



Regular Research Article

The taxed informal economy: Fiscal burdens and inequality in Accra

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ARTICLE INFO

Keywords:
Informal sector
Taxation
Inequality
Ghana

ABSTRACT

The common assumption that informal economies are untaxed has underpinned arguments that they represent an ‘untapped goldmine’ for government coffers. However, there has been limited empirical engagement with this assumption. While some studies have highlighted that many informal businesses pay both formal and informal taxes, there has been little systematic accounting of these payments. Using a novel dataset of 2,700 informal enterprises in the Accra metropolitan area in Ghana, this article presents the first geographically representative account of the nature, distribution and impact of taxation in an urban informal sector. We find that the majority of informal sector operators in this context pay a range of taxes and fees, which together amount to a significant burden, especially for low earners. Two key findings emerge in relation to the structure of these taxes. First, the incidence and burden of tax payments is highly uneven and strongly correlated with visibility to the state, suggesting that taxation is driven more by patterns of state enforcement than the choices of informal operators. Second, taxes and fees are highly regressive, with lower-earning operators paying significantly more in relation to their earnings. These findings have important implications for both our conception of informal businesses and efforts to tax informal businesses in low- and middle-income countries.

1. Introduction

In the face of high levels of debt and increasing fiscal pressures following the global pandemic and related economic crisis, governments around the world have been looking for new revenue sources. Tax authorities in low- and middle-income countries have increasingly focused on informal sectors as a ‘hidden goldmine’ of potential tax income, with new registration campaigns, presumptive taxes, or alternative ways of taxing informal businesses high on the policy agenda.¹ While it is common for academic, policy, and popular narratives to assume that informal sector operators do not pay taxes or actively avoid taxation and other forms of regulation (e.g. Portes et al., 1989; Portes, 1996; Levy, 2008), a growing literature has shown that they already make a range of formal and informal payments (Gallien et al., 2023; Gallien & van den Boogaard, 2023; Keen, 2012; Rogan, 2019, 2022). However, there is a surprising absence of systematic and geographically representative analyses of the tax burdens of informal sector operators. As attempts to tax

hundreds of millions of informal operators across lower income countries may add new fiscal burdens to pre-existing ones, there is an urgent need for a better understanding of existing systems of taxing the informal sector and their impacts on equity.

Using new and representative data from 2,700 informal sector operators in Accra, Ghana, alongside focus groups and key informant interviews, this paper seeks to address this gap. To the best of our knowledge, this is the first statistically representative survey of taxation in the informal sector that allows for a detailed understanding of who is and who is not taxed among this highly heterogeneous group. Much of the work in this area has been more focused on specific sub-sectors or on growth-oriented informal firms (Rogan, 2022). A representative coverage of the informal sector allows us to examine common assumptions about tax incidence and its distributional impacts.

Accra is a useful case to explore the taxation of urban informality for at least three reasons. First, Ghana’s informal sector is large even by regional standards, with roughly 85 percent of its workforce in informal

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employment (ILO, 2018). The Greater Accra Region accounts for over a third of urban informal employment in Ghana (Baah-Boateng & Vaneck, 2020).² Second, like a range of lower income countries in recent years, Ghana has faced a national debt crisis, which has energised policy discussions about taxing the informal sector as a source of revenue. In 2022, for example, a new electronic transfer levy (E-levy) was introduced with the explicit goal of extracting revenue from the informal sector (Anyidoho et al., 2023). Third, taxes aimed at the informal sector at the national and local level in Ghana reflect similar patterns in other lower income contexts (Bird & Wallace, 2005; Joshi et al., 2014), with Accra thus representing an indicative case study of attempts to tax informality.

Three key findings emerge, all of which provide an empirical critique of the common characterisation of informality as being rooted in voluntary and strategic tax and regulatory evasion by operators (Kleven et al., 2011; Portes et al., 1989; Portes, 1996). First, we find that the majority of informal operators do, in fact, pay a range of taxes and fees, which together represent a significant burden. Second, we find that the distribution of payments in relation to earnings is highly regressive and that this is the case even for payments that are designed explicitly to be progressive. Third, our data indicate that taxation within the informal sector is not evenly distributed, with the likelihood of payment being substantially higher for activities that are more visible and thus easier to capture by tax administrators. This supports a view of tax burdens in the informal economy as driven by features of tax administration rather than operators' choices.

The paper has both practical and conceptual implications. It offers an empirical rebuttal to a policy discourse that often assumes that informal operators are not taxed at all. It provides an account of the regressivity of simplified tax systems, which are the most widely used tool to tax small and informal enterprises without formal accounting records (see Mas-Montserrat et al., 2023; Hoy et al., 2024). At the same time, it provides an entry point into a discussion of the politics of tax and informality that highlights structural differences within a highly heterogeneous sector.³

The remainder of the paper proceeds as follows. Section 2 provides an overview of the literature on taxation and the informal sector, while Section 3 describes our methods and data. Section 4 shows that informal sector operators pay a range of taxes and fees, which represent a significant proportion of earnings in the informal sector. Sections 5 and 6 analyse the patterns of taxation in the informal sector, demonstrating in turn that informal sector taxation targets enterprises that are more visible to tax collectors while being regressive and placing a greater burden on the lowest earners. Section 7 concludes by considering the implications of these findings for theory and practice.

2. Tax and the informal sector

Any discussion of tax and the informal sector depends on the conception of the latter. There are multiple definitions of the informal sector, some of which make explicit assumptions about tax evasion (Gallien, 2024). However recent years have seen emerging consensus around an understanding of the informal sector that follows from the operational definition popularised by the International Labour

Organisation (ILO) and the standards adopted by the 15th International Conference of Labour Statisticians (ICLS) which conceptualises the informal sector as comprising of non-household private economic units producing goods or services for sale or barter that are not registered with the relevant national institutions (ILO, 2018). Here, the informal sector is differentiated from the wider concept of the informal economy, which includes informal work within private households and formally registered enterprises (Chen, 2016; ILO, 2018). This definition of the informal sector, which we adopt in this paper, allows us to explore tax payments by informal workers where tax payment does not require registration with the respective national institution.

Typically, three arguments are advanced for taxing the informal sector. The first is that, in contexts where most firms are informal, the potential tax revenue that could be extracted from the informal sector could be substantial (e.g. Schneider, 2005; Schneider et al., 2010). Second, arguments for taxing the informal sector are often rooted in fairness considerations, as it is commonly assumed that informal sector operators are tax evaders who do not pay their "fair share" (Emran & Stiglitz, 2005; Rothenburg et al., 2016; Torgler & Schneider, 2009) and, therefore, receive an unfair advantage over formal firms. Third, it is often argued that tax registration and payment is part of a broader formalisation process that is expected to lead to growth benefits for informal firms, as well as a multiplier effect on the growth of larger formal firms (Fajnzylber et al., 2009, 2011; Jessen & Kluve, 2021; Loeprick, 2009; Perry et al., 2007).

Scholarship has increasingly called into question the assumptions underpinning these rationales (Gallien & van den Boogaard, 2023; Moore, 2023). First, revenue gains from taxing the informal sector have often been shown to be limited—even non-existent—when factoring in the costs of administration (Gallien, Occhiali, & van den Boogaard, 2023; Keen, 2012). While there may be revenue potential in taxing large firms and high-income individuals within the informal economy (Kangave et al., 2016; Keen, 2012; Tripp, 1989), tax strategies have often instead focused on registering smaller businesses, despite the reality that many operate below tax thresholds (Dube & Casale, 2019).⁴

Second, studies increasingly suggest that common accounts underestimate the range of payments that informal operators already make, thereby raising equity concerns around introducing new taxes.⁵ Critically, there is little information on how much informal sector operators contribute to local authorities, with these taxes and fees often going unrecognised within national-level tax assessments (De Mel et al., 2013; McLure, 1977).⁶ At the same time, informal sector businesses in many contexts pay informal taxes and fees of various kinds outside of legal statutory frameworks in order to operate or access commercial space

² Ghana has 16 administrative regions which are further divided into 261 districts, municipalities or metropolises, each under a local government unit called an assembly. Accra, the country's capital, is in the Greater Accra Region and is administered by the Accra Metropolitan Assembly (AMA).

³ There is a longstanding and unsettled debate about the causes of informality. One point of agreement is that there is no single cause and that the drivers of informality tend to differ by context. While there is some general acknowledgement that the sub-Saharan African and Latin American contexts differ from one another in many respects, the informal economies in both regions are still highly heterogeneous (cf. Maloney, 2004; Chen, 2016; Ulyssea, 2018).

⁴ As noted by the IMF (2011, p. 39), "It is not uncommon for developing country tax administrations to devote large resources to [small businesses] in the hope of flushing out medium or large taxpayers by blanket enforcement operations; but results have been poor and costs of implementation high."

⁵ Table 2 presents the payments made by informal operators in Accra into three categories. For each payment there is very limited public information available on the prescribed payment amounts, their payment structure, enforcement measures, and collection methods. Where information on payment schedules is available, the information is difficult to synthesise. For example, the schedule for municipal license/operating fees is roughly 70 pages, with different tax rates depending on the size of the businesses, type of businesses (e.g. the rates for hairdressers is different depending on whether they provide braiding, dreadlocks, or washing services), and location of the business.

⁶ For example, one of the most comprehensive analyses of informal sector taxation in the literature found that there was a 75% tax gap in Ghana among informal non-farm enterprises (Danquah & Osei-Assibey, 2018). This analysis compared the amount received by the national revenue authority from the country's informal sector tax (the tax stamp) with the number of firms that should have been paying this tax as captured in a national household survey. The analysis, while robust, illustrates the way that local taxes and other fees are invisible to revenue authorities.

(Rogan, 2022).

Third, common methods for taxing informal firms, including presumptive tax regimes at the national level (such as Ghana's tax stamp) and flat rate fees and licences at the local level, are often regressive within the informal sector, while also reinforcing inequities between informal and formal firms because there is no minimum income threshold.⁷ As a result, those in the formal sector who earn similar amounts could pay less in taxes than their counterparts in the informal sector (Dube & Casale, 2017).⁸ Over and above the potentially regressive nature of presumptive and local tax regimes, there is an additional question of why the poorest operators (typically earning well below any reasonable tax threshold) should pay tax at all.¹⁰ Public officials often assume that taxes or fees levied on the poorest are so low as to have a limited negative impact. However, while taxes paid by informal operators may be modest in absolute terms, they often represent a significant and steady burden on highly variable, often seasonal, and insecure incomes. As Bahiigwa et al. (2004, p. 9) note, "to say that the amounts involved are too small to really matter is to distort the very meaning of poverty, which is that people's consumption is already below the minimum acceptable level."

