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What Are We Taxing?

Turnover, Profits and Policy in the Informal Economy

Michael Rogan, Max Gallien, Nwabisa Malimba, Tamaryn Friderichs and Sandie Phakathi

WIEGO Working Papers

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Abstract

Against the backdrop of declining development aid and increasing fiscal pressure, many lower-income countries are attempting to collect more taxes from large informal sectors. The promise of using third-party data and mass registration exercises have renewed interest in turnover-based presumptive tax regimes in particular. In theory, these tax regimes can be progressive and potentially efficient tax handles. In practice, their results have been extremely disappointing on both revenue and equity grounds. Why? And how can they be designed better? At the heart of this question lies the relationship between profit and turnover in informal sector enterprises. Due to limited bookkeeping, estimations of turnover are central to the design and implementation of presumptive tax regimes. And yet, there is almost no literature or data exploring the relationship between profit and turnover among informal firms, and its implications for tax design. This paper seeks to fill that gap using a harmonized dataset from the World Bank's Informal Sector Enterprise Surveys across a sample of 10 low-income countries. Our results suggest that turnover is a highly unreliable proxy for profit and, consequently, tax liability. Profit as a share of turnover varies considerably by country and by sector, and does not increase proportionately or predictably with turnover. We conclude with a simple illustration of how a turnover-based simplified tax regime can result in both horizontal and vertical inequalities in tax liability, using Ghana's modified tax scheme as an example. The findings suggest that where turnover is used as a proxy for taxation, its imprecision needs to be built into policy design to avoid taxing firms at varying rates of their profits and shifting excessive burdens onto very low-income operators. These findings are applicable to other policy interventions that rely on turnover in their design, such as regulatory exemptions, formalization strategies or social protection schemes. Also, there is a substantial need for more data collection on profit and turnover among informal operators.

1. Introduction

A substantial portion of economic activity around the globe, particularly in lower-income countries, occurs within informal sectors. Within these sectors, formal accounting and bookkeeping is often more limited than within formal sector enterprises: informal operators often do not have a full disaggregation of their income and profit, calculated against input costs and other expenses. This generates a problem for a wide range of policy interventions that require some kind of indicator of the size of a particular informal operator, such as support schemes for small businesses, social protection programmes, and financial interventions. A similar challenge exists where there are minimum thresholds to exclude very small activities, such as a range of regulatory rules, reporting requirements and taxation thresholds. Across the globe, by far the most common proxy used if full bookkeeping is considered unavailable is turnover, or total sales. The assumption is that this is easier for

small operators to estimate. But how good of a proxy for profits is turnover? And what are the implications for how well these policies work?

This question is particularly relevant in the context of taxation. As reductions in aid bite and fiscal pressures rise, many low-income countries in sub-Saharan Africa and beyond have renewed interest in expanding the tax base to incorporate their large informal sectors.¹ The pressures on domestic resource mobilization are likely to increase in the short-term as overseas development assistance (ODA) dropped by more than one-quarter in sub-Saharan Africa in 2025 (OECD 2025) while tax-to-GDP ratios in the region are still below pre-pandemic levels (UNDP 2024). While some countries have experimented with new tax handles, such as taxes on mobile money transactions (Anyidoho et al. 2023), others have turned to existing simplified or presumptive tax regimes (STRs or PTRs) to renew efforts to raise revenues from unregistered firms and

¹ The International Labour Organization's statistical framework defines informal employment as an umbrella term encompassing all types of employment in the informal sector as well as wage employment that is not "in law or in practice, subject to national labor legislation, income taxation, social protection or entitlement to certain employment benefits". The "informal sector" is a sub-set of informal employment and refers to employment and production that takes place in unincorporated enterprises not registered with national administrative authorities (ILO 2018: 10). However, the ISES data do not indicate whether registration is at the national, state or city levels. Accordingly, although this paper will refer to the "informal sector", it will deviate somewhat from the ICLS definition.

activities (Anyidoho et al. 2023; Mas-Montserrat et al. 2023). In broad terms, an STR is a tax based on an approximation of (presumed) taxable income (or profit) by indirect means. STRs are often used in contexts where accurate assessments of profit are impractical due to, inter alia, the lack of accounting and prevalence of informal and in-kind transactions. A purported benefit in contexts with large informal sectors is reduced compliance costs since taxpayers (as micro-enterprises) do not have to submit detailed transaction or business records (Mas-Montserrat et al. 2023).

Sub-Saharan Africa is at the forefront of the renewed interest in taxing the informal sector. A recent review of informal-sector taxation in the region suggests that about two-thirds of countries have some form of STR (Hoy et al. 2024). A particular feature of these regimes, both in sub-Saharan Africa and further afield, is the use of self-reported business turnover as an indirect measure of taxable profits. Among the countries in the region that levy a presumptive tax in the informal sector, about 90 per cent use turnover to approximate profit. Most (60 per cent) use a percentage of turnover to estimate tax liability while an additional 30 per cent use a combination of turnover percentage and a set fee (Hoy et al. 2024). Even when turnover is not used in the calculation of taxable profit, a number of countries tend to use turnover bands to distinguish between different types of taxpayers in the informal sector.

Recent research has shown that STRs have a poor track record overall – they tend to collect limited revenue, are often administratively costly, and have been associated with poor performance from an equity perspective. And yet, many revenue authorities continue to prospect for a “hidden goldmine” of untaxed income in the informal sector (see Gallien 2025). Notably, recent research has indicated that STRs perform very poorly both on equity and revenue grounds. Policy discussions of these challenges usually have sought the problem in the implementation of these taxes. Meanwhile, one possible explanation that has received relatively little attention is a central feature of their design: the assumption that turnover is a good proxy for taxable income.

The utility of turnover as a central indicator in a presumptive tax design – or in other government schemes that interact with businesses with weak bookkeeping – depends on how well it functions as a proxy for income.² This could be rephrased as three key assumptions about the correlation between turnover and profits: one around precision, one around horizontal equity, and one around vertical equity. First, in terms of general precision, the assumption is that it functions well on average. This means that there is a limited amount of variation between profits and turnovers across small firms. Second, that it functions well horizontally. This means that to the degree that there is imprecision, this does not vary substantially across salient sub-groups, such as sector and gender. If, for example, profit is a smaller share of turnover in sectors such as informal retail compared with other sectors (e.g. services), then a percentage tax on turnover will result in horizontal inequality across activities with the same turnover. In addition, if women are concentrated in specific segments of the informal sector, and if these sub-sectors have relatively low levels of profitability, then an ostensibly gender-neutral tax design will contribute to gender inequality (see Komatsu 2024). The third relevant assumption is that to the degree that imprecision exists, it does not correlate with income. Many simplified tax regimes utilize fixed turnover rates. However, if economies of scale improve the profitability of informal businesses, then the effective tax rate (as a share of profit) will be lower at higher levels of turnover, while raising higher demands from low-profit activities. Both outcomes would contribute to vertical inequality and a regressive tax structure.

Understanding whether these assumptions about turnover hold in practice is an important policy question. If turnover is a reliable and consistent predictor of profit in the informal sector, then the equitable design of an STR can be achieved through a careful technical exercise. If these assumptions do not hold, then the usage of turnover as a proxy for taxable profits will have systematic and predictable implications for the equity and efficiency of presumptive tax systems. We can assume, *a priori*, that there will be some violation of these assumptions – no proxy is perfect, and turnover is widely understood as a second-best solution in the absence of

² Revenue authorities tend to use the term “income” whereas firm surveys collect data on profits. In practice, the profits from small survivalist informal sector activities are often used as “take home” income instead of being invested back into the business. We acknowledge that there is some slippage in terminology but our concern is with how much is retained by informal businesses after expenses. As such, we use the term “profit” in our analysis but we recognize that this will often be the same as earnings or income in the informal sector.

bookkeeping. However, understanding the degree and direction in which these assumptions are violated is critical to mapping how simplified tax regimes work in practice, and how they can be designed more effectively.

In this paper, we present, to the best of our knowledge, the first systematic analysis of turnover and profit in the informal sector. We do this by drawing on data across 10 low-income countries, exploiting comparable data on turnover and profit collected through the World Bank's Informal Sector Enterprise Surveys,³ to test, empirically, the three assumptions set out above.

Our findings indicate that turnover as a proxy for profit effectively violates all three assumptions. First, the average profit rate obscures a large degree of variability. While averages across countries appear similar, within each country the distribution of the profit to turnover ratio is so wide that the mean is not a convincing practical measure of profit rates. If median profit rates are used to estimate profit from turnover, predicted profits will differ from observed profits by about 40 per cent on average, while only about one-third of businesses will have profits predicted within 25 per cent of their observed profits. Such a finding is striking but not necessarily unexpected given the heterogeneity of informal sectors. Second, there appear to be substantial and systematic differences in profit rates between different types of informal sector activities. Lower profit rates in the retail sector are driven by the trade in perishable goods. At the same time, some segments of the services sector are associated with higher profit margins. Both outcomes suggest that an assumption of the horizontal “stability” of profit rates is misplaced in the informal sector. Notably, however, the exact sectoral pattern varies substantially between contexts. While conventional wisdom suggests, for example, that services should operate with a higher profit margin than retail operations, this does not always hold. Substantial variation between countries within sectors means that adjusting for sector does not substantially improve the predictive power of turnover. As a result, sector-specific STR designs will not necessarily perform better than generalized regimes. Third, we find that there is a positive correlation between profit and turnover but that the strength of this relationship differs across the distribution. The relationship is strongest at the “tails” of the distribution but it appears to break down across the middle. As a result, the ability to predict taxable profits from

turnover is relatively poor for most of the middle segments of the informal sector and can lead to regressive tax outcomes.

Overall, these findings indicate that while the administrative challenges of implementing STRs have been at the centre of policy debates in recent years, a substantial number of the practical challenges can indeed be traced back to their design, and in particular to the usage of turnover as a key proxy within the design. The evidence presented here does not necessarily imply that turnover should be abandoned in STR design – largely due to an absence of strong alternatives. However, we argue that the weaknesses of turnover as a proxy need to be addressed through design and administration more explicitly. Most importantly, the imprecision of turnover as a proxy requires STR designs to include a generously defined minimum threshold to minimize the number of operators below the poverty line that are pulled into the tax system. The correlation between profit margins and overall profits also implies that regimes need to be more consciously designed with a view to progressivity, as flat rates will almost automatically generate regressive tax burdens. In some country contexts, it may be sensible to have sector disaggregated rates, however, our data challenges some of the more optimistic assumptions about these regimes.

