal fiscal and redistributive mechanism is possible (although we do not do so in this paper), but data from surveys can be less clear, especially when offerings and payments to churches are concerned: what is a tax and what is charitable giving? Charitable payments are often not associated with redistributive outcomes – for instance, there are many charities that support animal welfare, the arts and other areas unrelated to direct human welfare and redistributive outcomes. We distinguish informal taxes by their obligatory nature and redistributive effect, and include *Zaqat* for those reasons. This approach requires data to be collected to fit with unambiguous definitions. Below, we explore how far this is possible for Rwanda.

2.2.2 Informal transfers

Informal transfers are non-'market' transactions in the wider sense. Household payments from and into private pensions, annuities and insurance funds are all based on formal contracts in the market. Informal transfers are transactions based on family or community ties. The easiest informal transfers to define are inter-household transfers – cash or in-kind sums that are sent as one-off gifts or regular payments to another private household, such as remittances. It is crucial for 'fiscal accounting' and for consistency of income computation that these sums are identified for both donor and recipient households: as an income component for recipients, and subtracted from the gross income of donors. We do not consider the value from the transfer of 'people' or of 'people's time' between households. These result in care or other contributions to household wellbeing or to changes in co-residing family members – for instance temporary or permanent informal fostering of children.

Other forms of informal transfer involve payments into and drawings from risk-sharing loans, savings and 'insurance' schemes. These can be termed 'Community-based Risk Management' organisations/arrangements; details of such schemes are in the World Bank's Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) database, and have been reviewed by Dercon (2005), Bhattamishra and Barrett (2010) and the Africa Region Social Protection Unit of the World Bank (2012). These risk insurance arrangements tend to focus on protection against 'idiosyncratic shocks' and/or communal savings and loans. Examples include self-help societies (e.g. burial societies) and commitment savings devices (e.g. rotating savings clubs). *The crucial aspect to capture in 'informal' fiscal incidence and redistribution is the payments into as well as the payments received from these social protection arrangements*. These payments, identified and accounted for alongside tax payments on the right-hand side of the flow diagrams in Figure 1, can also be more clearly understood as 'net' values from reciprocal actions between households, and thus in reality sit across income receipt and payments out.

Our definitions follow those of the World Bank in the ASPIRE database on social protection, which identifies and quantifies 'private transfers' as part of overall social protection coverage across formal (state-run) and informal transfers. Table 1 shows the definitions used in the ASPIRE database for these so-called 'private transfers'.

One final coda to our definition of informal taxes and transfers is that that they can be in cash or in kind. This reflects the fact that many informal transfers may be of produce, food or other goods. The same is true of formal social protection programmes that provide 'in-kind' benefits (such as school feeding programmes and through 'access' rights to services at no or lower cost), and in taxation, where contributions are made of goods or through a labour commitment.[1]

Table 1 ASPIRE private transfer categories

Programme category	Programme sub-category
Domestic private transfers	Domestic transfers, inter-family in kind gifts and monetary transfers
	Alimony (divorce and food)
	Income and support from charity/private *Zaqat*, support for churches and non-governmental organisations (NGOs)
International private transfers	Remittances from abroad

Source: ASPIRE Program Classification (http://pubdocs.worldbank.org/en/340871485449612510/ASPIRE-program-classification.pdf)

1 Particularly in long-standing commitments of *corvée* labour: either exacted by a local authority for little or no pay or in lieu of tax (and used especially in the maintenance of roads) or regarding older forms of feudal-like obligations of subjects to local leaders/chiefs.

2.2.3 Distinctions between 'formal' and 'informal'

Underlying these definitions are assumptions about the boundaries between formal and informal institutions and transactions, boundaries which are often not fixed. Distinguishing between formal or informal *authority* for tax purposes can be important to identify taxes that are levied by devolved government institutions and those paid to informal chiefs and local community leaders outside such formally decentralised tax-raising institutions. Most economic definitions of tax are based on the concept of legal mandated payments to *government*. But formal government and informal authority in communities often overlap, with different roles for 'chiefs' or other local leaders being assigned for taxation and the provision of public goods at the local level (see Fanthorpe (2004) on Côte d'Ivoire, for example). This means that local elders (or religious representatives) can operate in separate or parallel ways to the processes in place for formal jurisprudence, and that these are often at the village and community level. Obligations associated with these are often enforced through customary law adjudicated by elders or leaders, as well as through peer pressure, reputational sanction and other means.

Formal institutions can also regulate and mediate informal transactions and institutions: for instance, in the setting and enforcement of the payment of alimony and child support by courts and in the regulation of charitable status or of community lending and savings institutions. Such regulation of informal transactions between private individuals or households and communities does not alter the fact that the transfers remain informal between individuals and social groups, and that the state is not the direct funder or provider of the transaction.

Policy-makers may wish to encourage or discourage certain behaviours, and make formal rules to do this. For example, income tax policy may not define informal transfers as 'taxable income' and/or may explicitly offset payments of alimony against taxable income for the payee. Similarly, the rules for state transfers may ignore or treat differently the income received from and payments associated with these informal payments to reflect concerns about incentives. These fiscal rules lead consequentially to foregone revenue, i.e. 'tax expenditure', and to increased spending on state transfers, and thus may be part of formal fiscal accounting. These rules do not change the *nature* of the underlying informal transactions between actors making exchanges of cash or in-kind support, but merely give those transactions formal fiscal consequences.

2.3 Prevalence of informal taxes and transfers

Separate literatures cover informal transfers and taxes: for example, informal taxes (Olken and Singhal, 2011), inter-household familial transfers (Cox et al., 2006) and informal community risk sharing and insurance (Dercon, 2005). One original contribution of this paper is to look across these three types of informal approaches to assess the scale and value of the underlying transactions and their importance for redistribution. These separate literatures are large. We consider a smaller portion of the literature to focus on issues directly relevant to our analysis of fiscal incidence and redistribution. Our interest is thus largely in their arithmetic impact on household incomes, rather than on behavioural effects such as incentives and 'crowding out'.

Informal transfers between households have long been analysed in development studies and economics (see for example Cox and Fafchamps (2008: 3,712): 'households in developing countries depend on friends and relatives for their livelihood and sometimes their survival; help exchanged within extended families and kin networks affects the distribution of economic well-being, and this private assistance and exchange can interact with public income redistribution').

In reviewing prevalence, the same authors state that 'across the spectrum of developing countries that have been studied, the modal percentage of households involved in private transfers in a given year (either as recipients, donors, or both) is somewhere around 40 percent' (ibid.: 3,733–3,734), but warn that prevalence is determined in part by the design of the survey instruments,

the definition of 'transfer' across loans or gifts and across regular and one-off payments and according to the period covered (past month or year). The value of transfers reported also reflects these survey measurement difficulties, but Cox and Fafchamps suggest modal values at 6–8% of average household income across all households (including non-recipients), and accounting for one-quarter to one-third on average of household income for recipient households. Recent evidence from Uganda confirms high prevalence, but that average rates of receipt and the value of transfers rise in the top half of household consumption distributions (Hill and Nkengne, 2016).