Fourth, paying taxes is often conflated with being formal, which is, in turn, assumed to come with certain benefits for firms. The purported, but empirically ungrounded, benefits of formalising and paying taxes are based on the assumption that growth and expansion are the primary goals of informal operators, most of whom are own-account operators who do not hire employees.¹¹ This strand of the literature also "views formalisation as a rational choice [where] firms will formalise if the benefits of formalisation outweigh the costs" (Joshi et al., 2014, p. 1334), with much emphasis thus placed on the importance of reducing registration costs (e.g. Djankov et al., 2002). Much of this literature focuses on contexts where there is expected to be a large number of smaller firms that evade regulations or are large enough to register for tax but have not done so. It is not clear how such an approach might differ in lower income contexts in Asia and sub-Saharan Africa where the majority of the workforce is informal, and a large proportion are engaged in survivalist activities. Thus, the growth argument relies quite heavily on assumptions that informal firms actively evade regulations (including tax); that these firms desire growth; and that there is an appropriate set of policies and support packages that will reward firms for registering. In reality, for some firms in lower income contexts,

⁷ Further, evidence suggests that low-income firms are more likely to be targeted by tax registration drives (Gallien, Occhiali, & van den Boogaard, 2023).

⁸ We have noted in an earlier footnote the dearth of information on taxes collected in the informal sector. Where documentation does exist, there is no evidence of a threshold since, by definition, these simplified regimes are often intended to target operators outside of the normal income tax system. For the national level tax system, meanwhile, the schedule includes 12 categories based on "type" of business and size—and importantly does not include any exemption threshold.

⁹ Meanwhile being formal is not synonymous with tax compliance (Mascagni et al., 2022; Le Maire & Schjerning, 2013), further complicating the question of fairness.

¹⁰ Micro-informal firms are "likely to have income and sales well below any reasonable tax threshold; and much of the most egregious evasion is by qualified professionals" (IMF, 2011, p. 8). Meanwhile, in many lower income countries, including Ghana, the tax threshold for formal sector operators can be surprisingly close to the poverty line, suggesting that existing tax thresholds may not themselves be "reasonable".

¹¹ Ulyssea (2020) notes that the results are somewhat mixed but generally indicate that formalization has no statistically significant effects on firm performance, measured variously through sales, profits or number of employees (see e.g. Benhassine et al., 2018; Rocha et al., 2018). It's also possible that formality can have negative impacts on firms' productivity, reinforcing that the causal effect of formality on firm productivity is not well understood (Arias et al., 2010).

informality may be a "survival strategy for low-skill individuals, who are too unproductive to ever become formal", implying that attempts to either reduce the costs or increase the benefits of formality will not be effective, while increasing enforcement of regulation or taxation can have "substantial adverse effects" on the lower-tier or survivalist segments of the informal sector (Ulyssea 2020, p. 534).¹² Empirical evidence reflects this reality, with interventions to reduce the costs of entering the formal sector having very limited or no formalization effects (Bruhn & McKenzie, 2014), while efforts to increase its benefits—especially by reducing tax burdens for formal firms—have proven cost ineffective and shown limited impact on incentives to formalize (Rocha et al., 2018).

Despite increasing academic criticism, expansions of informal sector taxation through registration drives, enforcement measures, or new tax instruments remains commonplace in lower- and middle-income countries, often shifting limited administrative capacity from other areas with likely higher revenue potential (Moore, 2023).¹³ The most common method of taxing informal firms at the national level is through specialised presumptive tax regimes. Also known as simplified tax regimes, these tax systems aim to estimate tax obligations where detailed book-keeping or records of profits and turnover are not available (see Mas-Montserrat et al., 2023). They include a few key variations in policy design, including allowing for a simplification of the generally applicable tax base; using an alternative tax base, such as turnover, rather than net profit or net value-added; or using non-financial indicators of tax liability, such as floor area or number of employees (Bird & Wallace, 2005; Joshi et al., 2014). There is some evidence to suggest that with such regimes more visible and easily accessible firms are more likely to be targeted by tax collectors, regardless of profitability (Gallien, Occhiali, & van den Boogaard, 2023; Morange, 2015; Ogembo, 2019; Prichard & van den Boogaard, 2017; Resnick, 2020; van den Boogaard & Beach, 2023)—a more general problem where tax administrators have discretion in enforcement.

To date, however, robust data has been lacking on the impact of these types of policies, their reach into different sectors, and their distributional impacts. We know that some informal economic units make a range of tax and fee payments, while others do not. We know that firm registration overall is still low, and that while revenue authorities are making efforts to register informal businesses, their sheer number and, at times, mobility makes this process partial and uneven. However, the patterns and impacts of these dynamics are largely unknown: previous research on taxation in the informal sector has largely relied either on small non-representative samples—often focusing only on certain sub-sectors, especially markets (e.g. Akpan & Cascant-Sempere, 2022; Carroll, 2011; Ligomeka, 2019; Resnick, 2020; Siebert & Mbise, 2018,) and cross-border trade (e.g. van den Boogaard et al.,

¹² This does not negate the point, well established by both Ulyssea (2018) and (2020), that the informal sector in any context is made up of heterogeneous firms that have different objectives, incentives, and relationships with the state and other formal institutions. The characterisation of informal sector firms or operators as *legalist* vs. *voluntarist* vs. *survivalist* is also well established in the literature (see Chen 2016) and is also identified by Ulyssea (2020) as an important starting point for understanding not only the nature of informality but also the policy implications for regulation, registration and taxation.

¹³ However, recent scholarship has also shown that mass registration exercises, be they door-to-door registration or using third-party data, often do not produce the anticipated registrations or payment (e.g., Gallien et al., 2023; Gallien, Occhiali & van den Boogaard, 2023). This may be the reason why the GRA, though aware of the large numbers of unregistered businesses, has adopted a simplified approach to registration and enforcement that includes presumptive taxes and limited street-level enforcement exercises, as reflected in our interviews with revenue officials.

2021)—or on large surveys with only limited questions on the different types of tax payments made by informal sector operators (see Danquah & Osei-Assibey, 2018; Dube & Casale, 2017).¹⁴

In addition to a common focus on sub-sector specific analysis, difficulty in getting representative data on the informal sector has limited the robustness of analyses of informal sector taxation. While the heterogeneity of the informal sector is well-known (Grimm, Knorringer & Lay, 2012; Ulysses, 2018), the underlying distribution of different activities is difficult to document *ex-ante*. Yet paying greater attention to this diversity is critical to understanding fiscal outcomes, as the experiences of taxation differ both by context and by the type of employment. Joshi et al. (2014), for example, suggest that it is mostly mid-size firms—not the smallest—which seem to gain the most benefits from the formalisation process. At the same time, case study evidence suggests that the most vulnerable within the informal sector are often more affected by multiple taxation and harassment by tax collectors, while the regressive nature of informal sector taxation adds to the burden of the lowest earners, often with gendered impacts (e.g. Akpan & Cascant-Sempere, 2022, Baah-Boateng & Vanek, 2020; Carroll, 2011; Prichard & van den Boogaard, 2017; Siebert & Mbise, 2018). By addressing this data gap, this paper is able to both present the most robust picture to date of the actual tax burdens of informal sector operators and answer key questions about the distribution of tax burdens and their effects.

3. Data and methods

The primary contribution of this paper is a geographically representative analysis of tax burdens within the informal sector in Accra. Our definition of an informal sector activity is a small non-household economic unit that is not registered with Ghana's Registrar General—the national body responsible for the administration and registration of commercial entities. This is the same definition used by the Ghana Statistical Service (GSS) in its operationalisation of the ILO's framework for defining the informal sector and where a small income-generating activity is one that employs ten or fewer people (see Baah-Boateng & Vanek, 2020). As we sought to understand the operation of these activities, we aimed to interview their operators, including employers and own-account workers but excluding employees.¹⁵

We employed a two-stage cluster sampling approach to collect data from 2,700 self-employed informal sector operators.^{16,17} We first stratified enumeration areas (EAs) by household income using data from the Ghana Statistical Service, then randomly selected 135 EAs out of a total of 536 and undertook a listing exercise to generate a master list of all households in each EA. This formed the sampling frame from which households were selected for inclusion in the survey. In each selected EA, we systematically selected 20 households to be surveyed, asking whether a household member operated any kind of small (ten or fewer employees) income generating business activity by themselves or with one or more partners, which household members were involved in this self-employment activity/business, and whether the household member

was the main owner (or main worker if the business was shared with another person).¹⁸ Following the listing exercise, which identified 3,169 individuals, enumerators interviewed the owners or operators of the identified business activities. The first question in the survey asked the respondent whether the business activity was registered with the Registrar General's Department—a requirement to be considered a formal enterprise in Ghana—to enable us to restrict our survey sample to owners or operators of small, unregistered business activities. As discussed above, this mirrors the definition of the informal sector used both by the Ghana Statistical Service and the ILO.

The survey instrument captured information on business operators, the characteristics of business activities, taxation, access to social protection and public goods, and perceptions of the government and the tax system.¹⁹ To create a list of payment types that was comprehensive and framed in a nomenclature that was intelligible to respondents, we undertook pre-survey focus group discussions with individuals working in the informal sector in March 2022. With respect to the incidence of payment, the relatively low average number of payments that each respondent makes and the fact that we ask about each payment directly should minimise recall bias. With respect to payment amounts, these same factors as well as the fact that most payments have fixed amounts that do not change regularly should also further limit recall bias.²⁰

To validate our survey findings, we undertook two further rounds of post-survey focus group discussions, in March 2023, with market vendors, street vendors, and home-based workers, one with market association leaders, and one with leaders of street vendors' associations. Drawing on the strong local network built by the organisation Women in Informal Employment: Globalizing and Organizing (WIEGO), we engaged with leaders of these associations in Accra to identify respondents who were available and willing to participate for two hours. We worked with WIEGO to ensure that we captured diversity in the locations of businesses and the nature of traded goods. The fact that the majority of focus group participants were members of associations may leave gaps in understanding the experiences of informal sector operators not in associations; however, this data nevertheless gives us confidence about the validity of the types of payments and amounts paid captured in our survey. We also conducted key informant interviews with relevant government institutions and labour unions to better understand tax policy formation and how administration works in practice.

As expected, earnings across our sample are highly heterogeneous (see Fig. 1). Throughout the paper we present tax payments grouped by earnings quintiles. The earnings variable was constructed from a series of questions adapted from the official Labour Force Surveys and the Ghana Living Standards Survey (GLSS) which allows for the calculation of 'take home pay' after business expenses for the self-employed (i.e., gross monthly earnings before taxes). The lowest earnings quintile of the

¹⁴ An exception is Paler et al. (2017), who surveyed 800 small and medium sized businesses in Kinshasa, Goma, and North Kivu provinces, though this sample includes both formal and informal businesses.

¹⁵ Employees of these businesses were not sampled as we required detailed information on the finances and operations of each business activity. For simplicity we use 'informal operators' interchangeably with 'informal employers and own-account workers' in the remainder of this paper.

¹⁶ This builds on the 1–2–3 survey design (Gennari et al., 2009).