Beyond their empirical and policy relevance, the paper's findings can make critical contributions to the existing literature on informal sectors and the economic realities of small firms more generally. First, most analyses of STRs focus on the outcomes of tax design or on the gap in potential revenue without interrogating the relationship between turnover and profit, which underpins a regime's outcomes (see Danquah and Osei-Assibey 2018; McNabb et al. 2021). The paper's conclusions provide testable predictions for the implications of building simplified tax regimes on turnover for equity, sectoral and gendered burdens. It illustrates these effects by estimating the distribution of tax burdens using microdata and the STR schedule from a specific context (Ghana).

³ <https://www.enterprisesurveys.org/en/enterprisesurveys#tabs-7b34b7e353-item-e7c5e427d6-tab>

The remainder of the paper is structured as follows. Section 2 provides a brief overview of turnover-based simplified tax regimes and then reviews the existing evidence on revenue outcomes, equity implications and minimum threshold design features. In Section 3, we describe the data from the harmonized release of the World Bank Informal Sector Enterprise Surveys and explain the construction of the turnover and profit variables as well as the profit-to-turnover ratios and calculation of the effective tax rates. Section 4 presents the results in three parts. After a brief descriptive analysis of profit margins across informal sector firms, we then explore the variation in these ratios, how they differ by country, sector and gender, and finally how they differ across turnover levels across the 10 countries. In Section 5, we illustrate the findings of the cross-country analysis by exploring in more detail the equity outcomes for one case in particular: Ghana. The Ghana Revenue Authority's redesign of its "modified taxation scheme" (MTS) is perhaps the most recent example of efforts to increase revenue collection in the informal sector through a turnover-based STR. In addition, the Ghanaian context is a particularly interesting example because the structure of profit rates in the informal sector combined with an ostensibly progressive tax design should, in theory, result in a relatively progressive tax burden. As such, the Ghana example suggests that, even in a best-case scenario, turnover is a largely unreliable proxy for profits. Section 6 concludes with a discussion on the central question of whether turnover-based STRs can be re-designed to improve equity outcomes or whether turnover is an inappropriate proxy for estimating tax liability in the informal sector.

2. Presumptive Taxation and Turnover: An Overview

As bookkeeping is often limited across small informal enterprises in many parts of the world, a variety of policy interventions that seek to target a specific subset of these activities rely on alternative measurements of the size and profitability of small enterprises. This includes, for example, business support, training and loan programmes aimed at small firms. At the same time, programmes or regulations that are meant to apply only to firms of a limited size, such as VAT filing requirements or certain labour regulations, similarly require proxies for the size of economic activities without bookkeeping. For both, turnover has been a popular alternative.

While it is reasonable to assume that activities without bookkeeping might similarly be unable to provide a precise amount of their own turnover, the assumption is that turnover is easier to estimate than net income.

However, the most widespread usage of turnover by states in lower-income country contexts is, arguably, to tax small enterprises. Many lower-income countries operate STRs, which are also commonly referred to as presumptive tax regimes since they are, in broad terms, a tax based on an approximation of (presumed) taxable income by indirect means. While some STRs rely on metrics such as the size of a store or stall, and some rely purely on sectoral specification to determine tax liability, turnover is by far the most widely used metric in STRs. It is used both to define liability for the tax through maximum and minimum thresholds (if they exist) and to determine the actual liability, which is commonly expressed as a percentage of turnover.

Somewhat remarkably, there was relatively little empirical work done on simplified and presumptive tax regimes in lower-income country contexts until the early 2020s. While there exists a wider policy literature on the design choices in presumptive taxation (Engelschalk and Leoprück 2015; Mas-Montserrat et al. 2023; Wei and Wen 2023; Wen 2023), it is often operating from first principles and with a focus on tax policy, rather than as an empirical investigation into the practice and administration of STRs. However, in recent years, the increasing availability of survey data on small firms and an increase in research being conducted in and with revenue authorities has changed this.

This emerging literature on the administration and performance of STRs generally paints an image of a tax handle that is not performing well. First, from the perspective of revenue authorities, STRs have been largely unsuccessful in raising revenue. Evidence from sub-Saharan Africa suggests that presumptive taxes have often contributed less than 1-3 per cent of total tax revenue, despite requiring substantial resources for taxpayer identification, monitoring, enforcement and dispute resolution (African Tax Administration Forum 2024). The most recent estimate suggests that, across the region, STRs have raised only about 0.5 per cent of domestic revenue mobilization (ibid.). Moreover, a recent estimate from Ghana suggests that the costs of administering the presumptive tax can be extremely high: in the case of Ghana's "tax stamp" they were as high as nine times the revenue collected (Gallien and Kombat 2025).

This is because, while these regimes are intended to simplify compliance and broaden the tax base, revenue authorities frequently face high transaction costs due to the prevalence of small taxpayers, limited adoption of digital tools, and consequently labour-intensive collection and sensitization (Keen 2012; Moore 2020).

The second key problem with simplified tax regimes is that they often perform poorly from an equity perspective, both in relation to horizontal and vertical inequality. In addition to that, they have been repeatedly shown to place relatively large tax burdens on the lowest earning activities in the informal sector (see Moore et al. 2018; Rogan 2019; Anyidoho et al. 2023, 2025). Horizontal equity requires that taxpayers with similar levels of turnover bear similar tax burdens, while vertical equity suggests that those with higher ability to pay contribute a proportionally greater share. A growing literature suggests that turnover-based STRs in particular tend to impose uneven burdens across sectors. For instance, in Romania, where a mandatory turnover tax was imposed on microenterprises, Lazar (2024) found that small manufacturers and traders bore disproportionately high effective tax rates compared to service-oriented firms. In some cases, micro-manufacturers paid taxes equivalent to 15 per cent or more of net profits, whereas high-margin service firms paid below 5 per cent. This imbalance shifted the fiscal burden from profitable to survivalist sectors, distorting competitiveness and discouraging investment in production-oriented industries. Similar results were observed in Ethiopia, where small retail traders, the majority of whom earned below the formal income tax threshold, were taxed at the same rate as large service providers (Asmare et al. 2023; Komatsu 2024).

Another way in which horizontal inequalities often manifest as unintended outcomes in simplified tax regimes is through gendered differences in tax burdens (see Komatsu 2024). In many contexts, women are overrepresented in low-profit activities in the informal sector such that turnover-based STRs result in high effective tax rates for women-owned firms compared to male-dominated, higher-margin enterprises (Asmare et al. 2023). While administratively simple, these systems have been found to risk reinforcing structural inequalities, disproportionately burdening women entrepreneurs, low-income earners and marginalized social groups (Asmare et al. 2023; Wen 2023). In terms of vertical equity, there is a growing literature documenting the risk of

regressivity in the design of STRs in sub-Saharan Africa (African Tax Administration Forum 2024; Anyidoho et al. 2025). Similarly, Lazar's (2024) findings from Romania's turnover tax regime found that firms with losses or near-zero profits were still taxed, resulting in effective tax rates 10 times higher than those of more profitable small firms under the regular income tax system.

Against the backdrop of these well-documented challenges of limited revenue generation and regressivity in tax burdens, recent years have seen increasing discussion of their implementation and reform. A particular focus has been on the importance of minimum thresholds, the re-evaluation of their revenue potential, as well as the opportunities and risks of utilizing digitalization and third-party data to improve their administration (African Tax Administration Forum 2024; Hoy et al. 2024; Gallien et al. 2025). Notably, these analyses have largely been grounded in the specific challenges of the administration of STRs. What has been absent so far has been an examination of whether the poor performance of STRs is directly related to the one feature that the vast majority of these designs have in common: the usage of turnover as a proxy for profit. Could that feature of STRs, combined with some key observations about profit and turnover structures within informal economies, predict some of these outcomes – and provide hints at more effective reforms?

3. Data and Methods

Research on simplified taxation as well as on the economic and fiscal realities of small and informal enterprises is often constrained by the lack of data. Governments typically collect limited data on these activities and most firm-level surveys exclude many informal activities. National economic censuses provide a better starting point. But these often only include a variable on income, or on turnover – but not both. While there have been some recent surveys focusing on the fiscal realities of small and informal firms (e.g. Anyidoho et al. 2023; Gwaindepi and Venganai 2025), these often capture relatively crude estimates of turnover and they are not comparable across different country contexts. This paper is based on the first data source that allows such a cross-country comparison.

3.1 The World Bank Informal Sector Enterprise Surveys

The analysis is based on publicly available micro-data from the World Bank Informal Sector Enterprise Surveys (ISES). In 2025, the World Bank released a cross-city harmonized dataset of surveys from 17 countries. Our analysis is based on this pooled dataset where the survey instrument and sampling approach (see below) are comparable across contexts. The surveys from the harmonized release were collected between 2018 and 2025 and, within each country, are designed to cover all informal businesses within a specified geographic area, often the main or capital city. In each country, an informal business is defined as an economic activity that is not registered with a relevant government authority. The surveys specifically exclude businesses or activities that are illegal or trading in illicit substances or services.

The sampling methodology of the surveys was based on an Adaptive Cluster Sampling (ACS) approach. An ACS disaggregates an urban area into primary sampling units (PSUs), which are then enumerated through an initial listing exercise and adapted to include adjacent PSUs when business activities are clustered together. Through this more rigorous two-step approach to sampling, a representative sample of the universe of unregistered enterprises is achieved and population weights are calculated (based on the probability of selection within stratum) and included in the data release. This updated sampling approach to the ISES also coincided with larger sample sizes for the more recent surveys.⁴ While the data release comes with three different weighting options, we use the provided stratified population weights that are inclusive of both interview refusals and unavailable businesses in order to achieve the greatest possible geographic representivity in each city.