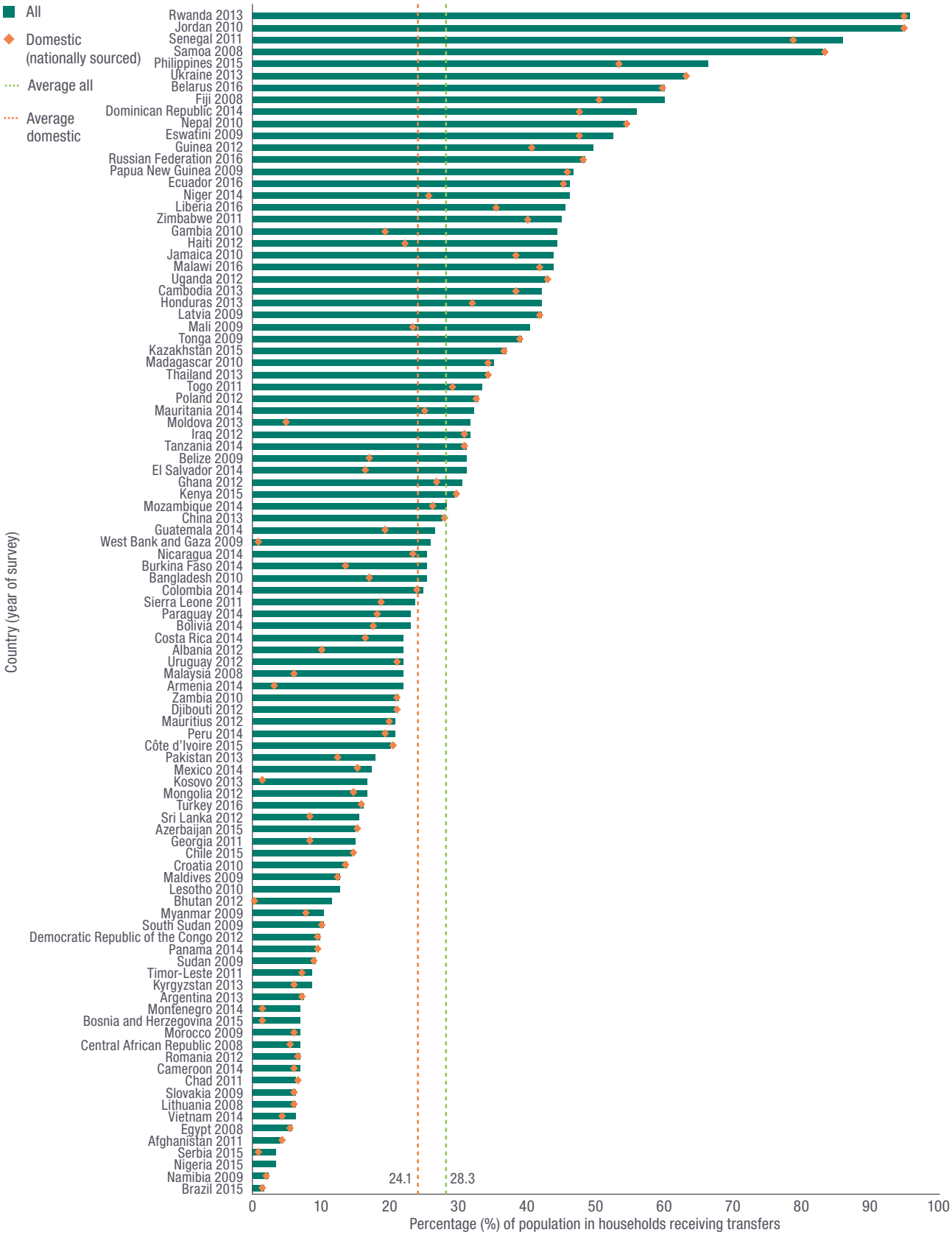
The World Bank ASPIRE database provides the ability to update the conclusions on prevalence and value since Cox and Fafchamps' study in 2008. ASPIRE data shows the prevalence of 'private' inter-household transfers across a larger sample of developing countries and across more recent time periods (2008–2018 for example). For this review, we undertook an initial descriptive analysis of prevalence and value of inter-household transfers using 99 countries that report 'private transfers' in World Bank ASPIRE data for the past 10 years. The results are shown in Figures 2 and 3.

Figure 2 clearly shows a huge range across these 99 countries: from countries that report over 90% coverage of the population – those on the left-hand side (Rwanda and Jordan); to those that report less than 5% (Afghanistan, Serbia, Nigeria, Namibia and Brazil). While many commentators focus on international remittances, Figure 2 shows that, for these 99 countries, the majority of coverage tends to be from domestic, *within country*, transfers between households. While a few countries show very high levels of international remittances (Moldova, West Bank and Gaza, Malaysia, Armenia, Kosovo, Bhutan, Montenegro, and Bosnia and Herzegovina, for example), the overall picture is clear – most of the population covered by informal inter-household transfers receive those transfers from within their own country. Overall, the average (mean of national-level coverage with no population weighting) shows that 28% of these populations benefit from informal transfers of this type, of which 24% benefit from domestic transfers.

Figure 3 shows these values as a percentage of beneficiaries' total household 'welfare'. However, the measure of welfare differs across countries between income and consumption, and interpretation must be careful not to ascribe too much precision or certainty to the resulting numbers. Figure 3 ranks countries left to right to match the ranking in Figure 2. This enables us to 'eyeball' any obvious linear relationship between the extent of coverage of these transfers and their value to recipients, and to confirm that there is no apparent relationship. It is notable that these values are far higher on average, 24% of household welfare, than the 8–9% reported by Cox and Fafchamps (2008). In short, informal transfers are both common and important when considering household incomes across a large selection of developing countries.

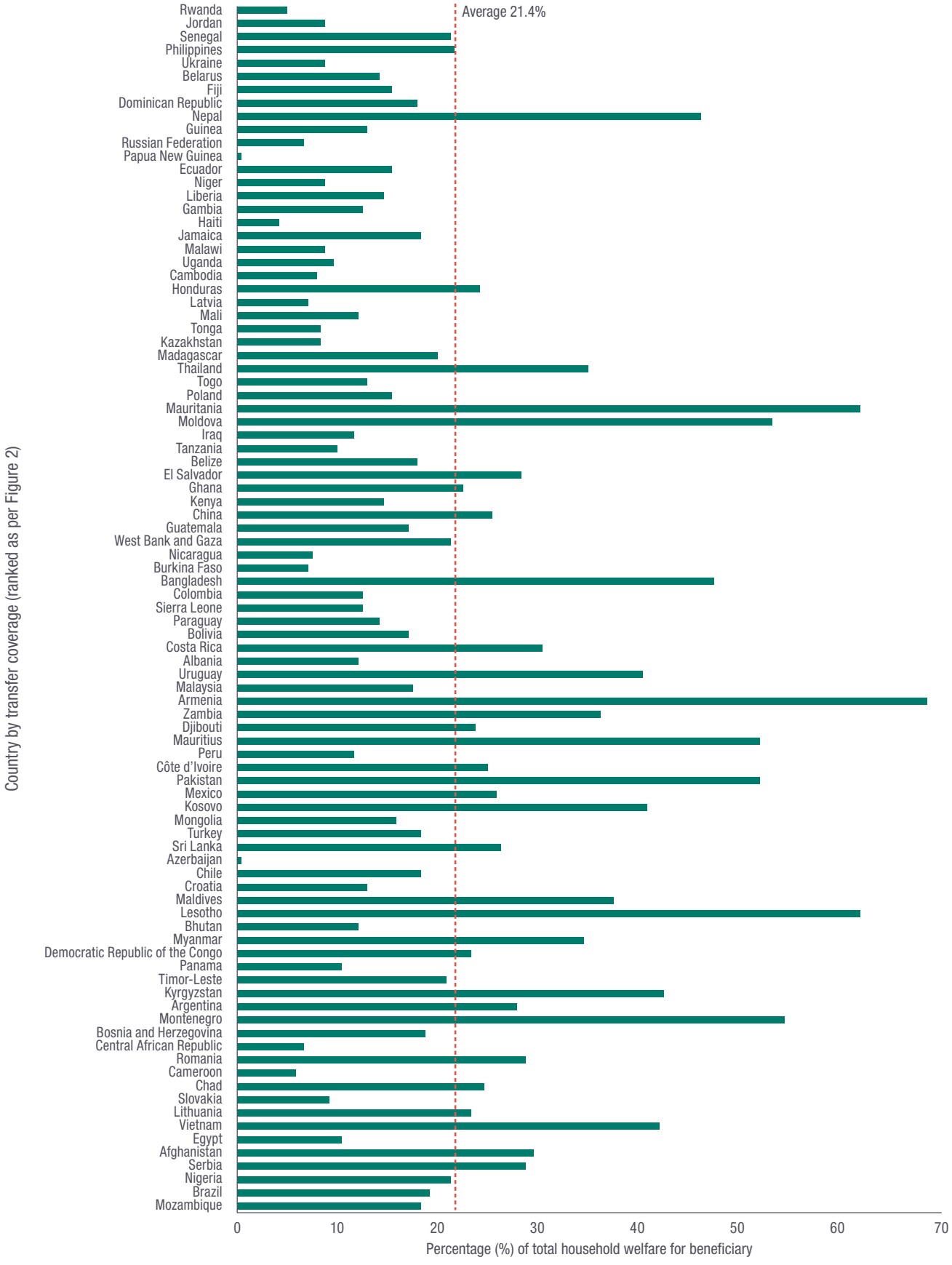
While data on the prevalence of informal transfers is now more comprehensive and recent, there remains a dearth of data on informal taxes. We have found no attempts to compile more comprehensive data on the prevalence and scale of informal taxation since Olken and Singhal's seminal 2011 paper, despite it inspiring numerous studies at national and sub-national level (see, for instance, Walker, 2018).