¹⁷ The survey data is publicly available through Mendeley Data: <https://data.mendeley.com/datasets/z25bp8ytbj/1>.

¹⁸ Our survey is unlikely to have picked up on hidden or illegal economic activities such as gambling or the selling of drugs. This is both in line with common conceptions of informality that exclude the trade in illegal goods or services and with the conception of informality in survey data from the GSS and other official sources that we use as reference points.

¹⁹ The questionnaire was piloted in March 2022 and revised during a workshop with the enumerators and field team. Ethical clearance was obtained through the University of Ghana's Institute of Statistical, Social and Economic Research (ISSER).

²⁰ Like all surveys on tax payment, our results are vulnerable to social desirability bias, with respondents potentially over-reporting tax payments. As is common for tax surveys, our dependent variable is reported payment. The magnitude of total tax payments should consequently be interpreted as an upper bound estimate. However, we have no reason to believe that mis-reporting would be heterogeneously distributed by earnings quintile or location, meaning it should be less likely to affect our distributional analysis.

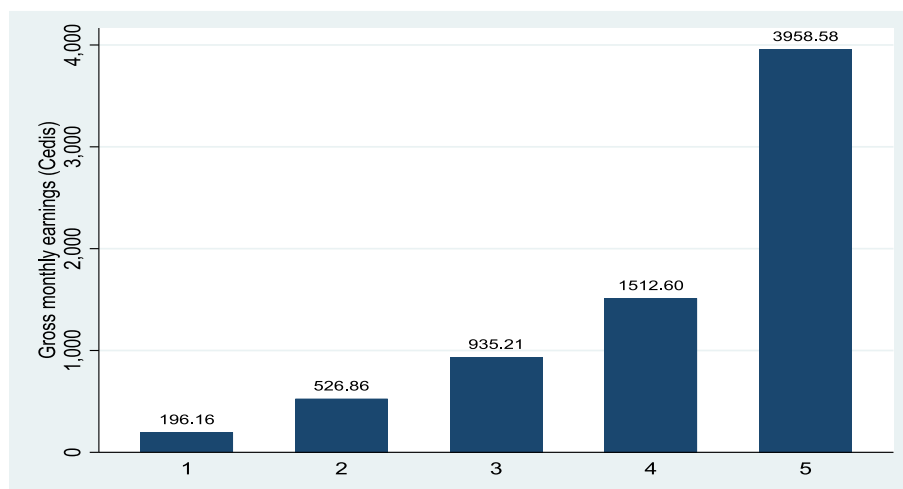


Fig. 1. Average gross monthly earnings, by earnings quintile (in May 2022 prices) Note. The data are weighted by population benchmarks.

sample takes home only about 200 cedis per month (in real May 2022 prices),²¹ which is below the national poverty line in Ghana (219 cedis per month in real 2019 prices) (World Bank, 2019). The highest earning quintile has monthly earnings of about 4000 cedis a month. While this is roughly 20 times higher than the lowest earning quintile, it is still only equivalent to approximately the wage of an entry level teacher in the formal sector. Given the diversity of economic activities covered here, reported turnover data similarly exhibits high heterogeneity: the mean turnover of just over 12,500 cedis is more than double the median (5,600), and almost ten times the mean turnover of the lowest quintile (1,372).

Mirroring estimates of the composition of the informal sector in Ghana's Labour Force Survey, the vast majority of informal income generating activities in our sample are operated by own-account workers—that is, self-employed informal sector operators without any paid employees (Table 1). Accra's informal sector is also highly gendered, with almost three quarters of our sample being women. Women in our sample are less likely to have had any education and are significantly more likely to be home-based workers or street and market vendors, while men are more likely to be classified in the 'other' category which consists largely of small, unregistered businesses in store-front type structures. This likely reflects the reality of gendered barriers to starting businesses and entering certain sectors, as is common in many contexts.

Relatedly, one of the key differences between women and men in the informal sector is status in employment (see ILO, 2018). Women in our sample are significantly less likely than men (13.7 percent vs. 22.7 percent) to employ others and, on average, earn significantly less than men. When women are employers, their businesses are, on average, smaller than male employers (2.3 vs. 3.5 employees). We take into consideration these gendered differences in our analysis.

4. Taxing Accra's informal sector

The Ghanaian government has made significant efforts to tax the informal sector in response to a growing fiscal and debt crisis. In 2021, the introduction of a tax on mobile money transactions, was intended to capture "the hidden, submerged or informal economy" (All Africa, 2022; see also Anyidoho et al., 2023). Nonetheless, a variety of fiscal instruments have long existed to extract revenues from informal activities.

At the national level, this includes the "tax stamp", a simplified (or

²¹ In May 2022, the equivalent of 100 Ghanaian cedis was USD 13. Following high inflation in the past few years, by July 2024, the equivalent value of 100 Ghanaian cedis was USD 6.5.

Table 1

Descriptive statistics (percent of sample).^a

	Women	Men	Total
Age (mean)	42.5**	39.8	41.8
Education			
None	10.9***	3.4	9.0
Kindergarten	1.6*	0.4	1.3
Primary	14.4***	6.4	12.4
Junior Secondary	28.7	26.7	28.2
Middle	12.3*	8.9	11.4
Senior Secondary	16.9**	28.9	19.9
Secondary	4.3	4.4	4.4
Tertiary	10.9***	20.9	13.4
Occupation group^b			
Home-based	45.8***	34.7	43.0
Market trader	7.3***	2.1	5.9
Street vendor	24.3***	17.6	22.6
Other	22.5***	45.7	28.4
Sector			
Manufacturing	22.3***	42.0	27.4
Trade	62.8***	26.5	53.6
Services	14.8***	31.4	19.1
Status in employment			
Employer	13.7***	22.7	16.0
Own-account	62.6	60.8	62.2
Own-account (w/ contributing family workers)	23.7***	16.5	21.8
Firm Size (employers)			
Total employees	2.20***	3.51	2.71
Mean gross monthly earnings (Cedis)	1,270.97***	1,854.51	1,418.99

Note. The data are weighted by population benchmarks. Statistical differences between women and men are denoted by: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

^a While there is no comparable source of data with which to validate our estimates, our sample aligns with recent estimates (see Baah-Boateng & Vanek, 2020) from the official Labour Force Survey of the size and structure of the informal sector. In particular, the overall age and gender distributions as well as the profile for education and status in employment align fairly closely with estimates from the Labour Force Survey.

^b This table presents the relative distribution of occupational groups, sector, and employment status across genders. For a table that describes the relative distribution of gender across occupational groups, sector, and employment status, see Appendix B.

presumptive) tax regime in the shape of a fixed quarterly contribution to the GRA based on the type of business activity and its size. Simplicity is one of the key objectives of this tax, since it does not require small informal (unregistered) self-employment activities to report turnover or keep business accounts. It is designed with a progressive rate schedule

that differentiates by category and size of business but does not have a minimum earnings threshold.

Local or city governments, known as assemblies in Ghana, also collect a range of payments from informal businesses. These fall largely into two types. The first set of payments varies the rate of payment by category and size of the enterprise; this includes, most notably, business operating licences, which are collected by the Accra Metropolitan Assembly (AMA). The second type are fixed-rate payments that are levied regardless of income or size. This includes, for example, the “daily toll”, which is paid predominately by market traders or traders operating within or in the immediate vicinity of urban markets. As in other lower income countries, market revenues in Ghana represent a significant source of income for local governments (Prichard & van den Boogaard, 2017). While payments at the local level are not commonly recorded within tax incidence assessments, we capture them to present a full picture of the fiscal relationships that informal enterprises have with the different levels of the Ghanaian state and to capture more accurately the real “cost of doing business” in Accra.

Overall, our survey data make clear that the common assumption that informal sector operators do *not* pay tax is empirically false. Overall, two-thirds of our sample report having paid at least one type of tax or fee related to their income-generating activity in the last 12 months. Contrary to popular belief and common policy narratives, most informal operators in Accra already have a fiscal relationship with either the Ghana Revenue Authority or with the local assembly. Fig. 2 also suggests that the incidence of payments does not increase significantly at higher levels of reported earnings. Significantly fewer operators in the lowest earnings quintile pay some type of tax or fee, but the differences in payment between the other four quintiles are small.

We disaggregate payments into three categories, with the breakdown of payments in each category summarised in Table 2 and the incidence of payment for each of these categories summarised by earnings quintile

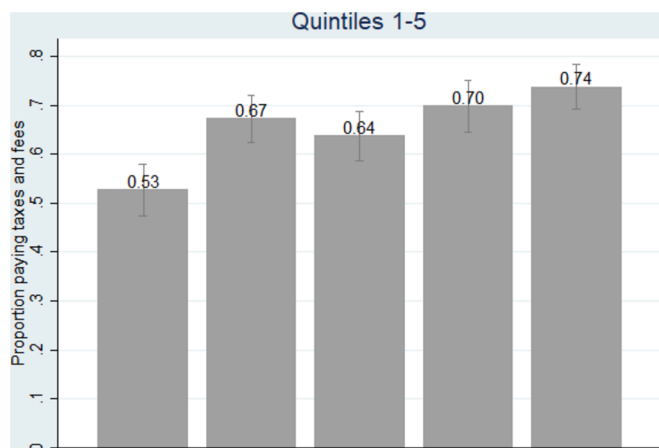


Fig. 2. Incidence of payment of any tax or fee Note. The data are weighted by population benchmarks. Error bars denote 95% confidence intervals.

in Table 3.²² The first category of payments captures taxes, which are defined as non-required, compulsory, and statutorily defined payments contributing to state revenue. Overall, 37 percent of the sample report paying at least one tax, ranging from 31 percent in the lowest earnings quintile and 45 percent in the highest earnings quintile. This figure is underestimated as it does not include indirect taxes (the value added tax or import tariffs),²³ or the tax on mobile money transfers introduced in 2022.²⁴ Nevertheless, even when the narrowest definition of tax is applied—and even with an underestimated figure—our data indicate that a significant percentage of informal sector operators are already within the tax net. The most common payment in this category is the tax stamp, paid by nearly a fifth of the sample,²⁵ followed by the daily toll, which was paid at the local government level by about 8 percent of respondents.

The second type of payments—and the most prevalent, paid by 41 percent of respondents—are *business licences and operating permits*. These are statutorily defined payments required to operate a business, commonly paid at the local level. The third category of payments is *user fees*, which are payments for a specific service or benefit. While these are differentiated from licences or operating fees by the fact that they are not by definition necessary to operate the business, they are tied to regularly accessing infrastructure that is required for the operation of certain businesses.