There are a few limitations inherent in this data. One is that there are some large variations in data quality across contexts. In particular, the (unweighted) percentage of observations with missing information for either turnover or profit ranges from 38 per cent (Nepal) to 88 per cent (Tanzania). Sample sizes themselves also vary considerably and it is not clear whether sample sizes are correlated with the expected population sizes (i.e. the number of informal sector firms) in each context. As a result, and following an admittedly arbitrary decision rule, five countries

for which over 50 per cent of observations are missing for either turnover or profit and for which there are fewer than 500 valid observations remaining were dropped from the sample. The Indian and Zimbabwean surveys were also excluded from the analysis as their questionnaires did not collect information on profit. As a result, 10 countries remained in the sample: from Africa (Democratic Republic of the Congo, Ghana, Mozambique and Sudan), Asia (Bangladesh, Indonesia, Iraq, Nepal and Lao PDR) and Latin America (Peru). While this is not an “even” or representative sample of low-income countries, it is the best available source of data with which to analyse turnover and profit in the informal sector.

A second limitation is that the sampling approach used in the data may under-sample very small and nano (single-person) enterprises that are primarily located within homes. As a consequence, it is better to think of the dataset as a sample of small and micro informal firms rather than a complete account of all informal and unregistered economic activities.

3.2 Methods

An advantage of using the ISES to make cross-country comparisons is that the questionnaires are largely standardized. In particular, the modules on turnover (sales) and profit are similar across the surveys used in the analysis and all include a question concerning the total sales of the business during the past month. In our analysis, we use the response to this question as a measure of turnover and multiply it by the number of months worked on an annual basis. In measuring profit, respondents were asked to report whether their business recorded a loss or profit (or whether it broke even) in the most recent month of operation. Then the amount of the net profit or loss is recorded in a separate (one-shot) question.

Based on these comparable measures of turnover and profit derived from the ISES, we then constructed two measures that we use to interrogate turnover in greater detail. The first is an indicator of profitability that we characterize as the profit rate. We constructed this variable by simply dividing net monthly profit by total turnover. To account for a number of outliers in each country dataset, we removed observations with a profit rate more than two standard deviations from the country mean. The second indicator is the effective tax rate, which

⁴ <https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/research-1/Understanding%20informality.pdf>

is simply the ratio of the expected (or imputed) tax payment to net profit. The effective tax rate is a simulated outcome based on the individual tax liability under the relevant STR and based on the turnover variable derived from the survey question (as outlined above). To impute these expected tax payments, we adjusted the profit (earnings/income) and turnover values for inflation (using published historical CPI tables from the World Bank Development Indicators database) such that all values are expressed in real 2025 prices to reflect up-to-date simulated tax payments and effective tax rates. In other words, the simulated effective tax rate is a test of the distribution (fairness) of the tax burden under an assumption of full compliance in line with the published tax liabilities under Ghana's MTS schedule. The effective tax rate can also be compared directly with the marginal tax rates for individual income taxes as well as the corporate income tax rate.

While the harmonized ISESs have the advantage of comparability, the way that turnover and profit are captured is relatively crude. "One-shot" questions are unlikely to be as accurate as detailed modules on sales, business expenses and asset purchases. This is particularly the case for the informal sector, where the vast majority of business operators do not keep written records of their business accounts.⁵ From the phrasing of the survey questions, it is not clear that respondents will understand how to estimate "net profits in the last calendar month" without prompts on what to include or exclude as business expenses. Patterns in the data also suggest that respondents commonly use one value to anchor their estimate of the other. While this is a clear limitation of the data, and a strong argument for better and more extensive data collection in this area, it is worth noting that this does remain, at this point in time and to the best of our knowledge, the best available data on the issue. Notably, this methodological problem is exactly the same problem experienced by revenue officials when trying to estimate turnover when collecting taxes. Consequently, exploring the implications of this data and its limitations is useful not just with a view to taxation but in broadening debates that rely on turnover, including conversations on productivity, formalization, and measures of poverty and inequality.

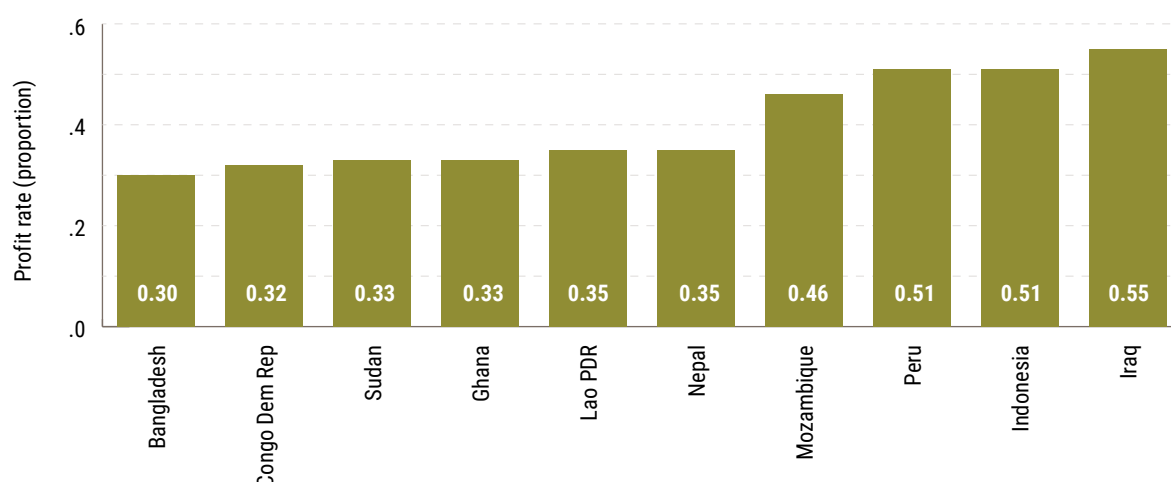
4. Results – Turnover as a Predictor of Profits

The main results are presented in five parts. First, we provide an overview of mean profit to turnover ratios across countries. Subsequently, we empirically evaluate the three key assumptions about the relationship between turnover and profit – namely, precision, horizontal equity and vertical equity. Following a section on each assumption, we estimate a series of multivariate analyses to examine the assumptions simultaneously.

4.1 The distribution of turnover and profit

Since the tax burdens of most STRs depend on the relationship between profit and turnover, the analysis begins with a simple descriptive analysis of this ratio. For the (weighted) sample as a whole, the average informal firm retains about 39 per cent of its turnover as profit. However, as Figure 1 shows, this average differs in each country dataset. The profit rate is as low as 30 per cent in Bangladesh while informal sector operators in Iraq retain about 55 per cent of turnover as profit. Despite this variation, there does appear to be some type of convergence around a profit rate of 30 per cent to 35 per cent in six of the countries in the sample.

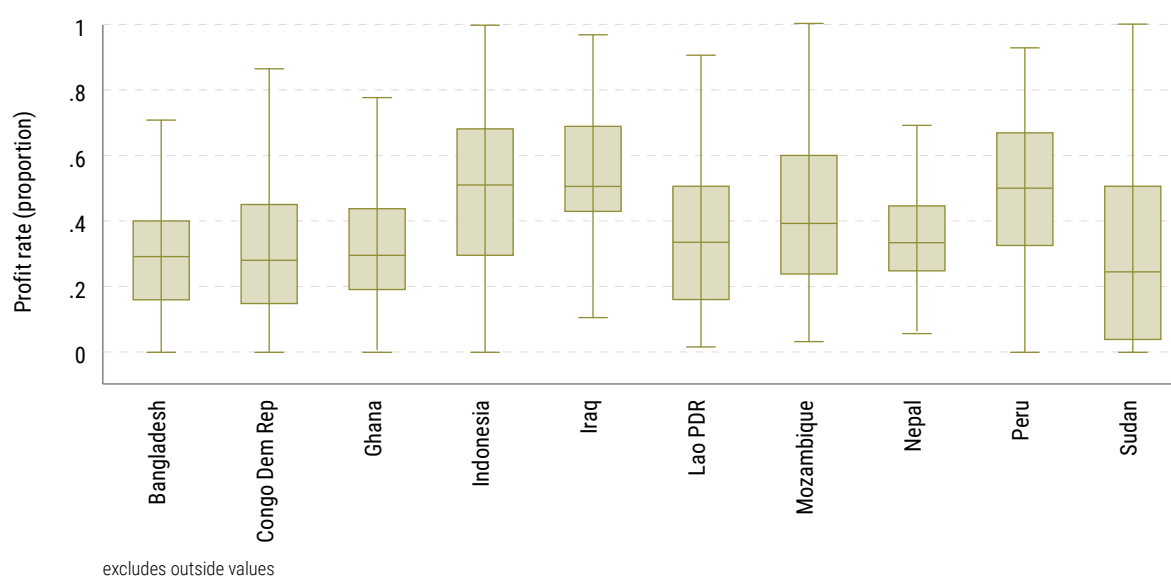
⁵ In the harmonized ISES dataset, 81 per cent of informal sector businesses do not keep any type of business accounts (own calculations).

Figure 1. Mean profit-to-turnover ratio (profit rate), by country

Source: Own calculations from the ISES. Note: Stratified population weights applied (inclusive of interview refusals and unavailable businesses).

However, the variation of the profit rate *within* each country is of greater interest from a policy perspective. Figure 2 shows the distribution of profit rates and illustrates substantial variation within country profit rates. One way of quantifying this variation is by examining the interquartile range, which shows how dispersed the rate is within each context. The dispersion is the widest in Sudan where the average profit rate

is 33 per cent (from Figure 1) but the interquartile range is 0.6. In other words, in Sudan, the average profit rate is low but it varies considerably around this mean. Across the sample of countries, the interquartile range for the profit rate is greater than 22 per cent, which suggests that the mean obscures substantial variation in the profit rate across all contexts. This leads directly to an empirical test of the first key assumption.