Figure 2 Coverage of 'private transfers'



Note: Year as per survey data for each country – shown on x-axis. Definition of private transfers as in Table 1.
Source: World Bank ASPIRE Database

Figure 3 Value of private transfers to beneficiaries



Note: Djibouti missing gross national income per capita data. Year and definitions as per Figure 2 and Table 1.
Source: World Bank Aspire database

3 Formal and informal taxes and transfers in Rwanda

3.1 Data

To match the approach of CEQ, our analysis uses cross-sectional micro-data from wave five of the Integrated Household Living Conditions Survey of 2016–2017 (EICV5). The survey was conducted over a period of 12 months between October 2016 and October 2017 and has a sample of 14,500 households. Reports on poverty and social protection and other thematic areas have been published by the National Institution of Statistics of Rwanda (NISR).[2]

The key issue for our analysis of informal and formal taxes and transfers was how the survey covered and captured the range of different income sources and expenditures that can together constitute a comprehensive analysis of taxes and transfers and across formal and informal definitions of these. It is important to set out at this early stage that the EICV5 is a general-purpose survey, and not designed to fully facilitate a comprehensive analysis of fiscal incidence – either informal or formal.

A thorough examination of the questionnaire and resulting variables allowed us to identify what was observable in the data. A careful consideration of how far the definitions of taxes and transfers discussed in Chapter 2 were represented in data recorded in EICV5 allowed us to interpret observed incidence accordingly.

In line with CEQ and other approaches to fiscal incidence, we use the household as the unit of observation and reporting.[3]

3.2 Formal and informal elements for fiscal analysis

Table 2 shows the various components for fiscal analysis identified from the survey. Note that, under the formal taxation component, no data on 'income tax' or 'social security contributions' is available from the survey as waged income is reported in net terms, and thus the net of directly deducted pay as you earn (PAYE) payroll taxes (income tax and social security contributions). There is no recording of employers' status as formally enrolled in PAYE, or any easy way of imputing formal waged employment other than from employee-based industry and occupation codes. This means that we are unable to accurately identify incidence of income taxes or social security contributions and are extremely constrained in our ability to impute their amounts. Further research will explore how far such incidence and imputation can assist in profiling Personal Income Tax (PIT) in Rwanda as part of future TaxDev country-level work at ODI. This data gap is a crucial one as income tax has a progressive structure but is dominated by high-status formal waged employees. The Rwanda

2 See http://statistics.gov.rw/datasource/integrated-household-living-conditions-survey-5-eicv-5 for these documents.

3 Note that current work to simulate formal income taxation and security contributions has to be undertaken at the individual level and will be matched back to the household fiscal incidence in a future report.

Revenue Authority (RRA) reports the number of PAYE taxpayers as increasing from 15,331 to 17,920 over tax years 2016 and 2017, covering the period of the EICV5 survey, and PAYE PIT revenue was recorded as 257.7 billion Rwandan francs (RwF) in 2016–17 (RRA, 2019: 15 and 21). Social security contributions are accounted for separately from PAYE, and amounted to 117.2 billion RwF in 2016–2017 (RSSB, 2017).

Under the formal transfers element of Table 2, loans and financial services under the Vision 2020 Umurenge Programme (VUP) were not included. The 'one cow for the poor' programme is also not included in analysis as the programme was captured for all previous periods rather than over the previous 12 months, and because no data on the value of the transfer was available. Income from these livestock transfers will be captured in the computation of agricultural income (from sales of livestock and products such as milk), and this means our approach of not including the 'one cow for the poor' programme avoids double counting. EICV5 data shows that 7.2% of all households reported ever receiving the 'one cow for the poor' programme.

The absence of data on income tax will make the interpretation of the role of formal taxation difficult, and we have put in place further research to develop and test an income tax (and social security contribution) model with which to impute such direct taxation. This model will produce results that will adapt and revise the findings reported here.

3.3 Income as the welfare measure

We use income as our welfare measure. We note that CEQ decided to use consumption data in neighbouring Uganda, because income data in the survey was considered unreliable (Jellema et al., 2017). Our approach was to prioritise using a viable income measure to enable us to match our analysis to local tax policy considerations for the tax policy team in the Ministry of Finance and Economic Planning (MINECOFIN) and for the RRA. We accept that measuring income is more problematic than measuring consumption, particularly for the bottom and top of the distribution, but wanted to base our analysis on an optimal measure of household income to be

Table 2 Formal and informal elements for fiscal analysis

Formal taxation	Taxes on property
	Other taxes/duties
	Mandatory health insurance payments
Informal taxation	Contribution to mutual aid or developmental projects
	Payments of offerings and tithes
Formal transfers	Vision 2020 Umurenge Programme (VUP) cash transfer[4]
	Receipt of VUP wages for public works
	Receipt of 'Other Government Transfers' – includes social insurance pensions (see Table 3 and discussion below)
Informal transfers	Receipt of informal transfer from another household – international and domestic
	Payment of informal transfer to another household
	Receipt of payment from Tontine
	Payment into Tontine
	Receipt of payment from SACO (savings cooperative)
	Payment into SACO

4 The VUP programme of social assistance cash transfers is given to elderly and disabled people and others who are not suitable to participate in public works.

more useful to local Rwandan policy actors in the short to medium term. We include all sources of income data across the many sources reported in the survey and at the level of economic activities (jobs), as well as individual and household-level income sources. We compute all final incomes at the household level. We paid particular attention to the issue of including sources of income in kind, rather than solely considering 'cash income', and this turned out to have considerable influence on our findings. For example, our first and quick attempt to map informal transfers across Rwanda and Uganda (Evans and Salomon, 2019) used purely cash income, and by doing so we found coverage of informal inter-household transfers to be at the margins of 50% of the population. By additionally including elements of 'in-kind' transfers of this sort, coverage rose to 95%, a finding that was validated by World Bank ASPIRE data reported in Chapter 2.

Many problems remain with using income as a measure of welfare. For example, earnings and business activity are measured on a range of different periodic assumptions – daily, weekly, monthly and quarterly – with no ability to consistently smooth lumpy reporting of large short-term income and expenses. We averaged income to a monthly amount that smoothed annual and quarterly reporting downwards and smoothed daily and weekly reporting data upwards. The values reported in the survey for home consumption from self-production are not directly reconcilable with income as there is no ability to identify subsistence production that is stored or transferred, only those elements that are sold or consumed. Our approach to defining and computing income also uses imputed income (imputed rent). This approach meant that income data was observed as non-zero and positive in all but a few exceptional cases.

Computing income from self-employed 'business' activities did result in a few large negative income values. These remained under all three definitions of income used in the analysis: original, gross and disposable income (see Figure 1), and we trimmed the data by the top and bottom 1% of observations based on disposable income, which both removed those large negative outliers and gave inequality profiles that were not overly sensitive to and distorted by the tails, although they are higher than those obtained from consumption, as would be expected.

In addition, all data on coverage and values for transfers and taxes can be reported using consumption quintiles or other markers in the consumption distribution used for poverty and inequality analysis by Rwandan policy-makers and analysts. However, our computations of redistributive effects and changes to inequality remain valid only for our income measure of household welfare.

To match the approach outlined in Figure 1 we adopted three clear income definitions:

- original pre-transfer income
- gross income after informal and formal transfers
- disposable net income after informal and formal taxes and related expenditure on transfers.

Full details and Stata codes for income computation are available from the authors.