Overall, 16 percent of our sample report paying at least one user fee. Stall rental fees are a common example, which though paid by only 13 percent of respondents (typically those operating in markets) represent a large amount relative to other payments. This category excludes fees paid for basic services (e.g., electricity, water, security, and cleaning) while at work. If we were to include the fees for these services, the proportion of informal sector operators making any payment discussed

²² We recognise that there are different ways to categorise these payments. For most of the subsequent analysis, we present aggregate figures across payment types. We find similar patterns across different ways of categorising payments, and thus are confident that our analysis is not the result of our specific categorisation. This additional analysis is available upon request. In our survey we also captured fees for basic services as well as informal payments, which are non-market payments that are not defined or required by law and are enforced outside of the state legal system. We exclude these from our analysis of overall payments as they are less relevant to thinking about the design of policy to tax the informal sector but have included more information about them in Appendix A.

²³ There is some debate about the impact of indirect taxes on informal firms, though the common understanding is that VAT is, in part, a tax on informal sector production, as it affects informal operators’ purchases from formal sector businesses and on imports (Keen, 2008). In this way, indirect taxes—both consumption and trade taxes—are often seen as a means of taxing informal firms. Meanwhile, where formal sector firms purchase goods from informal retailers, VAT indirectly taxes the value added in the informal sector because formal firms cannot reclaim input VAT on purchases from informal firms (Brockmeyer et al., 2024). While research suggests that in lower income countries, the large majority of VAT revenues are remitted by the largest firms, it is also true that small firms are less likely to claim exemptions or reduced rates (Brockmeyer et al., 2024; de Paula & Sheinkman, 2010). This suggests that the VAT has impacts on small firms in the informal sector with value chain connections in the formal sector—something that Ulyssea (2018) suggests may be common. The actual incidence of indirect taxes on informal firms, however, is less well established, as it requires detailed estimates of both firm expenditures and retail prices—part of the reason why VAT is excluded from our survey.

²⁴ Anyidoho et al. (2023) estimate that at the point of its introduction, 31% of informal workers in Accra were liable to pay the E-Levy. Given that the exemption threshold of 100 cedis per day has not been adjusted for Ghana’s high levels of inflation, that number has likely increased substantially since.

²⁵ The prevalence of payment of the tax stamp likely represents an underestimation, as a part of the tax stamp was, at least *de jure*, suspended in the context of the Covid-19 pandemic. It has long been a primary method of taxing informal enterprises and had been scheduled to be re-introduced in 2024.

Table 2
Payment types and incidence of payment.

Category	Payment type	Paid to	Incidence of payment (percentage)	Average annual payment (cedis)	Average annual payment (cedis) (conditional on payment) ^a	Description
Taxes	Tax stamp / presumptive turnover tax	GRA	18.9	36	194	National turnover tax on the informal sector
	Daily toll	AMA	8.1	21	282	Fixed rate toll on traders
	Import and export taxes	GRA	0.1	--	--	Customs and excise duties imposed at the point of entry
	Property tax	AMA	5.1	8	160	Payable by owners of immovable property to the local District Assembly
	Vehicle income tax	Other	0.5	2	329	Quarterly tax collected from commercial transport operators
Business licences and operating fees	Goods fee	GRA	0.2	6	3,057	Excise duties on selected products
	Market fees	AMA/ other	2.1	10	482	Municipal fees for trading in markets
	Operating permits	AMA	39.9	78	196	Municipal business permit
	Embossment fees	Other	0.2	--	60	Fee for renting out a commercial vehicle
User fees	Station toll	AMA	0.5	10	1,865	Tolls for using lorry stations
	Lorry park fee	AMA	0.3	3	1,146	Fees for using a lorry park
	Road toll	AMA	0.4	2	699	Municipal road tolls
	Stall rental fee+	AMA/ other	13.4	185	1,379	Market rental fee
	Storage charge+	AMA/ other	0.5	4	766	Fees for storage in or near public spaces

Note. The data are weighted by population benchmarks. + denotes a payment that is paid in exchange for the provision of a service.

^a Where possible, we have added two further checks regarding the amounts paid, comparing them with expectations established through tax schedules and key informant interviews and confirming payment levels that seemed particularly high to us in focus group discussions after the survey. While not employing a “rule of thumb” approach based on, for example, standard deviations from the mean, we removed outliers that differed significantly from scheduled amounts or were implausibly high relative to reported earnings. We observe that the only payments for which means and medians are higher than the ranges given in key informant interviews and the tax schedules are the fee for drivers licences, the roadworthy fee and vehicle insurance fees, all of which are only paid by a small minority of our sample (and not shown in the table).

Table 3
Incidence of payment (proportions), by payment category.

	Tax payment	License payment	User fee payment
Quintile 1	0.314 (0.024)	0.296 (0.026)	0.081 (0.012)
Quintile 2	0.351 (0.024)	0.405 (0.025)	0.153 (0.016)
Quintile 3	0.354 (0.027)	0.398 (0.028)	0.200 (0.023)
Quintile 4	0.382 (0.030)	0.459 (0.030)	0.176 (0.022)
Quintile 5	0.445 (0.025)	0.501 (0.026)	0.187 (0.019)
Total	0.372 (0.012)	0.410 (0.012)	0.160 (0.009)

Note. The data are weighted by population benchmarks. Standard errors in brackets.

in this section would rise to over 90 %. While each type of payment is only made by a minority of Accra’s informal operators, their totality covers most informal sector operators—reinforcing the need for a broad view of what counts as “taxation” of the informal sector. As indicated in Table 3, the incidence of payment tends to increase for each earnings quintile although the differences are often relatively small.

5. Who pays? Visibility and the uneven administration of informal sector taxation

As described in the previous section, while most informal operators in Accra pay some form of taxes and formal fees, approximately one-third of informal sector operators do not (see Fig. 2). What determines the likelihood of payment? Why are certain groups more likely to experience taxation? To answer these questions, we estimate a set of

stepped regressions on the determinants of making any payment, with a binary dependent variable measuring if respondents report having paid any “tax”, “licence or operating fee”, or “user fee”, in line with the classifications defined above. Table 4 presents the estimates from a series of OLS linear probability models to illustrate the determinants of paying tax. Since the dependent variable is binary, the reported coefficients can be interpreted as the marginal increase in the probability of paying any tax or fee (or the marginal difference relative to the base group).

We consider several possible explanations for variation in the likelihood of making any tax payment. Primarily, we hypothesise that the type of business operations—whether home-based, street-based, market-based, store-based, or other—may impact the likelihood of taxation on account of differences in their visibility to the state and the related ease of administering taxes, licences, and fees in these spaces. Market-based work and store-based work are conducted in a space that is fixed, highly visible to state actors, and specifically designated and identifiable as a commercial space. In addition, markets are highly concentrated commercial spaces, further simplifying tax administration. Street-based work is typically similarly visible but can be less fixed and often occurs in spaces that are not specifically designated or known as commercial areas. Home-based work can occur in a fixed but private location.

In addition to the type of business, we expect that five other variables may influence outcomes.²⁶ First, it may be reasonable to assume, and participants in the focus groups indicated, that different types of work (e.g., trade versus services) in the informal sector are more likely to face taxation. Second, earnings and the size of business, using the proxy of whether the business employs others, may impact whether tax collectors

²⁶ Descriptive statistics of these independent variables are included in Appendix B.

Table 4
Determinants of making any payment.

	(1)	(2)	(3)
Location			
Street-based	0.004 (0.03)	-0.007 (0.03)	-0.005 (0.03)
Store-based	0.237*** (0.03)	0.195*** (0.03)	0.198*** (0.03)
Market-based	0.330*** (0.03)	0.297*** (0.04)	0.286*** (0.04)
Other	-0.084* (0.05)	-0.114** (0.05)	-0.115** (0.05)
Sector			
Trade		-0.053* (0.03)	-0.044 (0.03)
Services		-0.033 (0.03)	-0.013 (0.03)
Other		-0.159*** (0.06)	-0.156*** (0.05)
Earnings quintile 2		0.101*** (0.04)	0.101*** (0.04)
Earnings quintile 3		0.067* (0.04)	0.061* (0.04)
Earnings quintile 4		0.119*** (0.04)	0.116*** (0.04)
Earnings quintile 5		0.129*** (0.04)	0.123*** (0.04)
Employer		0.124*** (0.03)	0.110*** (0.03)
Owns the land		-0.018 (0.03)	-0.015 (0.03)
Owns the structure		0.060** (0.02)	0.050** (0.02)
Born in Accra		-0.056** (0.02)	-0.059*** (0.02)
Association member		0.102*** (0.04)	0.078** (0.03)
Age of business			0.002* (0.00)
Female			-0.016 (0.03)
Age of respondent			0.026*** (0.01)
Age squared (respondent)			-0.000*** (0.00)
Constant	0.553*** (0.02)	0.503*** (0.04)	-0.068 (0.12)
Observations	2,700	2,654	2,654
R-squared	0.075	0.113	0.129

Note. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Column 1 reports the results of a linear regression focusing only on the location of a business, while column 2 includes a wider set of characteristics of these businesses and column 3 includes further data about the respondent and their business as controls. For the categorical variables, their reference categories are as follows: Location: “home-based”. Sector: “manufacturing”. Earnings quintile: “Earnings quintile 1”. All the remaining variables, aside from the three age variables, are dummy variables. Sample weights have been applied across all models.

are likely to target the business at all. Third, ownership over land or business structures may influence the extent to which informal operators are liable for tax (as for e.g., property taxation), as well as the degree to which tax collectors, if they are aware of ownership, perceive businesses as successful and thus worthwhile to target. Fourth, in Accra the migrant status of the business owner may impact the likelihood of payment as indigenes of Accra may have greater negotiating power with tax collectors given that they may have greater “claim” to the land as indigenes.²⁷ Finally, whether an informal business is in an association may plausibly affect the likelihood of payment if associational membership

²⁷ We have also used membership of the Ga ethnic group as an alternative measurement of claim to local land (given that they are indigenes of Accra). This did not substantially affect our findings, as illustrated in Appendix B.

makes the business more visible to the state.

The results are summarised in Table 4, with the type of businesses offering a strong and consistent explanation for variation in outcomes. The differences between street-based, store-based, and market-based businesses strongly correlate with the likelihood of facing any taxation, robust to a range of different specifications.²⁸ Traders operating in markets and stores (“market-based” and “store-based”) have a substantially higher likelihood of paying taxes and fees, as compared to home-based workers (the reference category in this model). Workers in the ‘other’ category are also significantly less likely to make any payments. This is a diverse group of informal sector operators that are either mobile (such as porters in markets) or work in private spaces such as workshops, construction sites, lorry parks or backyard structures.

As described in column 1, store-based operators are more than 23.7 percentage points more likely to pay taxes than home-based workers; for market-based operators this number rises to more than 30 percentage points. While street-based operators do not have a significant difference in their likelihood of being captured in the tax net than home-based workers, they too remain statistically and substantially less likely to pay than market-based workers and store-based workers (not shown in the table). While this is in line with expectations, it is notable that this difference remains robust when we include the other potential explanatory variables described above and, in particular, when we control for earnings. The size of the coefficient also remains larger than the coefficient on any of other variables. We conclude that the type of business, most likely operating through visibility to state agents, is the single most significant driver of whether informal operators in Accra are captured in the tax and fee net. Market spaces in particular stand out as a space of tight taxation and regulation.