Figure 2. Distribution of profit-to-turnover ratios (profit rate), by country

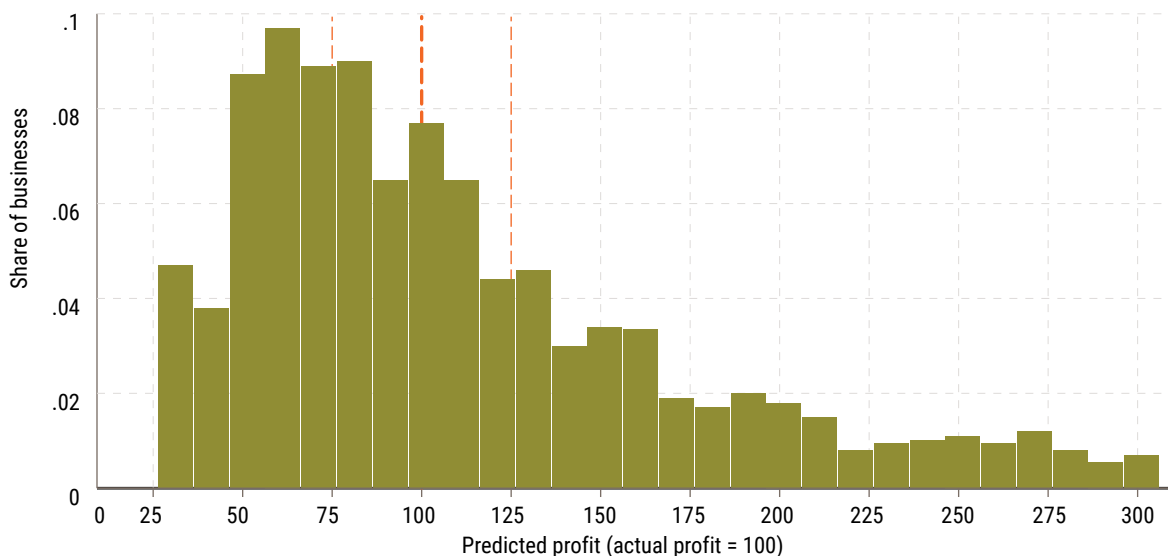
Source: Own calculations from the ISES. Note: The box plot identifies the minimum, first quartile (p25), median (p50), third quartile (p75) and maximum values.

4.2 Precision of turnover as a predictor of profit

As the previous section has highlighted, there appears to be substantial variation among firms' profit rates. What are the consequences of this wide dispersion of profit rates for their predictive power? There are several ways of answering this question. For the purpose of this section, we assume that, in practice, country-level median profit rates could be used to calculate expected profits by multiplying them by reported turnover. While this is a relatively simple model, it still represents a more sophisticated prediction than is practiced by revenue authorities when designing tax schedules.

Obviously, a model that relies on median turnover is not going to be precise – but how large are its errors? Figure 3 shows a distribution of predicted profits as a proportion of actual profits across the 10 countries. Effectively, this shows the profits the model would predict, with the reported profits normalized to 100 – so, 110 indicates an overprediction of 10 per cent, and 90 indicates an underprediction of 10 per cent. Two observations stand out. First, and perhaps most remarkably, this shows a very high average error rate. For the median business, predicted profits differ from reported profits by about 40 per cent. At the same time, only about one-third of businesses have profits predicted within 25 per cent of their actual value. Only about two-thirds are predicted within 50 per cent. Consequently, a tax regime charging a percentage of turnover will overtax some businesses and undertax others, both by a substantive margin.

Figure 3. Predicted profit as a proportion of reported profit



Source: Own calculations from the ISES. Notes: Stratified population weights applied (inclusive of interview refusals and unavailable businesses). Vertical lines contain observations with predicted profits that are 25 per cent above or below observed profits.

Second, the distribution is clearly skewed. It is not surprising that there are no values under 25, given that we have not allowed profits to exceed turnovers and that all predicted profit margins are above 25. However, it is notable that the distribution is skewed toward the right. Firms with profit margins above the country median find their profits underpredicted, although that underprediction is bounded. By contrast, for firms with relatively low profit margins, the relative

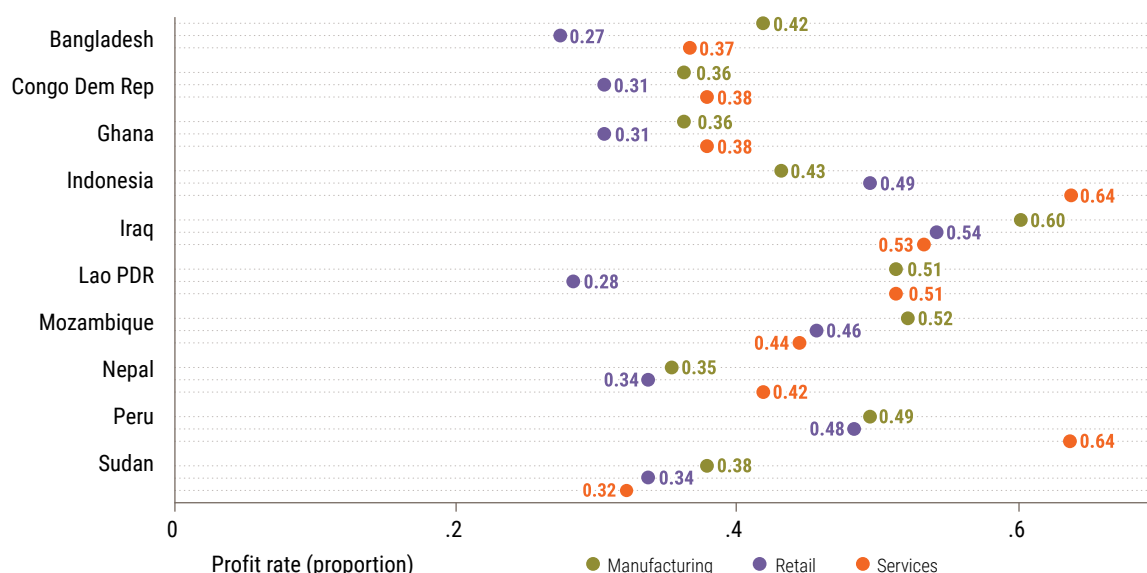
overprediction can become very large – we have restricted the graph to values under 300 here, but the actual tail is longer. Consequently, while most of the errors created by this method involve the underestimation of profits, the largest errors involve its overestimation. This already provides some indication that not only is there substantial variation between turnover and profit, but that this variation is unevenly distributed.

4.3 Horizontal equity – profit rates by sector and gender

To some extent, differences in profitability (both within and between countries) are expected to be explained by differences in the sectoral composition of the informal sector in each context. For example, while retail is the modal sector for all 10 countries, it ranges from 54 per cent of informal sector activity in Iraq and up to 85 per cent in Indonesia (own calculations from the ISES, not shown). There is an *a priori* expectation that profit rates are lower in retail given the large outlays required for acquiring stock, the transport of goods and the tight margins associated with many types of perishable goods.

Figure 4 explores this further by comparing profit rates for each sector and country. The results show that informal sector activities in the retail sector have the lowest profit rates in six out of 10 countries. Beyond this broad pattern, however, there is no clear evidence that either manufacturing or service sector activities have higher profit rates relative to one another. In some contexts, manufacturing is associated with greater profit rates while, in others, service activities have a clear advantage. The key finding (from Figure 2) therefore, is that there are large unobservable⁶ differences between contexts and that profit rates differ by sector in all 10 countries.

Figure 4. Mean profit-to-turnover ratios, by industry sector



Source: Own calculations from the ISES. Note: Stratified population weights applied (inclusive of interview refusals and unavailable businesses).

Since one of the main concerns with the systematic variation in profit rates by sector is that women may be disadvantaged by STRs if they are concentrated in low-profit activities (see Komatsu 2024), Figure 5 examines profit rates for women and men for each country. Somewhat counter to a *a priori* expectations, women in the

informal sector have substantially lower profit rates in only three contexts (Indonesia, Peru and Lao PDR). In addition, there are three contexts where women have higher average profit rates relative to men (Bangladesh, Iraq⁷ and Sudan). In purely descriptive terms, therefore, it appears that a gender disadvantage in profit rates is not

⁶ One obvious explanation that is difficult to test is that there are important differences within sectors. In other words, the three industry sectors are not homogenous and there may be differences in profit margins between, for example, the sale of perishable vs. non-perishable goods. The services sector is also likely to be quite diverse such that subsectors of the services sector might be expected to have different rates of profit. We test this possibility further in a series of multivariate estimates of the profit rate later in the paper.

⁷ Sample sizes for women are very small in Iraq (women account for less than 10 per cent of the total sample).

widespread across the countries in the sample. Profit levels (not rates), of course, could still be lower for women if they are concentrated in lower turnover activities or if they work fewer hours than men. The results simply suggest that, in the informal sector, women's activities are not necessarily less profitable than men's. However, the findings also suggest that profit rates often differ by gender, meaning that any tax regime

using a fixed turnover rate will likely produce some gendered effects. An obvious caveat, which applies to both the sector and gender analysis, is that the ISES only collect data from cities in each country and so large sectors such as agriculture are not included in the analysis. In addition, and as demonstrated in the previous section, the mean is not necessarily a reliable marker for comparisons between profit rates in the informal sector.

Figure 5. Mean profit-to-turnover ratios, by gender



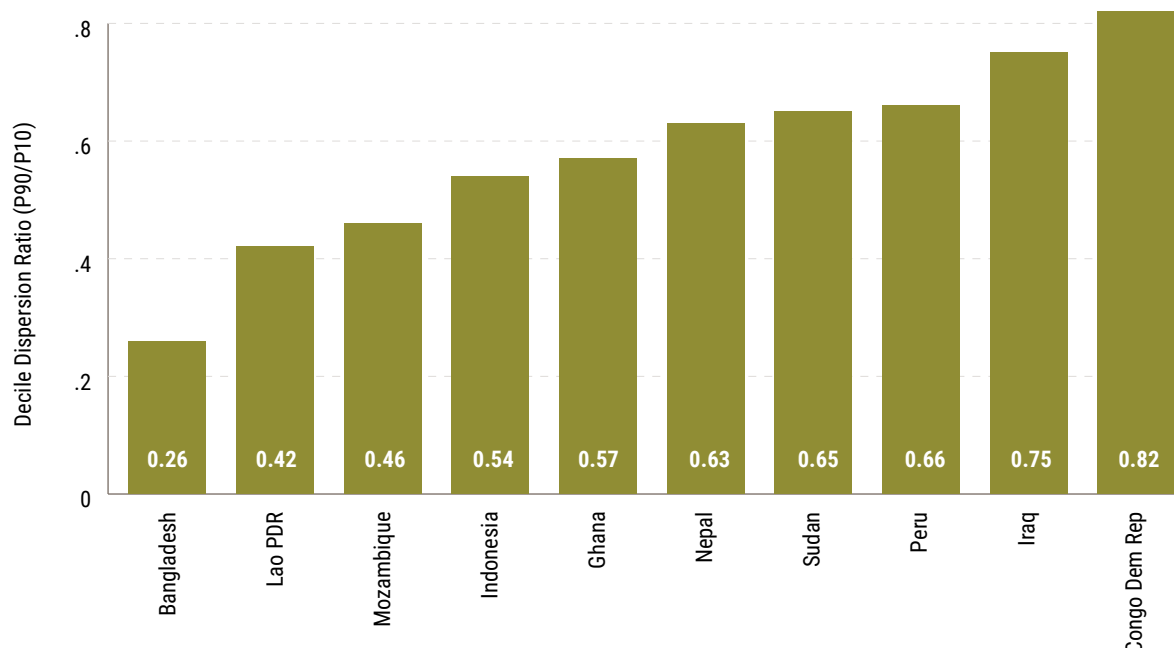
Source: Own calculations from the ISIS. Note: Stratified population weights applied (inclusive of interview refusals and unavailable businesses).