3.4 Coverage

Figure 4 shows the coverage of transfers – both formal and informal – by the percentage of households who receive them (green bars) and the percentage of the population living in those households (orange diamonds). Formal (state-provided) transfers are to the left. VUP cash transfers are seen in just 2.1% of households and cover 1.3% of the population – a reflection that these transfers prioritise low-income disabled and elderly individuals who live independently of others. The VUP public works programme is received by 1.3% of households and 1.5% of the population. The collection of programmes for 'other government transfers' is very diverse, as shown in Table 3. But, overall, the government of Rwanda has almost 'universal' coverage of this range of programmes: over 96% of households receive them, and a similar proportion of the population benefit from them. Table 3 shows how this extended coverage occurs through the provision of 'benefits in kind' that have a small value on average – just $2 per month in purchasing power parity (PPP) value. Other government

transfers go to a maximum of 13% of households. These are reimbursements of healthcare costs. Food relief was received by less than 7% of households. The remaining programmes are mostly high value but very small beneficiary programmes – including Rwanda Social Security Board (RSSB) social insurance pensions and other benefits that are received by just 0.9% of households.

Returning to consider coverage reported in Figure 4, we see that payments from informal social protection programmes such as SACO and Tontine cover larger populations than formal social assistance from VUP: SACO payments cover 3.8% of households and 4.7% of the population, while Tontine covers 42% of households and 46% of the population. Inter-household transfers dwarf

Figure 4 Rwandan population receiving formal and informal transfers

Source: Authors' calculations from EICV5

Table 3 Government transfer programmes represented by 'other government transfers' category

	Percentage (%) of households	Purchasing power parity (2015) per month ($)
Government donations of goods (telephones, bicycles, mosquito nets, buckets, etc.)	96.5	2.12
Payments for medical treatment	13.4	3.55
Food relief	6.8	5.77
Other benefits to the household	5.7	8.77
Educational scholarships (primary, secondary, university, vocational education and training)	1.4	64.52
The Genocide Survivors Support and Assistance Fund (FARG)	1.2	45.44
The Rwanda Social Security Board old age, disability and survivors' pension social security/Caisse Sociale du Rwanda	0.9	64.81
Old Age Grant	0.5	14.31
Allowance for dismissal or termination of employment	0.2	226.05
Local government education support	0.1	54.53
The Rwanda Demobilization and Reintegration Commission (RDRC)	0.1	60.3

Note: Ranking by descending percentage of households.
Source: Authors' calculations from EICV5

these by comparison and are nearly universal in extent – covering almost 95% of households and the population.

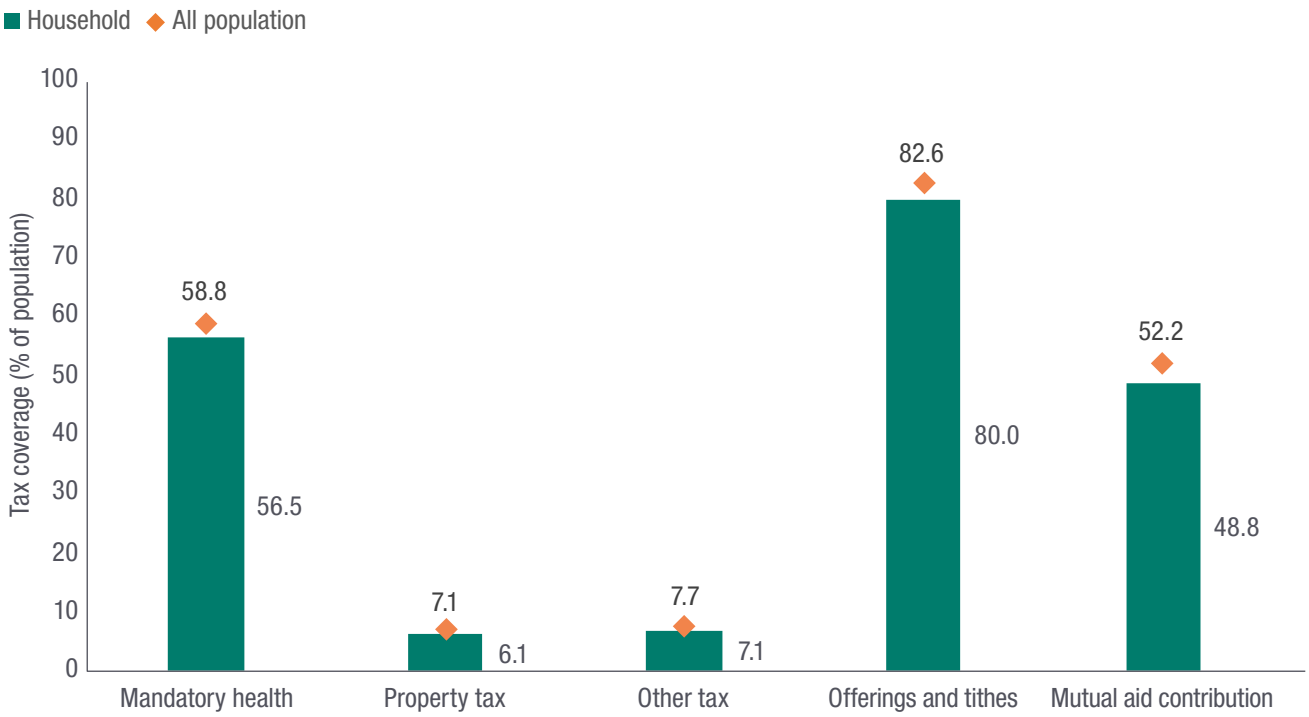
Figure 5 shows coverage profiles for taxes using the same approach as in Figure 4. Formal taxation by central or local government is shown on the left, in the solid green bars. The largest tax coverage comes from mandated health insurance payments, paid by 56.5% of households and for almost 59% of the population. Other formal government taxes have much lower coverage: property tax for 6.1% of households and 7.1% of the population, and 'Other tax' paid by 7.1% of households for 7.7% of the population. Informal taxes are shown in the patterned green bars and our provisional estimate of religious taxes – based on 'offerings and tithes' paid – suggests that these are paid by 80% of households for 82.6% of the population, but we are unable to confirm whether such payments reflect a precise definition of religious tax as discussed in Chapter 2. The other informal tax levied locally as 'contributions to mutual aid and development' is paid by 46.8% of households for 52.2% of the population.

3.5 Value of transfers

Figure 6 shows the values for each tax and transfer component across formal and informal sources. It uses two separate measures: PPP nominal value and as a proportion of income – reflecting the ASPIRE data approach discussed earlier. We only report 'beneficiary' values for those who receive a transfer. It is important to remember that the populations receiving these transfers are often quite small, and thus the overall effect on the value of transfers and taxes on the income distribution will be different from that seen for beneficiaries and taxpayers solely. Overall, we see very low values for taxes – both formal and informal. Mean values – shown in the right-hand sections of each graph – range between 25 cents and $2.41 in PPP United States dollars per month per capita, and these represent mean proportions of gross income of between 0.7% and 1.4%. Median values suggest little dispersion around these mean values.