Several other insights emerge. First, sector plays a role in the likelihood of payment, with a 5 percentage point lower likelihood of payment for retail and wholesale operators (relative to manufacturing). Second, and reflecting the patterns described in Section 4, higher earning quintiles are more likely to report taxation than the lowest quintile (the reference category), but the likelihood of payment does not vary significantly between the upper quintiles. For instance, while operators in the upper quintile are about 12 percentage points more likely to be captured in the tax net than those in the lowest quintile, they are not significantly more likely to pay taxes than the second-lowest quintile. Overall, the differences between the top four quintiles are lower than might have been expected. The opposite effect is striking when considering the lowest quintile. The average earnings in this quintile are 200 cedis a month. The minimum (PAYE) income tax threshold in Ghana was 4,380 per annum in 2022 (or 365 cedis per month); activities in this quintile are thus reasonably characterised as survivalist. And yet, most of this group (53 percent) still report that they make at least one payment—and, as we note above, this is an underestimation as it does not include the E-levy or VAT.²⁹

Third, while ownership of land does not have a significant effect, structure ownership is associated with a higher likelihood of tax payment. Fourth, in line with our expectations, operators born in Accra are less likely to make tax payments, suggesting that there may be additional difficulties for migrants to avoid taxation or, conversely, that locals might have some advantages in evading collectors. Albeit relatively small, this factor highlights that while visibility and enforcement-based dynamics are clearly central, other business-level characteristics may also shape the ability to evade. Finally, being part of an association has a significant positive effect on the probability of tax payment (by about

²⁸ Tables available upon request.

²⁹ Whether an informal operator is an employer, meanwhile, does impact the likelihood of payment, suggesting that this indicator of size of the business, possibly impacting the visibility of the business, does have an impact on likelihood of being included in the tax net, even after controlling for earnings and location.

7.8 percentage points). Women are not statistically more or less likely to pay taxes and fees, though both being older and having an older business are associated with a slightly higher likelihood of tax payment. It is worth noting that some of these significant predictors of tax payment are themselves likely proxies for visibility: higher earnings, the presence of employees, the age of the business, and structure ownership are likely further correlated with visibility of a business to tax collectors and other state agents.

What emerges from this analysis is that there is an uneven pattern of payment that is not primarily based on the ability to pay or a distinction between survivalist and growth-oriented activities, but on the visibility of businesses. We suggest that the relative visibility of businesses impacts the ability of state agents to identify activities and enforce taxation. This perhaps should not come as a surprise; it is and always has been an inherent feature of taxation, everywhere. As described by Scott (2017, p. 130), ancient tax collectors were “interested, above all, in the ease and efficiency of appropriation”, while contemporary attempts to tax corporate income are limited above all by attempts to conceal or shift this income from the reach of tax authorities. Given that the vast majority of economic units in Accra operate informally, taxing informal operators presents a substantial challenge for resource constrained municipal and tax administrations and is naturally guided by simplified strategies. Ideally, these would be guided by effectiveness and equity considerations, focusing on larger operators promising higher payments. However, as we highlight here, being driven by location and visibility to state actors, the current system in Accra does a poor job of screening out the lowest earning operators. This was also reflected in our conversations with tax collectors and administrators. They highlighted various challenges in collecting taxes from informal enterprises, including limited bookkeeping and the difficulties in identifying the owners of establishments, as well as the difficulties in locating and identifying businesses. In particular, businesses that do not have a shopfront visible from the street, were highlighted as substantially more difficult to identify, alongside businesses that were mobile. In order to identify businesses and collect taxes in a context of limited enforcement resources, efforts to target particular parts of the city in order to register local businesses were noted as a common strategy.

The skewed taxation of the informal sector appears, consequently, to be primarily a function of the features, structures, and capacity of Ghanaian tax administration. While not necessarily intentional, the effects of this are substantial. This was highlighted repeatedly in focus groups and key informant interviews, especially with informal sector operators working in markets. While much of the legalistic analysis of informal economies has viewed inclusion in the tax net as a decision taken at the level of the informal firm, the “demand side”, so to say, our analysis highlights the importance of understanding the impacts of tax administration, the “supply side”, on outcomes and of seeing informality like a state, in Scott’s (1988) phrasing.

6. Who pays more? regressivity of informal sector taxation

Having argued that the incidence of taxation in the informal sector is driven by the visibility of the activity and, in turn, the ease of tax administration, we now turn to the distribution of payments among those who pay, asking what drives the magnitude of tax burdens both in absolute and relative terms. Overall, we find that taxes and fees represent a non-negligible burden for informal sector operators in Accra, who pay on average 500 cedis in taxes and fees annually (or 760 cedis per annum among those that make at least one payment), representing roughly 5 percent of earnings (or 7.5 percent among those that make at least one payment).³⁰ While this may not be considered a heavy burden

overall, it is significant given low average annual earnings and the high rates of poverty within the informal sector. Understanding the impacts of these burdens requires us to further explore the distribution of payment across income quintiles and other sub-populations. To do so, we estimate regressions on the determinants of the absolute amount of payment, in cedis standardised by month, and the amount of payment relative to monthly earnings among those that have made any payment. This closely mirrors the analysis in the previous section but is substantially different in terms of the underlying mechanism. While we suggest that similar factors can influence both likelihood of payment and payment rates among those who pay, their effects may pull in different directions. For the former, mechanisms centre around visibility and ease of enforcement dominate, while for the latter they primarily relate to the structure and application of presumptive tax policies.

We consider several possible explanations for variation in the absolute and relative amount of taxes paid. Primarily, we anticipate that earnings and the size of business may impact the amount that they would pay. Here, two rival hypotheses exist. On the one hand, payment may be higher for larger businesses, given that part of the presumptive tax and levy regime (the ‘tax stamp’ and the licence fee) in Ghana is technically designed to be progressive, as described above. On the other hand, many of the other payments made by informal operators are levied at a flat rate, implying a greater relative burden on those with lower incomes. Second, in addition to earnings, businesses in some sectors may face higher rates of taxation, given that rates and fees vary according to the type of business. Third, the location of business operations—whether home-based, street-based, market-based, store-based, or other—may impact rates of taxation if the visibility described above also affects chances at occasional or partial evasion, or if different types of presumptive tax regimes dominate in different spaces, such as daily tolls in markets. Fourth, ownership over land or business structures may increase their overall rate of payment if collectors perceive building or landowners as making a larger profit and thus liable for a higher rate of taxation. Further, migrant status of the business owner may impact the amount of payment for the same reasons as it may affect the likelihood of payment, and whether an informal business operator is a member of an association may affect the amount of payment, as associational representation may play a role in negotiating down tax rates on behalf of informal businesses (see e.g. Joshi & Ayee, 2008). The results are reported in Table 5 and they are robust to a range of model specifications, varying the sample to include non-payers, adding registration with the AMA or GRA as a further control, and removing specific controls such as land ownership and structure ownership.³¹

Several findings emerge. First, we find strong evidence that taxation in the informal sector is regressive among those that make any payments. While those in the two highest-earning quintiles are more likely to pay more in absolute terms, as we would expect (col. 1), relative payment decreases as earnings increases (col. 2). Since the dependent variable (in col. 2) is the proportion of gross earnings paid in taxes and fees, the coefficients can be interpreted as the percentage point difference from the reference category (quintile 1). The top earning quintile pays, on average, 18 percent less of their earnings on taxes and fees compared to the bottom quintile.³² This has important implications for the fairness of the tax system, given survivalist earnings among the lowest quintiles.

Further, the effect of the location of the business (whether street, store, or market-based) on tax payment in Accra’s informal sector acts through whether taxes are paid at all, not how much is paid—mirroring the visibility argument above. Among those who are paying some taxes

³¹ See Appendix B. Additional tables available upon request.

³² We present the predictive margins by income graphically in Appendix B, showing that this regressivity is not limited to the difference between the lowest quintile and the upper quintiles (though this is particularly pronounced) but also exists to a statistically significant extent among the higher quintiles.

³⁰ Approximately USD 33 in July 2024. The cedi-USD exchange rate has been highly unstable since at least 2022 when the country acknowledged its debt crisis and sought a loan from the IMF.

Table 5
Determinants of the level of payment (in absolute and relative terms).

	(1) Absolute payment	(2) Relative payment
Location		
Street-based	-7.092 (30.01)	-0.025* (0.01)
Store-based	1.396 (16.55)	-0.010 (0.01)
Market-based	-22.523 (19.25)	-0.031*** (0.01)
Other	-15.100 (17.35)	-0.038** (0.02)
Sector		
Trade	16.325 (17.47)	-0.014 (0.01)
Services	-5.467 (9.83)	-0.020* (0.01)
Other	-33.479*** (12.16)	-0.032** (0.02)
Earnings quintile 2	11.889** (5.35)	-0.113*** (0.02)
Earnings quintile 3	18.291** (7.85)	-0.140*** (0.02)
Earnings quintile 4	24.544*** (9.32)	-0.163*** (0.02)
Earnings quintile 5	75.009** (30.02)	-0.183*** (0.02)
Employer	36.614* (19.49)	0.032*** (0.01)
Owns the land	-20.242** (10.27)	-0.008 (0.01)
Owns the structure	-45.142*** (16.64)	-0.050*** (0.01)
Born in Accra	-15.463 (18.51)	-0.007 (0.01)
Association member	17.615* (10.19)	-0.003 (0.01)
Age of business	0.384 (0.71)	0.000 (0.00)
Female	-22.588 (15.56)	-0.012 (0.01)
Age of respondent	0.598 (2.38)	-0.003 (0.00)
Age squared (respondent)	-0.015 (0.03)	0.000 (0.00)
Constant	88.784 (54.45)	0.341*** (0.05)
Observations	1,673	1,673
R-squared	0.065	0.211

Note. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Sample weights have been applied across all models. Sample restricted to respondents who reported making at least one payment. Estimation by OLS.

or fees, this mostly has no significant impact on the absolute or relative amounts of tax paid once we control for other features. Ownership of land and business structures have a significant negative impact on absolute payments and on relative payment (for land ownership only). This goes against our expectations but may indicate that owners have greater power to negotiate the rates of taxation that they face. Being an employer is associated with higher absolute and relative payments, perhaps indicating a degree of progressivity in the taxes levied, if being an employer is also associated with having a larger business. The overall finding from the second column in Table 5, however, is that the level of earnings is the key predictor of tax payments. In a well-designed and progressively structured tax system, earnings quintiles would be expected to be either statistically insignificant or significant with the signs of the coefficients being positive.