4.4 Vertical equity – profit rates across the income distribution

Having shown that profit is not a consistent share of turnover across countries or sectors, we consider the third assumption about turnover as a useful proxy for tax liability by how examining how profit rates differ across the turnover distribution (Figure 6). For each country dataset, the informal sector was apportioned into 10 equally sized deciles of reported annual turnover where decile 1 contains the bottom 10 per cent of informal sector operators and decile 10 contains the 10 per cent with the highest level of turnover. If turnover is a reliable basis for the design of a progressive tax regime, then the profit ratio should remain the same across all 10 quintiles. A ratio of less than one indicates that profit rates (not levels) are higher in the lowest turnover decile. Accordingly, a ratio greater than one indicates that profit rates are higher among the top turnover decile.

The results suggest that profit rates are actually higher in the lowest turnover decile than in the top decile across the sample. A possible explanation for this somewhat counter-intuitive finding is that fixed costs may be relatively low in the informal sector such that an increase in turnover requires an increase in inputs. Taken at face value, this suggests that an STR based on a fixed proportion of turnover would not necessarily result in vertical inequality as long as turnover bands (e.g. deciles) are largely homogenous (related to the first assumption) in terms of profit rates. If, for example, there are several high turnover but low profit activities in the informal sector then over-taxation of low profit activities would still be a feature of a turnover-based STR. This is an additional issue to which we return in the example from the Ghana survey.

Figure 6. Decile dispersion ratios (based on profit) according to the top and bottom turnover deciles, by country

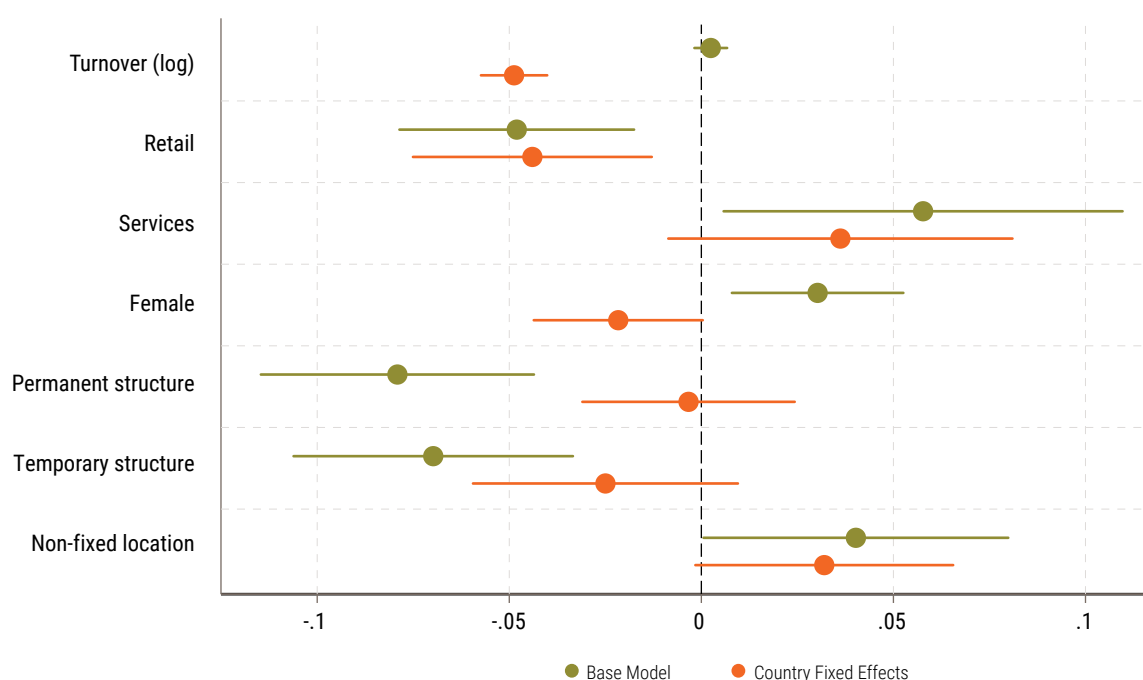


Source: Own calculations from the ISES. Note: The decile dispersion ratio is calculated as the ratio of the mean profit rate in the top 10 per cent of the turnover distribution to the bottom 10 per cent of the turnover distribution within each country.

4.5 The correlates of the profit rate

Having shown that the percentage of turnover that is retained as profit differs both by sector and country, the analysis now turns to a more detailed analysis of the correlates of the profit rate in the informal sector. Figure 7 begins with a relatively simple analysis where turnover (or, more precisely, its log value), sector, gender and type of business (proxied by its location) are included as regressors. The coefficients can be interpreted as the proportional difference in the profit rate relative to each respective reference group. While we also show results for the pooled model, the primary model we interpret here is a model that also adds country-fixed effects. In this specification, profit rates in retail – all other things being equal – are about five percentage points (-0.05) lower than in the manufacturing sector. Since turnover is measured in log form, the interpretation is that each one per cent increase in turnover is associated with a 0.0005 per cent decrease in the profit rate after controlling for sector, business location and country-fixed effects.

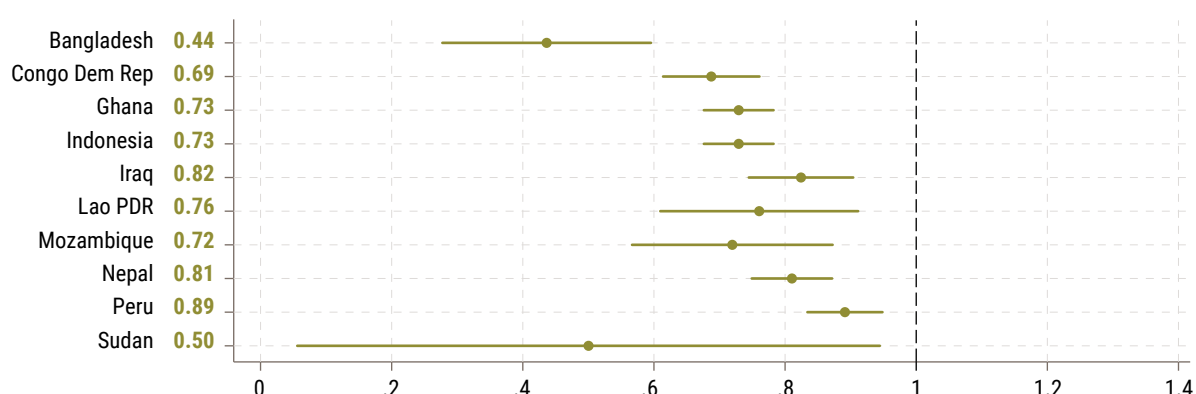
The results also show that, once country-fixed effects are added, gender, turnover and sector are significant predictors of the profit rate. The expected negative sign for the retail sector conforms to *a priori* expectations and aligns with the descriptive results presented earlier. While the descriptive statistics suggested that women did not have a systematic disadvantage in profit rates across most contexts, controlling for sector and business location (with household businesses as the reference group) does display a small but significant gender disadvantage in profit rates. Figure A.1 in the appendix shows the size and direction of the coefficient for gender after controlling for turnover, sector and location in each country. The negative sign for turnover suggests that profitability actually decreases, on average, when turnover increases, which is, again, suggestive of relatively low fixed costs and limited economies of scale in the informal sector. The size of the effect is relatively small (but significant) and provides some support to the descriptive analysis of profit rates at the top and bottom quintiles of turnover.

Figure 7. Correlates (OLS) of the profit-to-turnover ratio

Source: Own calculations from the ISES. Notes: Reference categories: Manufacturing, Males, Household-based businesses. Stratified population weights applied (inclusive of interview refusals and unavailable businesses).

It is possible that specific supply chains that dominate the informal sector in each country (e.g. garments and textiles in some Asian contexts) may contribute to the differences in profit margins. After re-estimating the regressions in Figure 7 using the more detailed information for industry sub-sectors, which is available in the ISES, the results (Figure A.2 in the appendix) remain largely unchanged. The more detailed controls for industry sub-sectors show that retail activities associated with perishable (food and agricultural) goods have particularly lower profit rates. At the same time, professional services (classified in the ISES as internet services, consultants, doctors, lawyers, chartered accountants, electricians, plumbers) have significantly higher profit margins. Thus, while profit rates are influenced by sector differences, the most effective way of thinking about this is to extend the analysis beyond wide sectoral categories and consider specific sub-groups of the main industrial sectors that appear to be driving much of the variation in profit rates.

As a final step in examining how profit rates are associated with turnover in the informal sector, Figure 8 presents a “global” estimate of the elasticity of profit to turnover. In this estimation, profit levels (not rates) are the dependent variable and the natural log transformation is used for both profit and turnover. The vertical line in the graph denotes a perfectly elastic (where a change in turnover is associated with a similar proportional change in profit). The most intuitive interpretation is that, for the 10 countries as a whole, profit is relatively inelastic to turnover since changes in profit are smaller than relative changes in turnover ($|E| < 1$). Put slightly differently, for the sample as a whole, a one per cent increase in turnover is associated, on average, with a 0.69 per cent increase in profit after controlling for country and sector effects. There is some variation in the data with the elasticity in the sample ranging from 0.44 (Bangladesh) to 0.89 (Peru). From the perspective of revenue authorities, this relative inelasticity of profit to turnover would mean that designing a simplified tax based on reported turnover would likely risk over-taxing high turnover and low profit informal activities (particularly in contexts such as Bangladesh and Sudan).