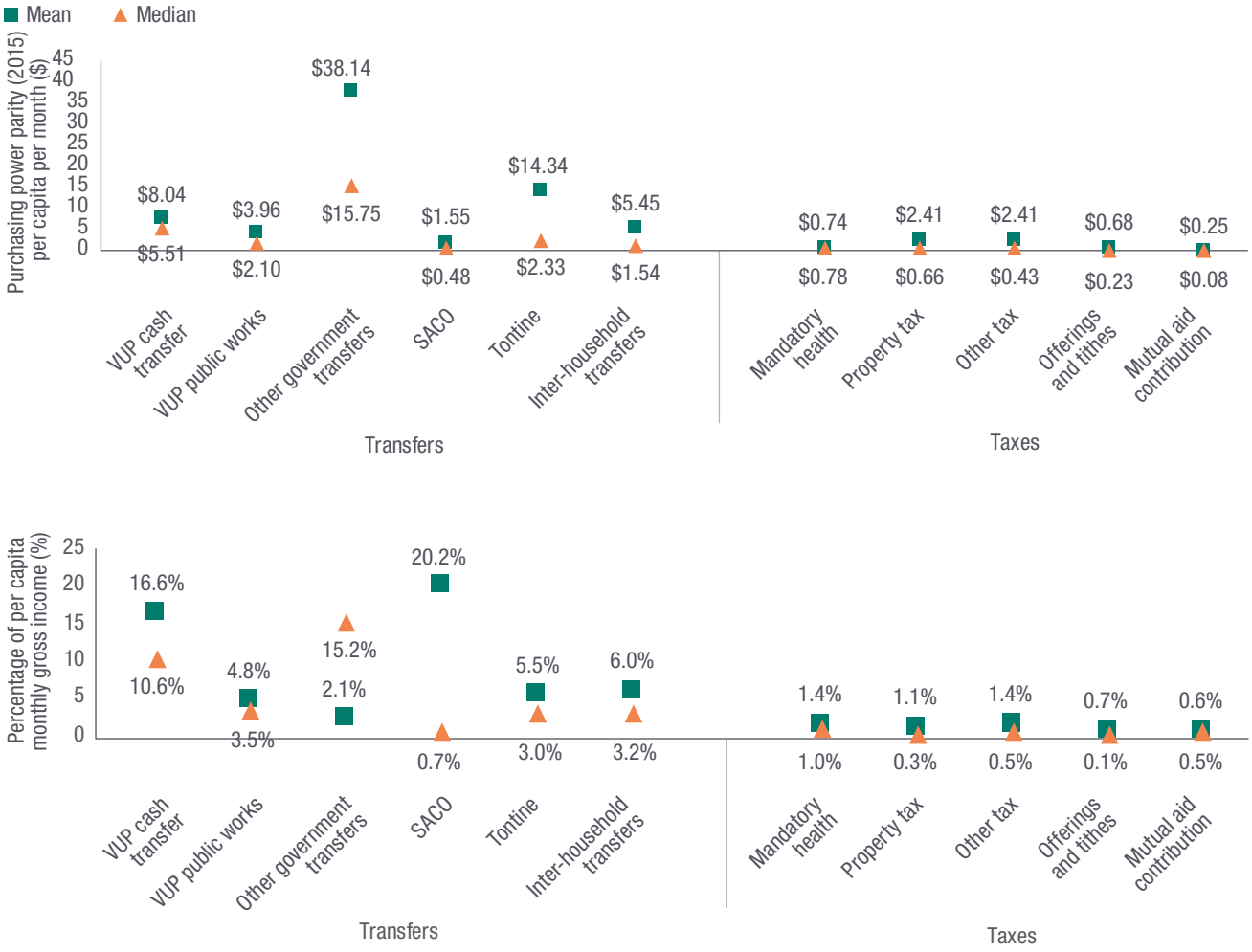
Turning to transfers, we see far larger differences between mean values and far more dispersion, as shown in the left-hand sections of both graphs. First considering formal government transfers, we see mean formal transfer values

Figure 5 Tax coverage of Rwandan population



Source: Authors' calculations from EICV5

Figure 6 Value of transfers and taxes for beneficiaries and taxpayers



Source: Authors' calculations from EICV5

for VUP cash transfers are $8.04 and just $1.55 per capita per month for public works wages from VUP. The 'Other Government Transfers', outlined in Table 3, produce a mean value of $38.14, but the mean is hugely influenced by the small number of high-value transfers. The median value is $15.75. The relative value of these formal transfers compared to beneficiaries' income differs according to the underlying targeting approach for each programme. VUP cash transfers account for 16.6% of gross income on average, with the result that they are targeted on 'low income' groups. The VUP public works 'wage' is on average 4.8% of income, reflecting its periodic, shorter-term nature compared to the more 'permanent' entitlement of cash allowances. The mean value for the 'other' group of government transfers is just 2.1% of gross income, while the median is much higher, 15.2%, reflecting the larger allowances paid and the fact that pensions, scholarships and redundancy payments are largely paid to those with low income from other sources.

Informal transfer values reflect their underlying basis – mean values for inter-household transfers are $5.45 and 6% of income. These mean values are higher than the medians, suggesting that large transfers (perhaps from international sources) skew the profile. Transfers from Tontine and SACOs represent drawings from community savings and loan institutions, and are thus similar to liquid income from capital investments

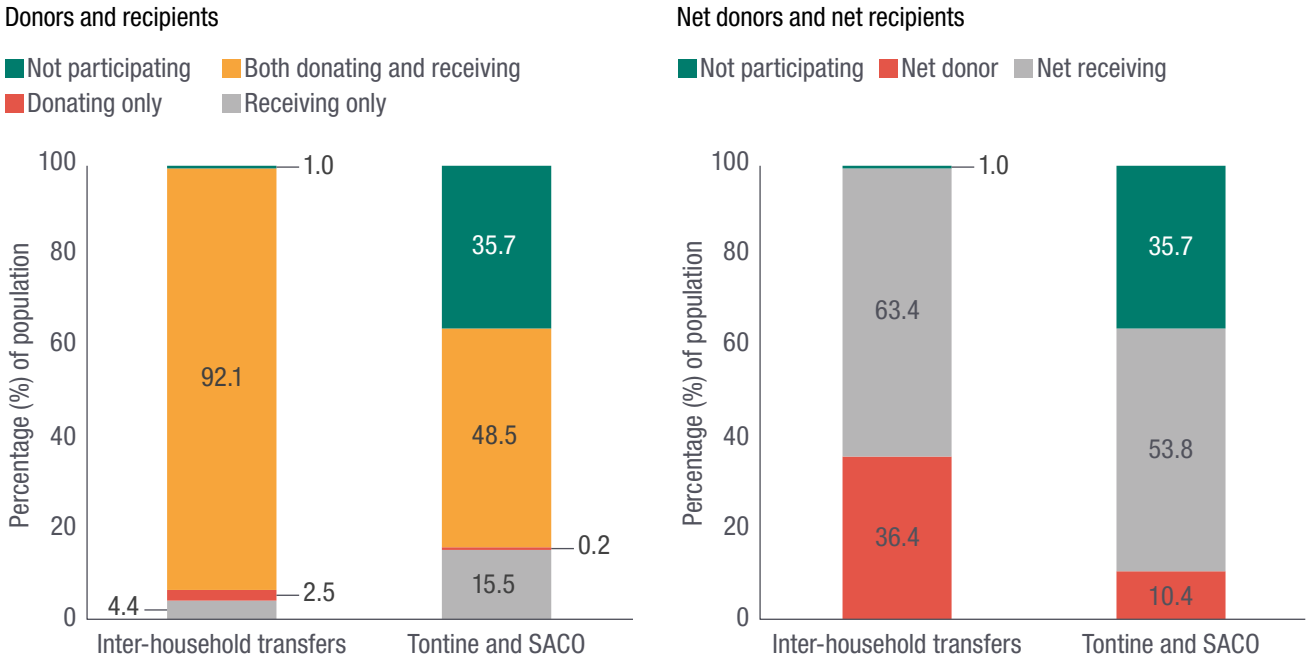
– Tontine income is much larger than SACO in nominal PPP value, but much smaller in relative income terms, suggesting that those drawing from these schemes differ in their underlying income levels – higher-income groups are withdrawing larger-value amounts. We can observe this when we consider how coverage rates and incomes differ across the distribution below.

3.6 Net value and incidence of informal transfers

Before considering distributional profiles for taxes and transfers, it is important to reconcile the values of informal transfers that are observed as both income and expenditure. It is crucial to assess private transfers from other households as being both transfers and expenditure on transfers: households can be both donors and recipients. There are several reasons why the donors and recipients of informal transfers do not balance. First, some payments come from sources that are not in the survey: both international remittances and similar payments from 'non-household' populations in Rwanda, such as those in armed forces' barracks. We know that international remittances are a small proportion of all inter-household informal transfers – received by less than 1% of households – and tend to be in cash and of higher value than most domestic transfers. Second, payments may reflect economic geography or lifecycle obligations, and be from urban to rural or from younger to older members of the extended family. There may also be payments to respond to economic difficulties, and thus to support family members in hard times, or to smooth out annual and seasonal fluctuations in income. Third, there is also the issue of measurement error – both in terms of selective non-response of remitters or donors and in terms of the amounts and incidence recorded by respondents.