To visualise this further, Fig. 3 presents relative tax burdens of operators in Accra's informal sector by quintile, conditional upon individuals paying at least one fee or tax. In addition to showing strong evidence of regressivity, Fig. 3 shows a particularly dispersed effective payment rate within the first earnings quintile. The interquartile range is

much wider in the lowest quintile while the highest effective payment rate is close to 50 percent. Fig. 4 presents the same data but segments it into the different categories of payments. While these figures show substantial variation in payments and fees within quintiles, they exhibit a clear pattern of regressivity. As we move from lower to higher-earning quintiles, relative tax and fee burdens decrease. The difference here is particularly striking with respect to the lowest quintile: the system for taxing the informal sector in Accra is not merely regressive, but particularly insensitive to those with a very low income. Moreover, it is not taxes alone which result in the uneven burden: fees and licenses are similarly regressive.³³

Are these outcomes gendered? While women are likely to pay lower amounts in absolute terms, we find no significant impact of gender on relative payments. While this suggests that outcomes are not primarily driven by gender, that does not mean that these dynamics are not gendered. As the majority of workers in Accra's informal sector are women, the majority of the taxes and fees discussed here are paid by women. Furthermore, while women make up the majority of all earnings quintiles, they are relatively less represented in the upper quintile, and have a lower mean and median level of earnings. Consequently, the regressive nature of the dynamics described above also disproportionately affects women.

Overall, our data show that the current system of taxing Accra's informal sector operators is highly regressive at both the extensive and intensive margins. Relative to their earnings, it imposes alarmingly high burdens on some of the lowest income groups. At the same time, higher-earning groups shoulder relatively low burdens in relation to their earnings. These findings are in line with related studies of the fiscal realities in the informal sector. For example, several studies of local government taxation in markets highlight the regressive, and gendered, nature of tax burdens (Akpan & Cascant-Sempere, 2022; Carroll, 2011; Dube & Casale, 2017; Joshi et al., 2024; Ligomeka, 2019; Tanzarn, 2008;). While most of these studies are based solely on markets, and often on limited case studies, our survey data confirms that these trends hold when considering a representative sample of the informal sector, capturing greater heterogeneity in terms of sectors and types of work. It also allows us to examine more closely the mechanisms at play.

What is causing this regressivity? As we have shown above, while some of the taxes and fees paid by informal operators in Accra are fixed fees paid irrespective of income or type of economic activity, others are explicitly designed to be progressive, classifying operators into a set of categories and charging different fees depending on the category, with smaller operators paying smaller fees and larger operators paying larger ones. For example, before its suspension during the Covid-19 pandemic, the cost of the tax stamp for the smallest category of hairdressers was 3 cedis per quarter, while that for a large hairdresser was 35 cedis. Notably, when we analyse the effective tax payment per quintile relative to earnings only for those progressively designed taxes, we find that they are still in practice highly regressive, especially with respect to the lowest earning quintile (see Appendix B). We suggest two explanations. The first is that even though these tax schedules are progressive in absolute terms, they are still not progressive in relative terms – meaning the difference in the fixed rates between categories is not keeping up with the extremely high earnings inequality within Accra's informal sector. Here, a revision of these rates is a clear and highly practical policy implication of our data. The second is that the actual application of these categories is subject to discretion by tax agents, negotiation, and corruption. This is supported by qualitative evidence, as respondents in

³³ Analysis disaggregated by payment types is available upon request and the same analysis (Tables 4 and 5 and Figure 3) is presented in Appendix B after removing 'user fees' from the measure of payments. The key finding is that the regression results on this narrower measure of payments are almost entirely unchanged. Moreover, the regressivity of payments (without user fees) are very similar to Figure 3.

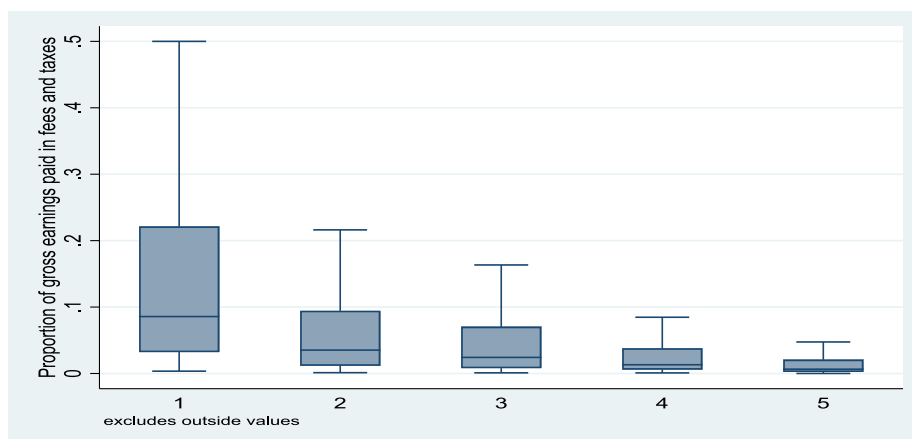


Fig. 3. Rates of regressivity (conditional on payment), by earnings quintile (1–5) Note. The data are weighted by population benchmarks. Estimates are conditional on tax payment. The box plot identifies the minimum, first quartile (p25), median (p50), third quartile (p75), and maximum values.

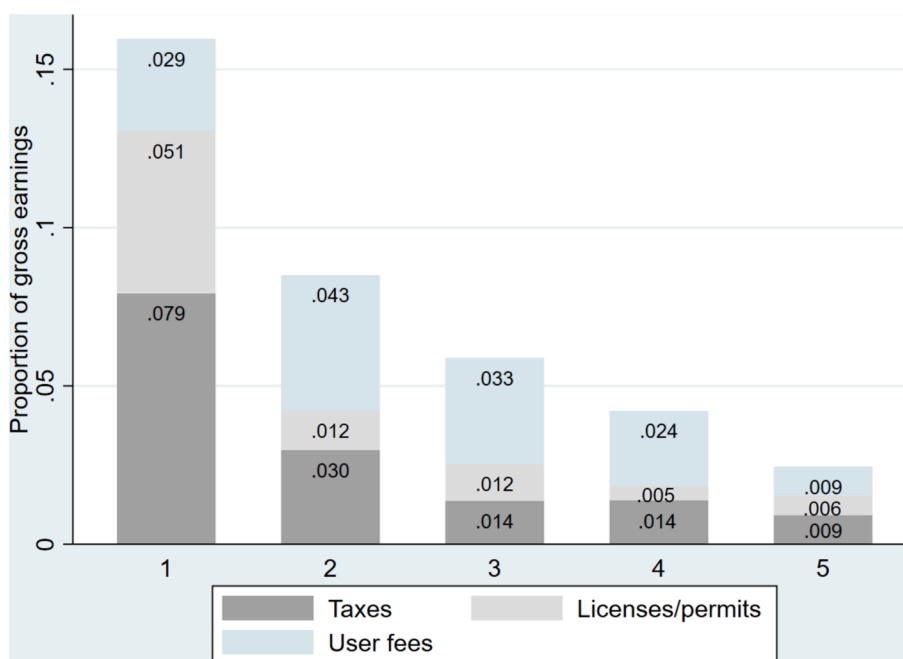


Fig. 4. Average payments as a proportion of gross monthly earnings (conditional on payment), by earnings quintile (1–5) Note. The data are weighted by population benchmarks. Estimates are conditional on tax payment.

our focus group discussions did not consider decisions about the categorisation of firms and determination of payments to be transparent, and consequently perceived a sense of coercion and unfairness about these processes and the administration of the taxes more generally.

7. Implications

The idea that informal economic activities are untaxed and thus not contributing to public revenues is widely repeated by policymakers in lower income contexts. Following the Covid-19 pandemic and the search for new revenue streams for cash-strapped states, narratives of informal economies as an “untapped goldmine” for government coffers have been commonplace.

What has been strikingly absent in discussions around new ways to tax the informal sector is the fact that a variety of mechanisms to tax informal economic activities have already been in place for decades and, consequently, that informal businesses already pay a range of taxes (Rogan, 2019). There has likewise been a scarcity of scholarship that

systematically analyses the impacts of strategies to tax the informal sectors. This paper addresses these gaps. It demonstrates that, contrary to popular and policy narratives, the majority of informal sector operators in Accra pay a range of taxes and fees, which together amount to a significant burden, especially for lower-earning operators. Notably, these taxes and fees are regressive among those that pay and heterogeneity in incidence is strongly correlated with visibility to the state.

Critically, our findings have external validity beyond Accra. Accra’s informal sector is not atypical for an urban informal sector in sub-Saharan Africa and most of the tax strategies described here, including daily market fees and presumptive tax regimes, also exist in other urban centres around the continent (see, for example, Mas-Montserrat et al., 2023). Consequently, our findings have at least three important implications related to ongoing efforts to tax informal businesses in lower income countries broadly.

First, the simple observation that informal operators already pay a wide range of taxes and fees means that new policies aimed at taxing the informal sector need to be understood as being layered on top of existing

systems. While this may appear to be a simple point, discussions about new ways to tax the informal sector are generally removed from analyses of existing burdens. The question that emerges is not how to tax the informal sector, but how to reform existing systems of taxation that affect informal operators. This shift in framing could help move the policy discussion on this issue away from its current focus on registration and “capture” (Moore, 2023; Gallien et al., 2023) towards a discussion of broader economic and social policy goals. A look at the actual payments made by informal operators alongside their earnings may also contribute to a shift from framing the informal sector as a goldmine of potential revenue towards an understanding that a large number of informal businesses and workers operate at the intersection of economic vulnerability and political marginality.

Second, the skewed nature of informal sector taxation and the outsized influence of where and how a business operates on the regressivity of these tax systems hints at an important area for policy reform. Our data support other recent scholarship that has highlighted that broad-based registration and taxation strategies often fail to identify higher-income taxpayers and disproportionately capture the working poor (Gallien, Occhiali, & van den Boogaard, 2023; Moore, 2023). Broad-based tax policies, as we have discussed, lead to systems that are driven by ease of collection from the perspective of state agents, which make a poor proxy for income or potential tax liability. Aside from the equity implications, this is also not a lucrative area for revenue authorities. Rather than layering further broad-based simplified tax mechanisms on top of existing ones, revenue authorities will benefit from thinking more explicitly about strategies to target high-income earners and evaders.

Finally, our analysis of the distributional consequences of the existing arrangements of taxing the informal sector in Accra, particularly with respect to the poorest quintile of informal operators, should be of utmost concern to policymakers. As we have outlined above, existing systems extract high tax burdens from economic activities that are clearly survivalist and operate near or below the poverty line. The finding of highly regressive outcomes, despite progressive policy design, is important for wider policy discussions on taxing the informal sector and suggests that rates of presumptive tax regimes should be revised and the lack of minimum thresholds should be reconsidered.