Figure 8. Profit-earnings elasticities (per cent), by country (with sub-sector controls)

Source: Own calculations from the ISES. Notes: Stratified population weights applied (inclusive of interview refusals and unavailable businesses). The dependent variable is the log of annual profit and the regressors include: the log of annual turnover and industry sub-sectors only. Coefficients denote the elasticity of profit levels to turnover levels or the expected change (in per cent) in profit for a one per cent change in turnover.

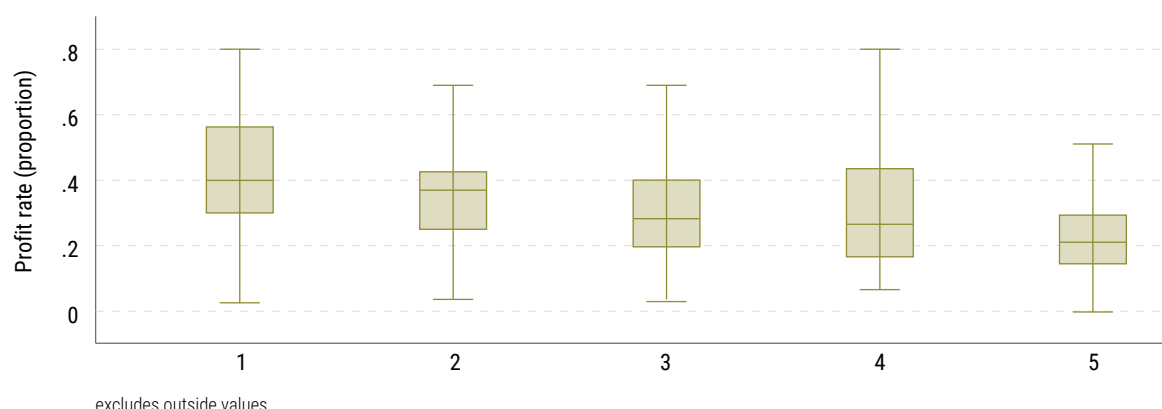
5. Ghana's Modified Taxation Scheme (MTS)

The preceding sections have highlighted that profit rates differ significantly between sectors and within sectors across the countries included in the data. What are the implications of this for turnover-based taxation? This section illustrates how the design of a turnover-based simplified tax can lead to unintended outcomes by undertaking a more detailed analysis from a single context. Ghana's revenue authority has implemented a recent revision to its STR and moved towards a regime that is based more closely on self-reported turnover. The new design of Ghana's MTS is based on simplicity. Informal sector businesses with a self-reported annual turnover of less than GHS20,000 (roughly USD2,000) are required to pay progressive quarterly lump sum installments. For businesses with a turnover of more than GHS20,000 but less than GHS500,000⁸ (USD50,000) per annum, a flat rate of three per cent of turnover is due in tax. While not specified in the legislation, it has been reported to us that, in practice a minimum threshold exempts businesses with reported turnover of less than GHS5,881 (USD550) per annum from paying any tax, so we have assumed that threshold in our modelling.

The informal sector in Ghana is an interesting example because, as demonstrated in Figure 6, higher turnover activities are associated with

relatively low profit margins. Ostensibly, this could make it easier for the revenue authority to design a progressive tax system providing that profit margins are relatively stable across the turnover distribution and within different turnover bands. Before illustrating the outcomes of Ghana's informal sector tax regime on the distribution of the tax burden, we begin with an analysis of how the profit rate is distributed within each quintile of turnover (Figure 9). The results suggest two important features of the relationship between turnover and profit in Ghana. First, profit rates are substantially lower for businesses with higher levels of turnover. The first two quintiles have a median profit rate of about 40 per cent and 36 per cent, respectively. In contrast, the median profit rate is just over 20 per cent for businesses in the top two turnover quintiles. A tax based on either higher installments or a fixed turnover percentage would, therefore, result in a higher effective tax rate for these businesses. This would result in a progressive distribution of the tax burden if profit rates were elastic to turnover. Second, within each turnover quintile, the profit rate has a wide range. Both the interquartile range and the distance between minimum and maximum values suggest that turnover level is not a consistent marker of profit. Put differently, there may be both high profit and low turnover informal activities in quintile one and low profit and high turnover activities in quintile five.

⁸ This threshold was GHS750,000 in mid-2026. We still present our modelling here on the basis of 500,000 cedi as a maximum threshold, but varying this would not substantially change the findings discussed here.

Figure 9. Mean profit-to-turnover ratios in urban Ghana, by turnover quintile

Source: Own calculations from the ISES. Notes: Stratified population weights applied (inclusive of interview refusals and unavailable businesses). The box plot identifies the minimum, first quartile (p25), median (p50), third quartile (p75) and maximum values.

Perhaps the best way to illustrate this possibility is to examine the share of firms in each turnover quintile that are also in the same profit quintile (following the diagonal in Table 1). The results suggest some interesting differences in the way that turnover and profit diverge from one another. For example, in quintile 1 (of turnover) almost all (98.3 per cent) businesses are also in the lowest profit quintile. This is not surprising as these are survivalist activities that have very low absolute levels of turnover. In quintiles 2 and 3, less than half of businesses are in the same profit quintile,

which suggests that, for these activities, turnover and profit levels are particularly divergent. In terms of the top turnover quintile, about 72 per cent of businesses are in the top profit quintile, suggesting that they have relatively high levels of both profit and turnover. There is, therefore, a higher degree of overlap between absolute levels of turnover and profit among the bottom and top quintiles of the turnover distribution. For the middle quintiles, in particular, a tax liability based on turnover would likely not result in an even or predictable tax burden across informal activities.

Table 1. Transition matrix for the share (proportion) of informal enterprises that are in the same turnover and profit quintiles, column totals (turnover quintile)

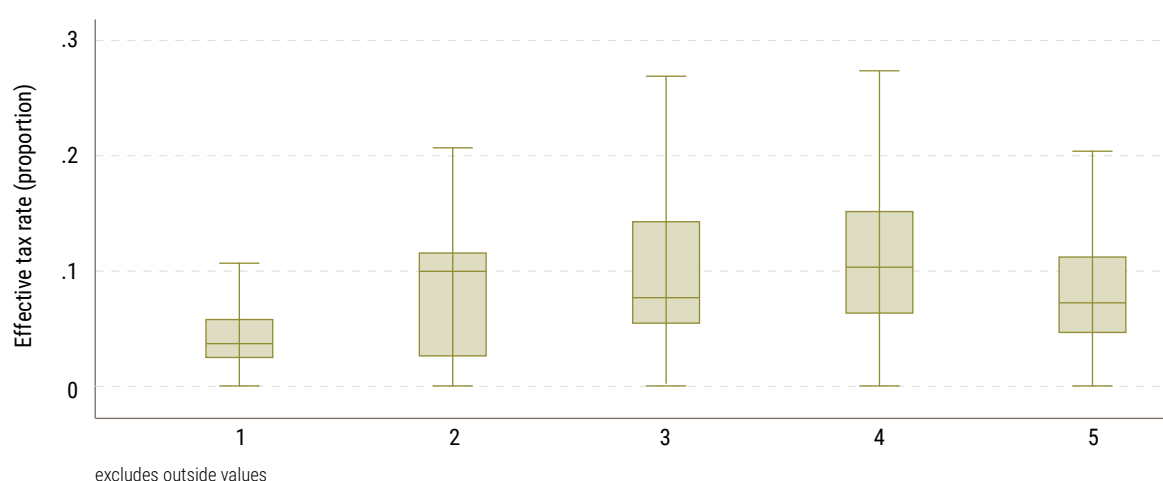
Quintiles of profit	Quintiles of turnover					
	1	2	3	4	5	Total
1	.983	.267	.127	0	.005	.283
	(.009)	(.058)	(.036)	---	(.005)	(.023)
2	.017	.433	.150	.042	0	.134
	(.009)	(.078)	(.036)	(.024)	---	(.020)
3	0	.301	.395	.206	.052	.197
	---	(.093)	(.050)	(.058)	(.025)	(.027)
4	0	0	.319	.546	.220	.208
	---	---	(.047)	(.068)	(.047)	(.021)
5	0	0	.009	.205	.723	.179
	---	---	(.006)	(.058)	(.051)	(.021)
Total	1.00	1.00	1.00	1.00	1.00	1.00

Source: Own calculations from the ISES. Note: Stratified population weights applied (inclusive of interview refusals and unavailable businesses).

In Figure 11, the distribution is again presented in quintiles but, to show the actual distribution of tax burdens, the quintiles are based on reported profits (not turnover). The imputed effective tax rates are estimated by simulating the tax liability for each informal sector operator based on reported turnover and then presenting this amount as a share of net profit. The top quintile (with the highest absolute levels of profit) pays only 8.3 per cent of profits in tax, on average. This is considerably lower than the three middle quintiles that have lower profits. The first quintile does have the lowest average effective tax rate at 7.4 per cent but this is a relatively high tax

on the activities with the lowest levels of profit. Moreover, while the effective tax rate appears to be progressive for the first three quintiles, the differences are not statistically significant. At the same time, the effective tax rate for the top quintile is significantly lower than the tax rates for quintiles 3 and 4. In addition, the median effective tax rates for quintiles 2-4 show evidence of high variability and potential regressivity. For example, the effective tax rates for informal activities in quintiles 3 and 4 range from zero to about 28 per cent. As the same time, the median effective tax rates are actually higher for the middle quintiles where profit and turnover diverge considerably.