Similarly, non-market, community savings and loan organisations such as SACO and Tontine will involve members both receiving from and paying into them. For these transfers it is thus important to understand the net effect of payments in and out, for both beneficiaries and donors. Figure 7 shows the population covered using a 'gross' approach that first counts those who live in households who only receive, only pay out or both pay and receive such transfers. We then show the 'net' approach that classifies households by their overall net arithmetic value of transfers paid and received – those who are net donors or net recipients. The vast majority of informal inter-household transfers are seen in contexts

Figure 7 Net receipt and payment of informal transfers



Source: Authors' calculations from EICV5

where there is both an inflow and outflow of such transfers, covering 92% of the population. Only 4.4% of the population live in households that only receive, and just 2.5% live in households that only donate. When the differences between transfers in and out are calculated, we see that 63% of people live in households where the net effect is positive (they receive more than they pay out), while 36% of households have the opposite balance – they pay more than they receive. This necessarily means that transfers in are higher in value. This effect may result from international transfers.

Considering SACO and Tontine payments in a similar manner over the previous 12 months, we see that 48.5% of households both pay in and draw out from these community savings and loan organisations, while only 15.5% live in households that only draw out. A much larger proportion of the population live in households that do not participate at all in these schemes. When it comes to net income from the schemes, 53.8% of the population live in households that are net drawers from the scheme, and just 10.4% live in households that are net savers. A time series or longitudinal profile would help us better understand the underlying dynamics for these schemes, along with an understanding of the amounts involved – otherwise, on simple populations, the large net drawing from savings would appear on first impression to be unsustainable.

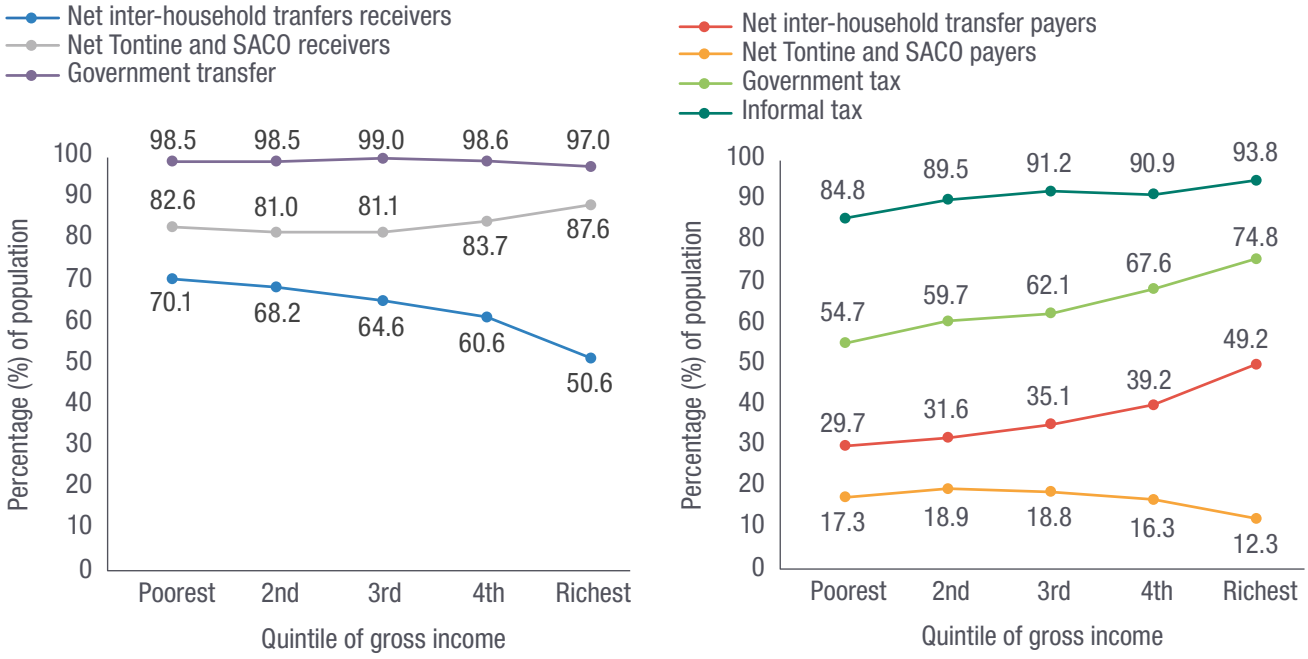
We only report aggregate and net values from this point on in our analysis.

3.7 The distribution of transfers and taxes

To consider distributional coverage and incidence we use per-capita gross household income. This ensures that taxes and transfers can be reported consistently in percentage terms, with a maximum of plus or minus 100%. Disposable income comparisons are more difficult to interpret as zero incomes (33 observations) occur, making reporting percentages difficult to graph and to interpret. A full set of results using different income definitions is available from the authors on request.

Figure 8 shows the percentage of each quintile population who receive transfers (the left-hand graph) and who pay tax and have transfer expenditures (the right-hand graph).

Figure 8 Beneficiaries and taxpayers by income quintile



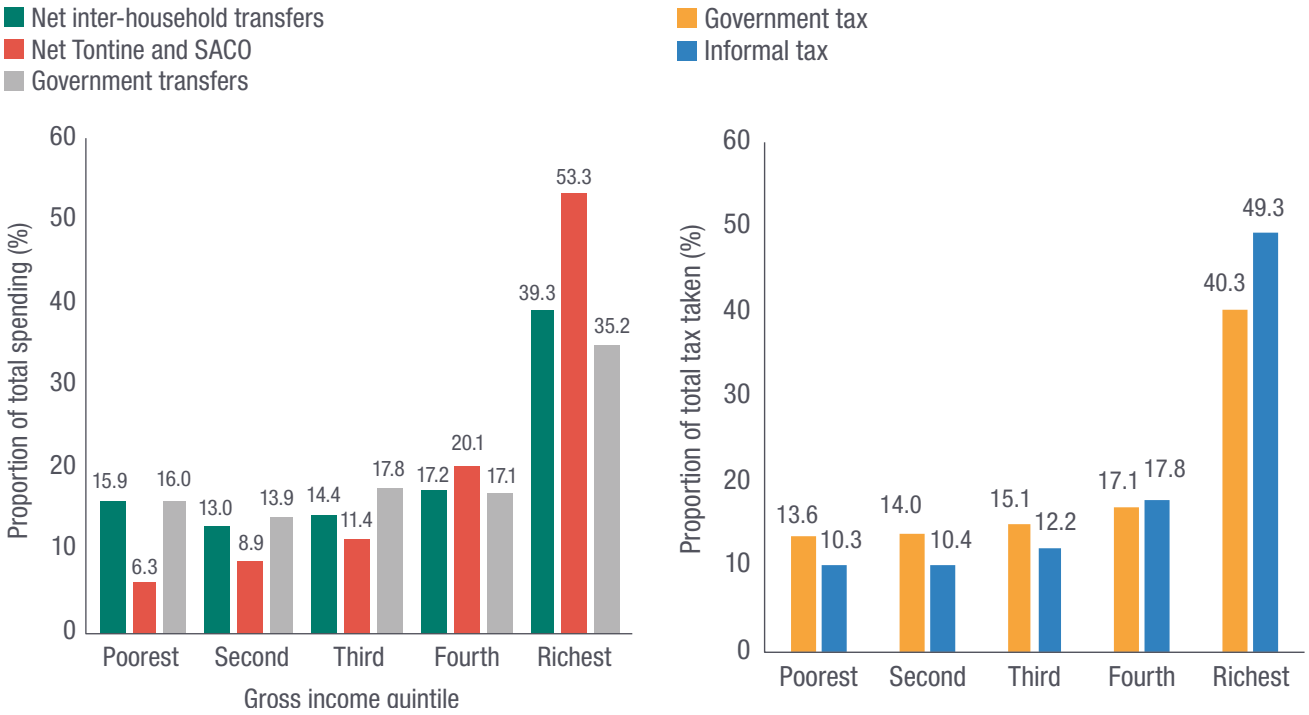
Source: Authors' calculations from EICV5

Figure 8 shows that the profile of beneficiaries receiving any government transfers is flat and almost universal across the distribution. Those who are net beneficiaries of informal inter-household transfers show a declining prevalence as quintile income rises, from 70% to 50% respectively, while net donors of these same transfers rise from 30% to 49% across the quintiles. For community savings and loans, those drawing income from Tontine and SACOs have a largely flat profile across the distribution, rising from 83% of the poorest to 88% of the richest quintile. Those paying into those same schemes fall across the distribution, from 17% to 12% from poorest to richest quintile. Finally, the proportion of government taxpayers rises across the quintiles from 55% to 75% from poorest to richest quintile. Understanding the resulting fiscal and financial consequences requires coverage and values considered together to assess how the overall totals of transfers and taxes are shared across the distribution.