Presumptive taxes are, by nature, simplified. They often imply a trade-off, sacrificing precision for ease of administration and the idea of everyone paying “at least something small”. Our analysis informs this trade-off in two ways. It shows not only that many of the ostensibly “untaxed” are already making payments, but also that what looks like a small fee can add up and that the equity effects of a simplified but regressive arrangement can be substantial. In Accra, the daily toll is illustrative. Only representing 1–2 cedis per day, it is often framed as a relatively benign tax, and even one with primarily symbolic value, putting into practice the idea that all citizens should contribute something to the public purse. When asked about their largest tax payments, respondents in our focus groups often underestimated this payment due to its low per-day value. However, as this is paid every day, and at a flat rate, it adds up; we estimate that for people in the lowest-earning quintile who pay the daily toll, it represents on average 14 per cent of monthly earnings. From a policy perspective, the built-in regressivity of these types of payments is one part of a trade-off that also includes costs of administration and simplicity of design. Our study both provides an estimation of this “price of simplicity”, so to say, and an underlying argument for collecting this kind of data more commonly and more systematically to assess the real policy impacts of taxing informality and inform trade-offs in design and administration.

From a research perspective, our analysis also highlights the

importance of collecting evidence on the heterogeneity within the informal sector and its relationship to tax. Our findings are in line with recent scholarship that has argued for a “de-bundling” of the conception of informality, noting that not all informal work is necessarily unconnected to state regulatory structures or tax systems, while there is heterogeneity among informal operators in relationships to both taxation and social protection (Gallien & van den Boogaard, 2023; Holland & Hummel, 2022). This study provides a productive starting point for new questions on the politics of informal work and formalisation. A common assumption — most famously embodied in both Judith Tandler’s “devil’s deal” (Tandler, 2002) and Alisha Holland’s concept of “forbearance” (Holland, 2016) — is that these politics primarily revolve around uneasy equilibria of under-taxation and under-provision. How these arrangements are perceived, both by street-level bureaucrats and informal operators, how they are shaped by the strategies employed by capacity-constrained local and national authorities, what kind of social contracts they relate to, and how they can be transformed into more equitable arrangements then become important questions for scholarship and policy on tax and informality.

CRediT authorship contribution statement

Nana Akua Anyidoho: . **Max Gallien:** Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Michael Rogan:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Vanessa van den Boogaard:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Max Gallien reports financial support was provided by UK Aid, the Bill & Melinda Gates Foundation, and the Norwegian Agency for Development Cooperation to fund the research described in the manuscript. Michael Rogan reports financial support was provided by Swedish International Development Cooperation Agency to fund the research described in the manuscript. Vanessa van den Boogaard reports financial support was provided by UK Aid, the Bill & Melinda Gates Foundation, and the Norwegian Agency for Development Cooperation to fund the research described in the manuscript.

Acknowledgements

The project is a collaboration between WIEGO, the ICTD and the ISSER at the University of Ghana. This work was supported by funding from the Swedish International Development Cooperation Agency (Sida), UK Aid under grant number 300211-101, the Bill & Melinda Gates Foundation under grant number OPP1197757, and the Norwegian Agency for Development Cooperation under grant number QZA-17/0153. We are grateful to Siviwe Mhlana, Daniel Amoah, Ghida Ismail and Nana Ama Oppong-Duah for their support throughout this project. We would like to thank Dr Simon Bawakyillenuo and the team at ISSER for their essential work in the data gathering for this project. We also extend our sincere gratitude to all those who agreed to be interviewed for their patience and commitment.

Appendices.

Appendix A: Fees for basic services and informal taxes

As noted above, our analysis in this article focuses on formal taxes, levies and user-fees. However, there are further costs of doing informal business in Accra that we have collected data on but have not focused on in this paper. [Table A.1](#) below summarises the incidence and average monthly payment (among those who do pay this) for a range of payments made for basic services, as well as informal payments made both to traditional authorities and other actors.

First, informal sector operators pay fees for services such as water, electricity, waste collection, cleaning, and security. While in theory these are often discretionary payments and may be paid to actors outside of the state, in practice these are payments that informal sector operators must necessarily pay for services that are essential for the continued running of their enterprises. This is indicated by the fact that these fees have the highest incidence of payment among all the payments discussed in the paper (see [Table A.1](#)).

Second, informal sector operators may pay informal taxes, defined as non-market payments that are not defined or required by law and are enforced outside of the state legal system. There are a relatively large number of these informal payments to a range of actors but at very low incidences. Notably, only 6 percent of our sample report paying informal taxes or fees. This is somewhat surprising, given a large and expanding literature that has highlighted the prevalence of these payments in different contexts (e.g., van den Boogaard et al. 2019, van den Boogaard et al. 2022). There are several possible explanations for this relatively low rate. First, in the urban context of Accra, informal payments may indeed be relatively less prevalent than in other areas of the country. This impression is borne out in our focus groups, particularly with respect to traditional authorities. Second, there may be some social desirability bias or fear around reporting informal fees to facilitate access to permits or licences, which may have led to an under-estimation of these types of payments.

Table A.1
Payment types and incidence of payment: Services fees and informal taxes.

Category	Payment type	Paid to	Incidence of payment	Average monthly payment (cedi)
Basic service fees	Water	AMA, landlords and private providers	0.593	69.2
	Electricity		0.757	106.6
	Waste/Sanitation services		0.740	35.9
	Cleaning services		0.017	49
	Security		0.013	38
Informal taxes	Payments to traditional authorities for transport of goods	Traditional Authorities	0.004	21.6
	Other payments to traditional authorities (aside from transport of goods)	Traditional Authorities	0.017	17.83
	Additional payments/informal levies to access permits/ licences	Various Actors	0.017	32.2
	Additional payments/informal levies to access services	Various Actors	0.005	55.6
	Illegal checkpoint levies	Unspecified	0.003	108.6

Appendix B

Table B.1
Gender breakdown of occupational groups, sectors and employment status.

	Women	Men	Total
Occupation group			
Home-based	80.1 (n = 909)	19.9 (226)	100 (1135)
Market trader	91.4 (149)	8.6 (14)	100 (163)
Street vendor	80.9 (509)	19.1 (120)	100 (629)
Other	56.4 (436)	43.6 (337)	100 (773)
Sector			
Manufacturing	60 (441)	40 (297)	100 (738)
Trade	87.1 (1246)	13 (185)	100 (1431)
Services	64.2 (267)	35.8 (149)	100 (416)
Status in employment			
Employer	63.7 (268)	36.3 (153)	100 (421)
Own-account	74.9 (1220)	25.2 (410)	100 (1630)
Own-account (w/ contributing family workers)	80.1 (478)	19.9 (119)	100 (597)

Note. Sample sizes in parentheses. Row totals.

Table B.2
Descriptive statistics of variables included in the regressions.

Variable	Mean	Standard Error (mean)	N	Standard Deviation
Any Payment	0.635926	0.009262	2700	0.481259
Absolute Payment	45.13439	3.454819	2679	178.8182
Relative Payment	0.054403	0.00246	2646	0.126534
Employer	0.155926	0.006983	2700	0.362852

(continued on next page)

Table B.2 (continued)

Variable	Mean	Standard Error (mean)	N	Standard Deviation
Land Ownership	0.212593	0.007875	2700	0.409218
Structure Ownership	0.618148	0.009352	2700	0.485931
Accra Born	0.642593	0.009225	2700	0.479325
Association Member	0.074074	0.005041	2700	0.26194
Firm Age	10.46593	0.169131	2700	8.788315
Female	0.741852	0.008424	2700	0.437697
Age	41.55037	0.230057	2700	11.95413

Note. Sample weights have been applied.

Table

B.3. Determinants of rate of payment (in absolute and relative terms).

	(1) Absolute payment	(2) Relative payment
Earnings quintile 2	9.608*** (3.34)	-0.032*** (0.01)
Earnings quintile 3	14.612*** (4.49)	-0.048*** (0.01)
Earnings quintile 4	20.902*** (5.77)	-0.060*** (0.01)
Earnings quintile 5	40.229*** (14.14)	-0.083*** (0.01)
Employer	34.475*** (12.73)	0.023*** (0.01)
Sector = Trade	4.239 (9.03)	-0.015*** (0.01)
Sector = Services	-3.403 (6.23)	-0.017** (0.01)
Sector = Other	-24.280*** (7.15)	-0.033*** (0.01)
Street-based	-0.948 (9.50)	-0.003 (0.01)
Store-based	12.783 (10.19)	0.006 (0.01)
Market-based	14.248 (10.66)	0.008 (0.01)
Other	-8.616 (8.93)	-0.012 (0.01)
Born in Accra	-13.222* (7.67)	-0.007 (0.00)
Association member	16.781** (8.27)	0.005 (0.01)
Firm age	-0.060 (0.36)	0.000 (0.00)
Female	-23.116** (10.45)	-0.010** (0.01)
Age (respondent)	0.396 (0.99)	-0.000 (0.00)
Age squared	-0.008 (0.01)	-0.000 (0.00)
Firm registered (AMA or GRA)	14.241** (6.78)	0.036*** (0.00)
Constant	28.965 (19.59)	0.096*** (0.02)
Observations	2,654	2,646
R-squared	0.053	0.114

Note. Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1; Sample weights have been applied across all models. Estimation by OLS. Specification differs from Table 4 as follows: sample not restricted to respondents who reported making at least one payment; additional control for registration status with either the AMA or GRA; controls for land and structure ownership dropped.

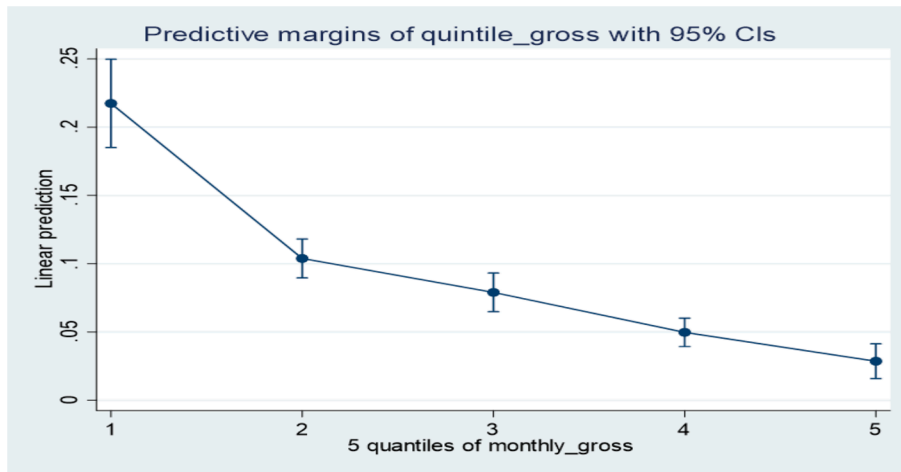


Fig. B.1. Marginal effects (predictive margins by earning quintiles) Note. predictive margins are estimated controlling for all other variables included in Table 4. Note. The data are weighted by population benchmarks. Estimates are conditional on tax payment. The box plot identifies the minimum, first quartile (p25), median (p50), third quartile (p75), and maximum values.