Figure 10. Distribution of effective tax rates in Ghana, by profit quintile

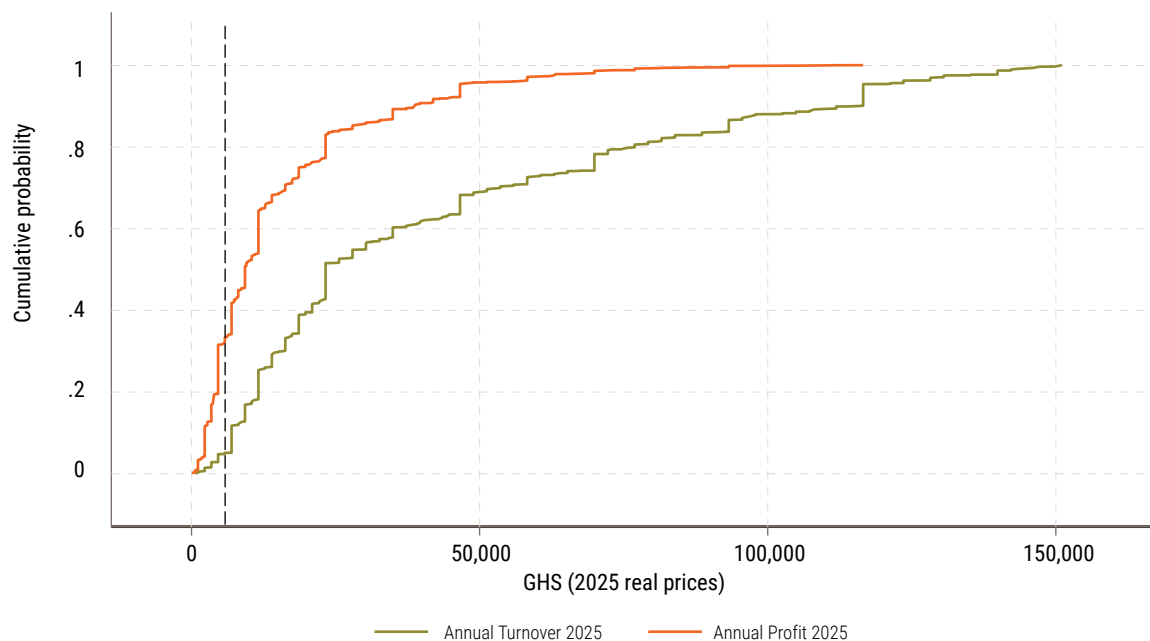


Source: Own calculations from the ISES. Notes: Stratified population weights applied (inclusive of interview refusals and unavailable businesses). The box plot identifies the minimum, first quartile (p25), median (p50), third quartile (p75) and maximum values.

In addition to the partially regressive and uneven structure of tax burdens, our modelling suggests that, based on its usage of turnover as a proxy for taxable income, Ghana's current STR overtaxes informal activities with the lowest levels of turnover and profit. This is explained, in part, by the fact that the minimum turnover threshold is set at the same level as the earnings threshold for employees paying personal income tax. Figure 11 plots cumulative distributions of turnover and profit against this threshold to illustrate where the threshold "bites" in Ghana's informal sector. The results suggest that only about 10 per cent of informal sector operators report turnover below the threshold. As such, 90 per cent of informal sector activities are not exempt from taxation. However, if the distribution of profit is compared

with the threshold, then roughly 30 per cent of businesses should be exempt (i.e. if the same exemption applied in both the formal and informal sectors). Put differently, the divergence between turnover and profit among the lowest earning activities in the informal sector means that nearly a third of businesses are liable for tax even though they earn below the minimum threshold. Thus, and notwithstanding the large proportion of operators that should be exempt from STR payments, the use of turnover as a proxy for profit or take-home earnings means that tax rates are higher in the informal sector compared with the formal sector.

Figure 11. Cumulative distribution functions (probabilities) for real annual turnover and profit, Ghana (2025 prices)



Source: Own calculations from the ISES. Notes: Stratified population weights applied (inclusive of interview refusals and unavailable businesses). Vertical line denotes minimum annual turnover threshold for Ghana's MTS.

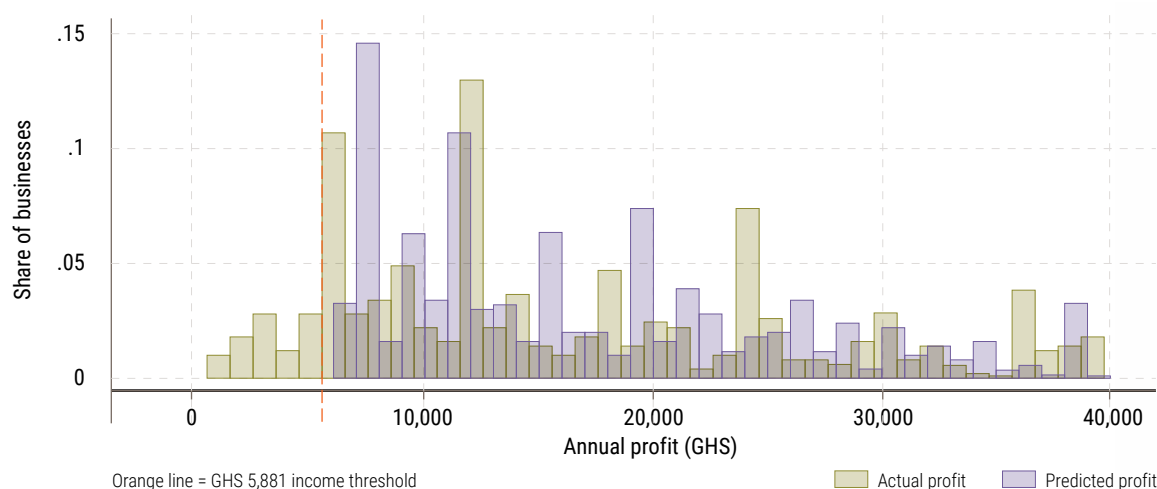
Finally, we can illustrate more directly the consequences of the imprecision of turnover as a proxy for income when it comes to the effectiveness of thresholds. Figure 12 plots both the profits that firms have reported, and the profits that we would predict them to have if we only had information on the average or typical profit margin and their reported turnover.⁹ While this represents a relatively simple approach to estimating profits, it is similar to the broad approach adopted by the Ghana Revenue Authority in the face of limited data. The red line in Figure 12 is drawn at 5,881 cedi. This was the minimum income tax threshold for employees in the formal income tax system at the time that data was collected. Rather inexplicably, this same amount was used for the MTS minimum turnover threshold – meaning that *de facto*, the minimum tax threshold for informal sector operators, when converted to income, is three times lower than it is for formal sector workers. However, for the purpose of this section we assume that the intention here may have been to apply the 5,881 cedi profit threshold to the MTS. Consequently,

in Figure 13 we only show firms whose predicted profits – based on their reported turnover – are above that minimum threshold.

As expected, we find no firms with predicted profits underneath the threshold – these have been excluded. However, we do find a large number of firms with actual profits beneath the threshold who would still be taxed under this arrangement, because their predicted profits (though not their actual profits) are above the threshold. In fact, in this simulation, only about *half* of the firms that should be exempted from taxation, based on the minimum threshold and their actual profit, are exempted when predicted profits are being used. Consequently, the effectiveness of this threshold in protecting low-income operators is vastly undermined through the imprecision of turnover as the main predictor of profit.

⁹ Predicted profits are estimated by simply multiplying the median profit rate by reported turnover.

Figure 12. Share of firms with observed and predicted profits above Ghana's STR threshold (2025 prices)



Source: Own calculations from the ISES. Notes: Stratified population weights applied (inclusive of interview refusals and unavailable businesses). Sample restricted to firms with predicted profits above the minimum tax threshold.

Notably, a simple simulation suggests that this dynamic is not unique to Ghana but is a more generalizable feature of how the imprecision of turnover-based estimates of taxable profits interact with thresholds set near the bottom of the profit and turnover distribution. For the reasons discussed above, the imprecision of turnover is heightened here and, hence, so is its practical implication. Across the countries for which we have data, we used reported profit data to calculate a minimum tax threshold that would exempt the bottom 10 per cent of firms. We then simulated how many of these firms would actually be excluded – or taxed – if a turnover-based proxy was applied to enforce that minimum threshold. Table 2 summarizes these results.

It shows that, while the proportion of total firms misclassified is relatively low, this is a feature of the fact that only 10 per cent of firms were meant to be classified as “exempt”. If we focus on the proportion of the firms that are meant to be classified as exempt based on their reported profit, we find that a substantial proportion are taxed based on their reported turnover, ranging from 23 per cent of firms in Iraq to 100 per cent of exemption-eligible firms in Iraq. Consequently, the effectiveness of minimum thresholds to protect low-income earners from over-taxation through STRs is substantially undermined by the imprecision of turnover as a proxy for taxable income.

Table 2. Simulated minimum thresholds, by country

Country	Simulated exemption threshold	Firms under threshold wrongly taxed (%)	Total firms misclassified (%)
Bangladesh	60,000	38.2	8.4
Congo, Dem. Rep.	240,000	64.4	8.4
Ghana	1,200	58.7	8.8
Indonesia	8,400,000	56.2	7.1
Iraq	4,200	22.8	6.4
Lao PDR	3,600,000	60.7	9.5
Mozambique	4,800	31.3	8.5
Nepal	60,000	61.2	9.2
Peru	1,560	48.2	5.9
Sudan	780	100.0	10.3

6. Discussion and Conclusion

Identifying tax liabilities in the informal sector is a perennial challenge. Revenue authorities do not have access to information on turnover or profit and rely instead on measures of self-reported (often daily) turnover or sales. In addition to concerns about the reliability of self-reporting, revenue authorities typically have no data on how profit rates differ across sub-groups of informal sector activities. As a result, authorities are forced to make relatively strong assumptions about how well turnover proxies for taxable profits or incomes. Even as revenue authorities intensify attempts to find digital solutions to improve the measurement of turnover in the informal sector, there is still a surprising lack of evidence on whether turnover is a reliable measure of taxable profits.

This paper offers the first detailed empirical examination of the relationship between turnover and profit in the informal sector. The results suggest that profit rates are highly heterogeneous, meaning that turnover is a very imprecise proxy for profits. We also show that, while there are important sector differences in profit rates, these are less systematic than commonly assumed, with more variation existing within sectors than between them. Notably, our results also suggest that profit is relatively inelastic ($|E|=0.69$) to turnover, meaning that profit rates are commonly higher on the lower end of the income distribution. This could be due to the low proportion of fixed costs in the informal sector as well as inefficiencies (limited marketing or logistical expertise, uneven market power, constraining regulations and enforcement, or supply chain constraints) inherent in informal sector activities. Notably, it could also be a factor of an improved ability to estimate turnover or profit as profits increase. This inelasticity manifests itself in highly variable (both vertically and horizontally) and largely unpredictable profit rates across activities and turnover levels. The general conclusion from this analysis is that turnover, while broadly correlated with profits, is not likely to be a reliable proxy for profit or income in any of the 10 country datasets that were included in the analysis.