3.8 Benefit and tax incidence

Figure 9 shows the proportion of total value for each aggregate element of taxes and transfers that occurs by gross income quintile. Transfers are shown in the left-hand graph, and looking across all sources of transfers we see that proportions of every transfer source are higher in the richest quintile. Net income from informal sources is reported as transfers. Net expenditures are not shown but continue to be treated as deductions from gross income in the computation of redistribution reported below. We see that Tontine and SACO taken together have the most regressive transfer effect: 53% is found in the richest quintile and just 6% in the poorest. Net inter-household transfers have 39% of all net effect as a transfer in the richest quintile, and 16% in the poorest. Formal government transfers are less regressive by comparison, but not by very much: 35% is found in the richest quintile and 16% in the poorest. Taxation appears regressive overall for both informal and formal sources: 49% of all informal taxes are found in the richest quintile and just 10% in the poorest. Formal taxes (remembering that income tax and social security contributions are not observed) are slightly less progressive, with 40% found in the richest and 14% in the poorest quintile.

Figure 9 Proportion of total spending and total tax take by quintile of gross income



Source: Authors' calculations from EICV5

3.9 Redistribution

Redistribution is the outcome of the combination of these tax and transfer effects and their underlying progressivity in total. We show redistribution as the resulting difference between original and disposable income, and Table 4 describes the overall redistributive effects of all transfers and taxes by showing who in the quintiles of original income changes their quintile position for disposable income. The diagonal in grey shows the proportion of those who remain in the same quintile as they occupied for original income. This is the vast majority across the distribution, but is obviously higher in the top or bottom quintiles as they only have one potential direction of change: 91% of the poorest remain poor and 94% of the richest remain rich.

Almost 7% of the original poorest move up into the second quintile for disposable income, but almost 9% of those in the original second quintile move down into the poorest, meaning that there is a lot of churn resulting from these taxes and transfers at the bottom of the distribution (but with a caveat on interpretation from underlying measurement error of income welfare that may understate differences at small margins).

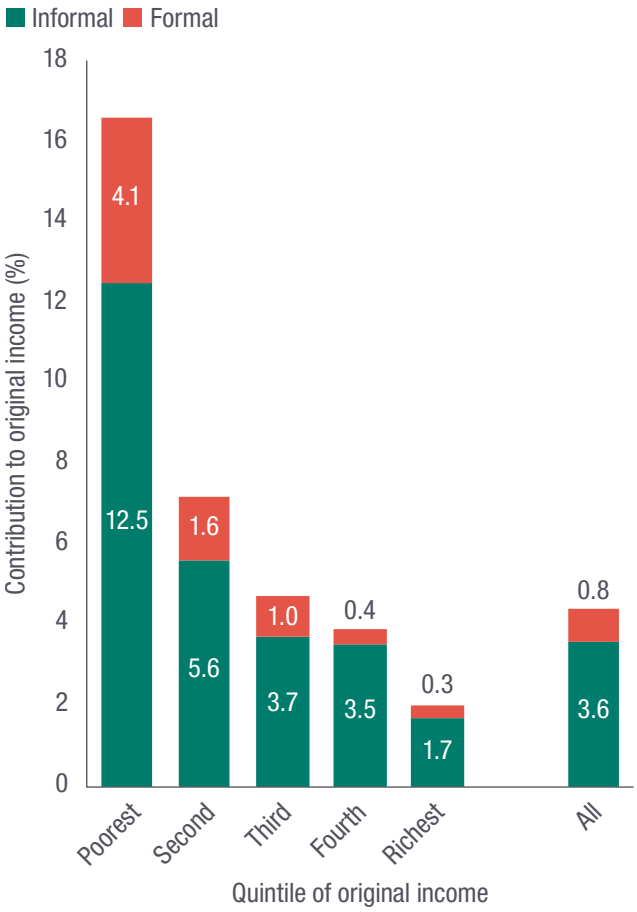
To understand the redistributive impacts more clearly we can assess how far distribution occurs at each part of the original income distribution. To do this we first calculate the income difference between disposable and original income for all the population, and we then arithmetically apportion the difference between informal and formal groups of taxes and transfers. This allows us to estimate how much redistribution comes from the inclusion of 'informal taxes and transfers' compared to their official, formal and government-run counterparts. Figure 10 shows the result of this analysis. Overall, we see that informal taxes and transfers contribute 3.6% redistribution to original income compared to just 0.8% from formal taxes and transfers among the taxes and transfers analysed. In short, informal taxes and transfers account for 82% of all redistribution, with just 18% from formal sources. We see that the largest proportional effect is on the poorest quintile of original income, and then the proportional effects decline monotonically across the remaining quintiles. However, original incomes are very low overall, and especially so in the bottom half of the distribution. This suggests that an analysis of redistributive efficiency is better considered by assessing how the overall redistribution is allocated across the same quintiles.

Table 4 Change in quintile positions between original and disposable income

		Disposable income quintile				
		Poorest	Second	Third	Fourth	Richest
Original Income	Poorest	91.1	7.14	0.87	0.53	0.35
	2nd	8.77	83.23	6.87	0.87	0.26
	3rd	0.10	9.50	83.58	6.41	0.41
	4th	0.02	0.11	8.67	86.66	4.53
	Richest	0	0.03	0	5.64	94.44

Source: Authors' calculations from EICV5

Figure 10 Contribution of formal and informal taxes and transfers to redistribution



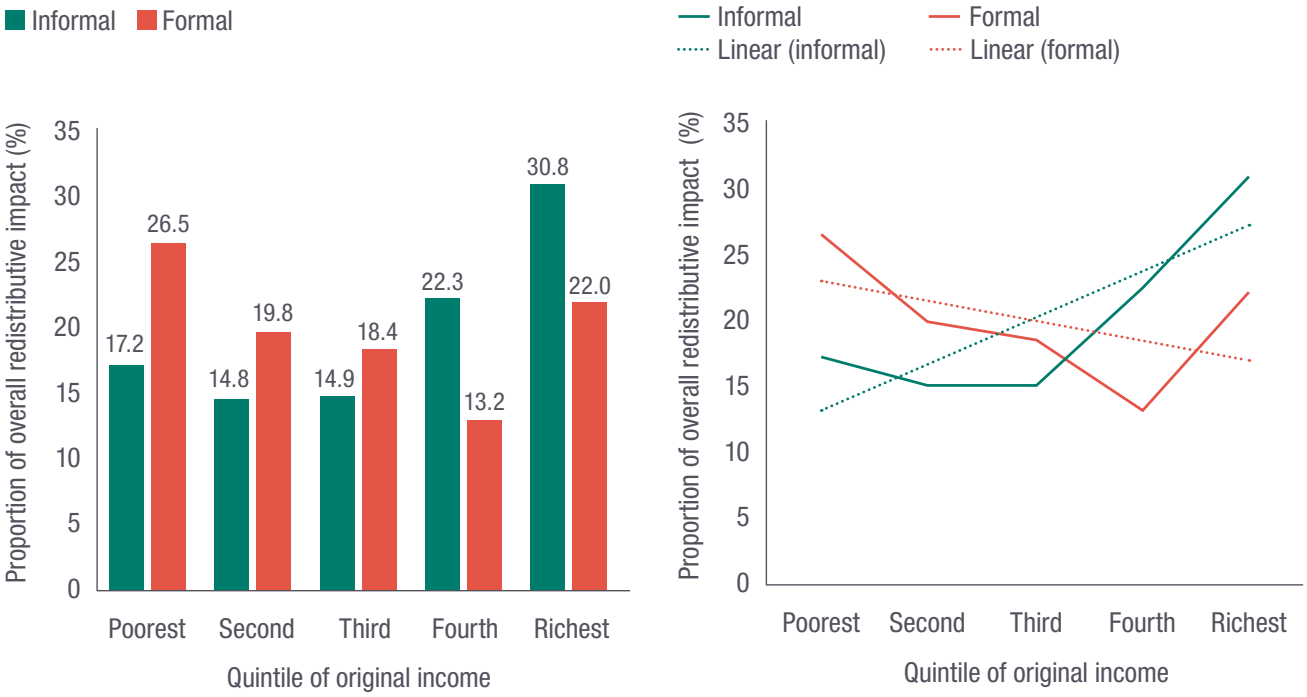
Source: Authors' calculations from EICV5