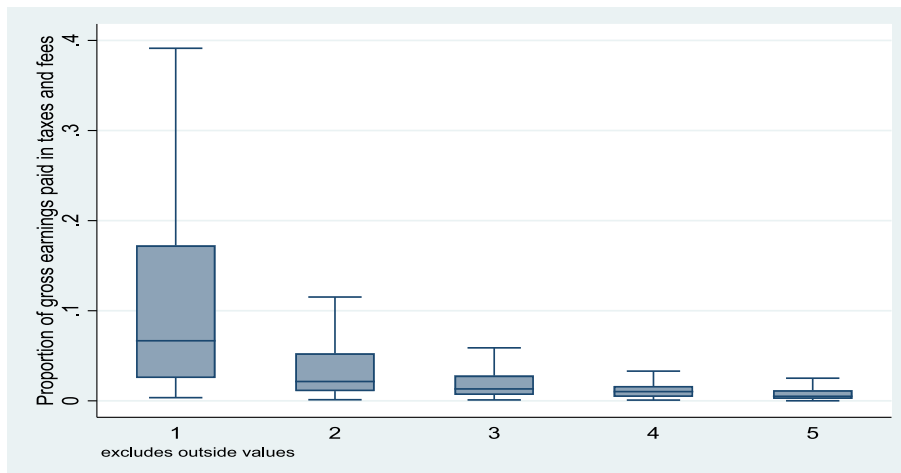


Fig. B.2. Rates of regressivity (conditional on payment), by earnings quintiles 1–5 (user fees excluded).

Table B.4

Determinants of making any payment (user fees removed).

	(1)	(2)	(3)
Location			
Street-based	-0.016 (0.03)	-0.013 (0.03)	-0.012 (0.03)
Store-based	0.185*** (0.03)	0.152*** (0.03)	0.155*** (0.03)
Market-based	0.319*** (0.03)	0.300*** (0.04)	0.286*** (0.04)
Other	-0.102** (0.05)	-0.116** (0.05)	-0.118** (0.05)
Sector			
Trade		-0.046* (0.03)	-0.033 (0.03)
Services		-0.049 (0.04)	-0.027 (0.04)
Other		-0.171*** (0.05)	-0.170*** (0.05)
Earnings quintile 2		0.086** (0.04)	0.086** (0.04)
Earnings quintile 3		0.056 (0.04)	0.049 (0.04)
Earnings quintile 4		0.113***	0.108***

(continued on next page)

Table B.4 (continued)

	(1)	(2)	(3)
Earnings quintile 5		(0.04) 0.135***	(0.04) 0.127***
Employer		(0.04) 0.142***	(0.04) 0.125***
Owns the land		(0.03) -0.001	(0.03) 0.002
Owns the structure		(0.03) 0.099***	(0.03) 0.088***
Born in Accra		(0.02) -0.043*	(0.02) -0.047**
Association member		(0.04) 0.083**	(0.04) 0.055
Age of business			(0.00) 0.003**
Female			(0.03) -0.023
Age of respondent			(0.01) 0.026***
Age squared (respondent)			(0.00) -0.000***
Constant	0.537*** (0.02)	0.447*** (0.04)	-0.145 (0.12)
Observations	2,700	2,654	2,654
R-squared	0.060	0.103	0.122

Note. Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1; Column 1 reports the results of a linear regression focusing only on the location of a business, while column 2 includes a wider set of characteristics of these businesses and column 3 includes further data about the respondent and their business as controls. For the categorical variable, their reference categories are as follows: Location: “home-based”. Sector: “manufacturing”. Earnings quintile: “Earnings quintile 1”. All the remaining variables, aside from the three age variables, are dummy variables. Sample weights have been applied across all models.

Table B.5

Determinants of level of payment in absolute and relative terms (user fees removed).

	(1) Absolute payment	(2) Relative payment
Earnings quintile 2	2.117 (3.39)	-0.089*** (0.01)
Earnings quintile 3	1.784 (4.65)	-0.105*** (0.01)
Earnings quintile 4	6.719 (6.87)	-0.114*** (0.01)
Earnings quintile 5	45.523** (18.57)	-0.120*** (0.01)
Employer	24.144 (16.69)	0.020*** (0.01)
Sector		
Trade	21.565 (13.50)	-0.001 (0.01)
Services	-3.410 (5.13)	-0.015** (0.01)
Other	-9.910 (8.06)	-0.012 (0.01)
Location		
Street-based	-7.033 (20.34)	-0.009 (0.01)
Store-based	-11.564 (16.25)	-0.015** (0.01)
Market-based	-1.469 (17.77)	-0.006 (0.01)
Other	-5.087 (16.04)	-0.012 (0.01)
Owns the land	-4.956 (8.70)	0.007 (0.01)
Owns the structure	-8.861 (11.81)	-0.010 (0.01)
Born in Accra	-5.263 (11.47)	-0.004 (0.01)
Association member	9.777 (8.01)	-0.001 (0.01)
Age of business	0.180 (0.47)	0.000 (0.00)
Female	-13.569 (14.30)	-0.003 (0.01)
Age of respondent	1.260	-0.001

(continued on next page)

Table B.5 (continued)

	(1) Absolute payment	(2) Relative payment
	(1.57)	(0.00)
Age squared (respondent)	-0.018	0.000
	(0.02)	(0.00)
Constant	11.955	0.172***
	(33.18)	(0.03)
Observations	1,570	1,570
R-squared	0.031	0.203

Note. Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1; Sample weights have been applied across all models. Sample restricted to respondents who reported making at least one payment. Estimation by OLS.

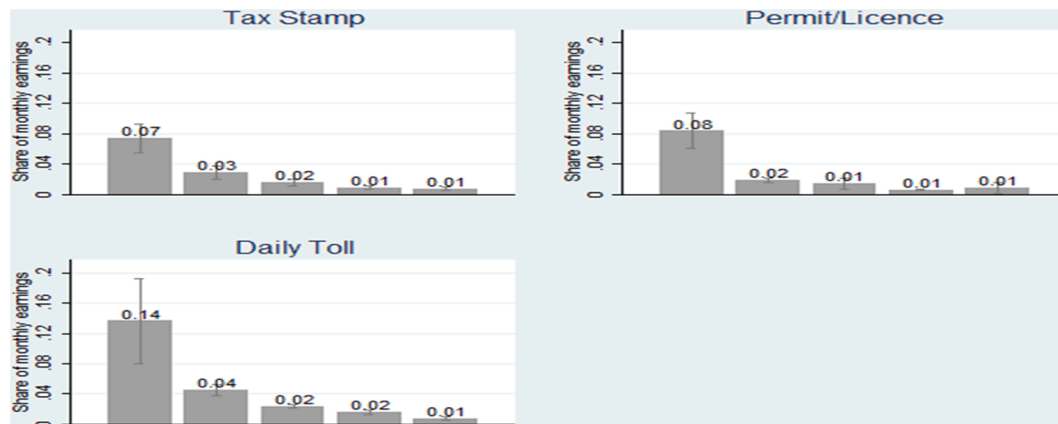


Fig. B.3. Conditional tax rates for the three main ‘presumptive’ payments Note. The data are weighted. Error bars denote 95 % confidence intervals.

Table B.6

. Determinants of making any payment.

	(1)	(2)	(3)
Location			
Street-based	0.004 (0.03)	-0.005 (0.03)	-0.003 (0.03)
Store-based	0.237*** (0.03)	0.195*** (0.03)	0.199*** (0.03)
Market-based	0.330*** (0.03)	0.303*** (0.04)	0.292*** (0.04)
Other	-0.084* (0.05)	-0.118** (0.05)	-0.119** (0.05)
Sector			
Trade		-0.047* (0.03)	-0.040 (0.03)
Services		-0.028 (0.03)	-0.008 (0.03)
Other		-0.161*** (0.06)	-0.157*** (0.05)
Earnings quintile 2		0.104*** (0.04)	0.105*** (0.03)
Earnings quintile 3		0.075** (0.04)	0.069** (0.04)
Earnings quintile 4		0.125*** (0.04)	0.122*** (0.04)
Earnings quintile 5		0.133*** (0.04)	0.128*** (0.04)
Employer		0.123*** (0.03)	0.109*** (0.03)
Owns the land		-0.006 (0.03)	-0.004 (0.03)
Owns the structure		0.060** (0.02)	0.049** (0.02)
Ga (reference category: all other ethnicities)		-0.084*** (0.02)	-0.087*** (0.02)
Member of association		0.097*** (0.03)	0.073** (0.03)
Age of firm			0.002* (0.00)
Female			-0.013

(continued on next page)

Table B.6 (continued)

	(1)	(2)	(3)
Age of respondent			(0.03) 0.025*** (0.01)
Age squared (respondent)			−0.000*** (0.00)
Constant	0.553*** (0.02)	0.491*** (0.04)	−0.078 (0.12)
Observations	2,700	2,654	2,654
R-squared	0.075	0.117	0.133

Note. Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1; Column 1 reports the results of a linear regression focusing only on the location of a business, while column 2 includes a wider set of characteristics of these businesses and column 3 includes further data about the respondent and their business as controls, including their gender, age, and the age of the business. Sample weights applied.

Table

B.7. Determinants of rate of payment (in absolute and relative terms).

	(1) Absolute payment	(2) Relative payment
Earnings quintile 2	12.918** (5.19)	−0.077*** (0.01)
Earnings quintile 3	18.728*** (6.19)	−0.102*** (0.01)
Earnings quintile 4	28.044*** (8.54)	−0.119*** (0.01)
Earnings quintile 5	58.193*** (19.10)	−0.141*** (0.01)
Employer	39.465** (17.05)	0.031*** (0.01)
Sector		
Trade	12.922 (14.12)	−0.011 (0.01)
Services	−3.316 (8.67)	−0.014 (0.01)
Other	−31.777*** (10.99)	−0.029*** (0.01)
Location		
Street-based	−15.410 (20.39)	−0.018* (0.01)
Store-based	3.069 (16.33)	−0.004 (0.01)
Market-based	−13.366 (17.62)	−0.019** (0.01)
Other	−12.103 (16.64)	−0.023 (0.01)
Owns the land	−11.031 (7.99)	−0.003 (0.01)
Owns the structure	−51.662*** (11.47)	−0.053*** (0.01)
Ga (reference category: all other ethnicities)	−23.632*** (8.43)	−0.019*** (0.01)
Member of association	17.666* (9.39)	−0.001 (0.01)
Age of firm	0.083 (0.49)	0.000 (0.00)
Female	−22.537 (13.87)	−0.006 (0.01)
Age of respondent	−0.696 (1.63)	−0.003** (0.00)
Age squared (respondent)	0.002 (0.02)	0.000** (0.00)
Constant	108.999*** (37.71)	0.288*** (0.04)
Observations	1,673	1,673
R-squared	0.079	0.217

Note. Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1; Sample weights have been applied across all models. Sample restricted to respondents who reported making at least one payment. Estimation by OLS.

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