Furthermore, we have shown that, even when presumptive tax regimes are implemented efficiently (i.e. assuming full compliance), there is still some risk of horizontal inequality between, inter alia, industry sectors. Across the country datasets that were included in the analysis, the share of turnover that is retained as profit varied substantially between sub-sectors. Even after controlling for firm characteristics and

turnover levels, retail activities were found to have significantly lower profit rates. While gender effects show heterogeneous patterns across different countries, sectoral effects will lead to gendered distributions of real tax rates and there is still a risk of taxing women at a higher rate in contexts (e.g. Bangladesh) where women are concentrated in specific sub-sectors of the informal sector. Overall, the findings do not suggest that there is a one-size-fits-all sectoral ratio that could fix the imprecision of turnover as an indicator of profit: variation between sectors is difficult to predict and still dwarfed by variation within sectors. Instead, sector-specific presumptive tax designs would need finely disaggregated data and careful calibrations to country contexts.

We have shown throughout the paper that many of the common challenges associated with presumptive tax regimes are, to a substantial extent, a logical outcome of the nature of their simplified design and the features of the relationship between profit and turnover. The fact that the imprecision of this proxy leads to under- or over-taxation (by more than a third) for the majority of firms – and that it undermines the effectiveness of minimum thresholds that are meant to avoid the taxation of people in poverty – should give us serious pause. At the same time, while profit levels are clearly correlated with turnover levels, profit rates are not consistent across the turnover distribution. Thus, the correlation between turnover and profit is not strong enough to offset the prevalence and distribution of high turnover and low profit activities in the informal sector. In the Ghana example, this unpredictability resulted in imputed tax rates that were uneven and partially regressive – a finding that likely describes presumptive tax regimes in many countries.

Where do we go from here? Our analysis certainly highlights that the problems with turnover are substantial and are likely already generating large inequities in practice. Consequently, there is an urgent need for innovation. And yet it is not surprising that revenue authorities continue to rely on self-reported turnover as the main indicator of taxable income. There is, frankly, an absence of alternative proxies. Using observable features such as square footage or location or imposing fixed fees as alternatives to turnover percentages do not present attractive alternatives. The obvious question from a policy perspective then is whether turnover-based systems can be saved from their shortcomings: whether the design features of simplified tax regimes can be adapted to account for the heterogeneity and variability of profit rates. We draw four conclusions for policy makers.

1. Sectoral rate variation

One of the most commonly discussed design adjustments for STRs involve sectoral rate variation. Our analysis suggests that sectoral approaches may have some promise in improving the power of turnover to predict profits. However, it also found substantial heterogeneity, both between sector averages across contexts and within sectors. Consequently, such an approach would require a robust evidence base to establish credible sectoral averages and would still need provisions to address the remaining heterogeneity. In addition, there is likely to be a loss of “simplicity” in both the design and administration of sector-differentiated tax rates. Still, we recommend that revenue authorities aim to gather data on profit rates within key sectors within their country contexts and to explore the implications of systems currently in use. There is clearly scope to experiment with more variation in sectorally specific models, if done in a data-driven way. At the same time, retail operators trading in perishable goods (particularly food and agricultural products) are one of the most consistently over-taxed sectors in our data. Often having relatively lower profit margins, they also make up substantial sections of informal sector traders in many countries. Therefore, adjusting the regime in this sub-sector should be given priority.

2. Minimum thresholds

Our analysis has suggested that revenue authorities can use minimum turnover thresholds to avoid some of the negative equity implications of STRs. Turnover estimates could be used to align thresholds more closely with, for example, the minimum thresholds in respective personal income tax regimes. The evidence from the imputed effective tax rates in Ghana suggests that raising the minimum threshold could improve the equity outcomes of the regime. However, problems remain: the low precision of turnover as a proxy means that many firms below the threshold in terms of real income would still be drawn into the tax system. This could be avoided most effectively by raising the minimum threshold further, to account for a certain amount of precision error. In light of the extent to which the low precision of turnover undermines the ability of minimum thresholds to prevent the over-taxation of informal sector operators with very low incomes, this should represent a high priority in updates of STR designs.

3. Progressivity

As we have shown here, flat turnover rates are not in themselves likely to give rise to progressive regimes. If vertical equity (progressivity) in tax burdens is taken seriously by revenue authorities, then careful attention to minimum thresholds, payment schedules (both lump sum and fixed rates) and profit margins should be the priority. Given the challenges with threshold precision, raising rates for some turnover categories may still increase rates for some survivalist and low-profit activities. Consequently, erring on the side of setting minimum thresholds too high is likely to be a more effective way of improving progressivity. If rate differentiation is the preferred strategy, then increasing tax obligations at the very top (i.e. the top decile) of the turnover distribution only is likely to be most effective, both from a revenue and an equity perspective.

4. Data

More broadly, an obvious alternative for turnover as a proxy is not in sight. We recognize the unlikelihood of revenue authorities abandoning turnover-based STRs in the absence of a credible alternative. As we have shown here, recognizing the imprecision of turnover and building that into policy analysis could allow the designers of these regimes to make allowances for error, especially with a view to protecting very low-income operators. At the same time, better methods of estimating real incomes or profits are sorely needed and should be an area of substantial activity and investment by revenue authorities, researchers and development partners alike. Some of this can be done with already available data, but much will require the collection of new data, both by researchers and revenue authorities. There has been some optimism in recent years that the increasing digitalization of various aspects of economic life – such as the increasing adoption of mobile money payments – will generate better and more easily accessible proxies for income or profit. We see this potential but also urge caution. Until we have a precise understanding of the actual relationships between profits and turnover among informal firms, the usage of new forms of data risks grafting one imprecise proxy on another. Instead, data collection needs to focus on the lived economic realities of informal firms at a granular level, generating better data on real profits and real turnovers. Without a better sense of what we are generating a proxy for, we are at risk of generating more and more remote approximations.

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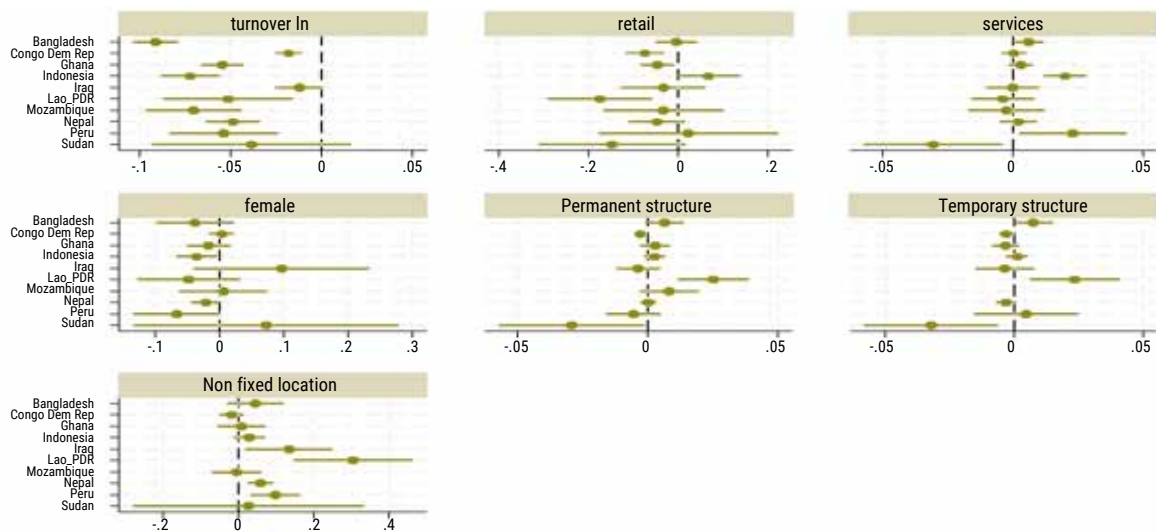
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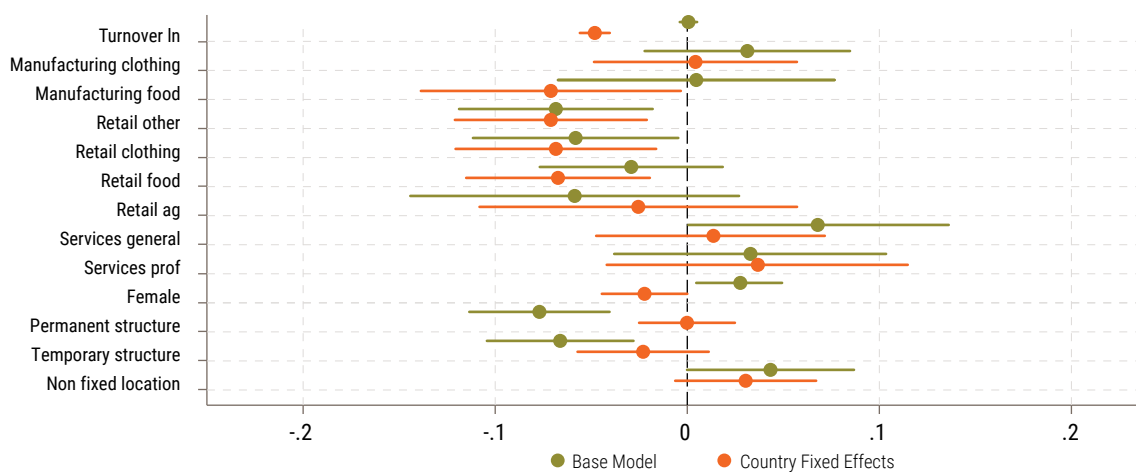
Appendix

Figure A.1 Correlates (OLS) of the profit-to-turnover ratio, by country



Source: Own calculations from the World Bank Informal Sector Enterprise Surveys. Notes: Reference categories: Manufacturing, Males, Household-based businesses. Stratified population weights applied (inclusive of interview refusals and unavailable businesses).

Figure A.2 Correlates (OLS) of the profit-to-turnover ratio with sub-sector disaggregation



Source: Own calculations from the World Bank Informal Sector Enterprise Surveys. Notes: Reference categories: Manufacturing, Males, Household-based businesses. Stratified population weights applied (inclusive of interview refusals and unavailable businesses).



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