Figure 11 shows how the overall redistribution from formal and informal sources is shared across the quintiles of original income. The left-hand graph shows this as bars that sum to 100% for each source, and we see that the green bars for informal taxes and transfers have their largest incidence in the richest quintile, almost 31%, and the second largest in the poorest quintile – just over 17%, resulting in a j-shaped profile across the distribution. By contrast, redistribution from formal sources shows the reverse trend, with the highest incidence, 26.5%, occurring in the poorest quintile and the second highest, 22%, in the richest: a backward facing j-shaped profile. The right-hand graph in Figure 11 concentrates on these 'lines' of progressivity/regressivity, and clearly shows that the overall linear trend is for formal taxes and transfers to have a progressive redistributive effect, while informal taxes and transfers are on the whole regressive in their redistributive effect. Together, the lines resemble 'crossed hockey sticks'.

3.10 Inequality reduction

What impact does this redistribution from taxes and benefits have on household monetary inequality? Inequality in Rwanda is officially reported using a household consumption welfare measure and the Gini coefficient as an inequality index. Our analysis does not replicate this as we use income as our welfare measure, and our results should not be interpreted as any refinement of or commentary on official inequality measures. However, we do need to measure inequality to better understand the impact of formal and informal taxes and transfers. Our approach is thus not to focus on a single inequality measure, such as the Gini, but to look across a suite of measures to establish whether a consistent pattern of effects on inequality can be seen. Table 5 shows the results from this approach. We first generate a range of inequality index results consistently for our three measures of income: original pre-transfer, gross (after transfers) and disposable net income (after taxes and transfers). We then make a consistent index of those results in which we set the index score for each different measure to 100 to represent the baseline inequality resulting from 'original income'. The values for each inequality measure for gross and disposable income are then set to the same index for each and across every measure. Our original income data contains zeros and the majority of inequality indices in Table 5 drop those zero income observations when calculating their score. However, we purposely

Figure 11 Quintile proportions of formal and informal sources of redistribution



Source: Authors' calculations from EICV5

include two measures – shown in the last two rows of Table 5 – that *do not* drop zero incomes. This allows us to assess whether the inclusion or exclusion of zero incomes affects our interpretation of the overall inequality profile. The answer is a clear 'no' – they replicate the pattern of changing inequality shown in the other eight indices.

The results in Table 5 are clear. The addition of transfers to original income decreases inequality by a small amount: from 100 to between 98 and 92 depending on the index used. The subsequent deduction of informal taxes, formal taxes and expenditure on transfers then increases inequality but to an overall level (99–94) that is just below that first observed in original income. But in terms of inequality reduction, the overall effects are very small compared with tax and benefit systems in Organisation for Economic Co-operation and Development (OECD) countries.

Table 5 Inequality in original, gross and disposable income

	Original pre-transfer	Gross	Disposable net
Relative mean deviation	100	98	99
Coefficient of variation	100	96	97
Standard deviation of logs	100	94	98
Gini coefficient	100	98	99
Mehran measure	100	98	99
Piesch measure	100	98	99
Kakwani measure	100	96	98
Theil index (GE(α), α = 1)	100	95	97
Mean log deviation (GE(α), α = 0)	100	93	97
(Coeff. var. squared) (GE(α), α = 2)	100	92	94

Source: Authors' calculations from EICV5

What changes in inequality can be attributed to informal taxes and transfers? To answer this question we use the approach pioneered by Shorrocks to decompose inequality by factor (income source) (Shorrocks, 1982; Cowell and Jenkins, 1995). This allows us to decompose disposable income into its constituent components defined as:

- income from formal taxes and transfers
- income from informal taxes and transfers
- original pre-transfer and tax income (residual factor).

The results of this decomposition are shown in Table 6. Sensitivity and robustness tests for the decomposition are available from the authors on request.

Table 6 shows that the major factor in income inequality remains the original dispersion of income values represented in original income: the equivalent of 97.9% of inequality is explained by this. Just 2.1% of inequality arises from transfers and taxes, but there is a large difference in the contribution of formal and informal sources to this minor level of inequality reduction. Formal taxes and transfers reduce inequality but by a very small margin – the major important finding is the neutral to negative contribution they make in countering inequality. Conversely, informal taxes and transfers contribute 2.2% to inequality. These findings confirm and reflect the earlier evidence on redistribution shown in Figures 10 and 11.

Table 6 Factor decomposition of disposable income inequality

Original income (residual)	0.979
Formal taxes and transfers	–0.001
Informal taxes and transfers	0.022

Source: Authors' calculations from EICV5

4 Summary and conclusions

We first reviewed the literature and evidence on informal taxes and transfers to align definitions with best practice in fiscal incidence analysis and to meet definitions set down by the World Bank on non-state and non-market transfers. We described how an approach using these definitions could be included in fiscal analysis that identified and separately accounted for informal taxes and transfers alongside their formal counterparts. We then illustrated how such fiscal incidence analysis could be undertaken using Rwandan household survey data.

We found it was possible to identify, quantify and analyse a range of informal taxes and transfers, but that definitional uncertainty surrounded how these were represented and reported in survey data. Important instruments of formal tax policy were missing, which made a comprehensive comparison of informal and formal fiscal incidence imperfect. Identification of informal taxes faced uncertainty, especially around the issue of 'religious taxation' where survey responses were based on 'tithes and offerings', but without clarity around how much of these were formally obligated tithes or voluntary charitable donations. Informal transfers were more easily identified – as both income and expenditure – but including SACO institutions clouded a clear demarcation of transfer versus savings. This is also a problem in the general analysis of transfers when considering formal pension contributions and payments. We demonstrated how to profile these income and expenditure aspects of informal transfers through using net incidence and net values. Our findings on the high proportion of the population who are both donors and recipients of informal household transfers is an important consideration, and a novel contribution to the literature. In future it may be best to think of 'informal flows' between households, rather than receiving and giving separately. In this regard, a cross-sectional snapshot of informal transfers between households may be insufficient to understand flows, and analysis would benefit from additional longitudinal investigation of the panel. This is recommended for future research.

Our main findings illustrate the huge scale of informal transfers compared to other formal mechanisms: 95% of the population live in households that receive such transfers. The Rwandan government also reaches similar coverage levels, but mostly through in-kind provision of small value; formal cash transfers from pensions and social assistance reach under 4.5% of the population. Informal redistribution accounts for 82% of direct redistribution of income (just 18% from formal taxation and transfers). This estimate undervalues formal taxation from income tax and social security contributions, which are unobserved, and a more comprehensive estimate of overall roles will be done as part of future research to model and impute direct formal taxation and to reconcile this with the published accounts of RRA and RSSB. These informal taxes and transfers have a weakly regressive impact overall compared to the smaller but progressive impact of formal taxes and transfers. The main finding on inequality in disposable income was how small any redistributive adjustment was: 97% of 'post tax and transfer' inequality was still identifiable from original income before such fiscal adjustments. Informal transfers and taxes accounted for 2.2% of inequality in addition, and formal instruments made a smaller and more marginal progressive contribution to reduced inequality.

Our analysis and explication have established the 'proof of concept' of exploring the role of informal taxes and transfers on disposable income. Fiscal incidence analysis including informal mechanisms is possible and doable, subject to survey data constraints. In Rwanda the importance of informal mechanisms in both their scale and effects on redistribution and inequality are such that they should not be ignored by policy-makers and analysts. This paper does not, however, begin to approach the applied and behavioural questions for policy that result from its findings. We leave that to future research.

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