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Horizontal Equity of Taxation: Citizen Beliefs and Policy Preferences*

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Abstract

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1 Introduction

Tax inequity hinders tax collection and weakens the fiscal contract between citizens and the state. Historically, taxes perceived as arbitrary or unfair have contributed to political instability, protests, and revolts in contexts as varied as early modern France (Davoine et al., 2025), colonial Nigeria (Afolabi, 2022), and the mid-20th-century Soviet Union (Keen and Slemrod, 2021). A well known recent example is Warren Buffett's observation that he faced a lower tax rate than his secretary. While anecdotal, it reflects a pervasive feature of tax systems: income that is closely held and controlled by its owners—subject to limited third-party reporting and greater tax planning opportunities-often faces lower effective taxation than wages. This disparity spans the income distribution, from self-employed individuals who can underreport income or deduct personal consumption as business expenses (Leite, 2024), to large firm owners who structure income to minimize or defer taxes and achieve effective tax rates below the population average (Bach et al., 2023; Bruil et al., 2025).

Taxing closely held income poses a challenge globally, driven less by preferential treatment and lax enforcement than by structural difficulties in curbing evasion for this type of income. Studies from around the world consistently show that 50 to 75 percent of income from self-employment goes undeclared in income taxes; in contrast, the evasion rate for salaried employees is typically below 10 percent, owing to third-party reporting and employer withholding. As a result, two individuals with identical earned incomes - one self-employed and one salaried - might pay very different amounts in taxes, generating a stark case of horizontal inequity. While the challenge is general, the problem is acute in developing countries where the self-employed constitute a large share of the labor force, including in the top decile where they represent almost half of all workers (Jensen, 2022).

Accordingly, horizontal inequity in income taxation is a salient concern for policymakers, as underscored by the Indian Finance Minister in 2018:

> *"Income tax data analysis suggests that a major portion of personal income-tax collection comes from the salaried class. Perceptions of fairness suffer when the employee class is forced to contribute disproportionately to income taxes while the class of self-employed gets away with paying minimal taxes."*

How large is tax inequity between self-employed workers and employees in practice? How do citizens perceive this disparity? This paper makes two contributions. First, we build tax simulation models for a set of developing countries to quantify horizontal inequities arising from differences in employment structure and tax evasion. We document large horizontal disparities: a self-employed worker in the top income decile pays 6 percentage points less in taxes than an otherwise comparable employee (36% less in relative terms). This gap

is comparable in magnitude to vertical differences in these systems, measured as the tax burden gap between top-decile and median workers. We also document a sharp equity trade-off: a budget-neutral reform that expands the income-tax while reducing consumption taxes improves vertical equity but worsens horizontal equity by a similar magnitude.

Second, we implement two large-scale information experiments—an in-person survey in Pakistan and an online survey spanning five additional developing countries. Baseline responses reveal widespread concern about horizontal tax inequity. Providing randomized information about its true magnitude further increases stated concern, yet has no detectable effect on policy preferences, including the choice between income and consumption taxation.

To quantify horizontal inequities between self-employed individuals and employees, we build tax microsimulation models using household surveys from 29 developing countries. The data distinguish employment types and measure household consumption, allowing us to assess tax burdens across workers. The models incorporate key features of personal income taxes (exemptions, rate schedules, deductions) and value-added taxes (differentiated rates and purchases from the informal sector). Combined with estimates of evasion by employment type, we compute household effective tax rates as a share of income.

Our tax simulators focus on personal income and consumption taxes for two reasons. First, these are the main revenue sources in most countries. Second, they illustrate a central equity trade-off in the tax mix. Schematically, consider a two-by-two matrix in which individuals are rich or poor and either salaried or self-employed. In many developing countries, only the rich pay income taxes, but rich self-employed individuals can partly evade them while employees cannot. By contrast, consumption taxes apply broadly and can be similarly avoided by both groups through informal purchases. Raising income taxes improves vertical equity by increasing the tax burden on the rich, but worsens horizontal inequity between self-employed and employees. Increasing consumption taxes has the opposite effect: it reduces vertical equity but leaves horizontal equity largely unchanged. A revenue-neutral shift between the two thus improves one dimension of equity at the expense of the other.

Mirroring the two-by-two matrix, we define the "rich" as individuals in the top income decile. Consistent with this definition, income tax liabilities become meaningful only around the 90th percentile in many countries, as over two-thirds of individuals are legally exempt from PIT on average across developing countries. We measure horizontal inequity as the gap in effective tax rates between rich employees and rich self-employed, and vertical inequity as the gap between top-decile workers and the median worker. Both measures are normalized by the (income-weighted) average effective tax rate in each country, so they are expressed as percentages of the economy-wide tax burden.

We present four descriptive results. First, self-employed workers account for 44% of

top-decile earners on average. Unlike in high-income countries—where this share is closer to 10%—self-employment is common among the well-off in developing countries, making horizontal tax inequity a potentially first-order issue. Second, the consumption patterns of self-employed and employees in the top decile are comparable, such that consumption taxes should have similar incidence on these two groups and thus be horizontally equitable.

Third, we document substantial horizontal inequity at the top of the income distribution. Using plausible evasion differentials across worker types from the literature, we estimate that the ETR gap between employees and the self-employed in the top decile amounts to about 70% of countries' total ETR (a 6-8 percentage points gap in tax rates). This magnitude is comparable to the vertical equity achieved in these countries: the average tax differential between top- and median-decile households reaches 90% of countries' total ETR.

Fourth, we study the equity effects of expanding income taxes while curbing consumption taxes - a reform often prescribed to improve tax equity (Inchauste et al., 2025; Nguyen et al., 2022; Rodriguez et al., 2023; Lara Ibarra et al., 2021). A budget neutral increase in income taxes, offset by lower consumption taxes, worsens horizontal equity by about as much as it improves vertical equity. This trade-off is not mechanical but reflects the joint distribution of employment, consumption, and limited enforcement over self-employment income. These results show that horizontal and vertical equity are tightly linked, despite typically being studied as separate design principles (Stiglitz, 1982). We emphasize that these results are positive (descriptive) rather than normative: they provide factual insights into reform options for policymakers who are concerned about horizontal inequity, but do not provide a welfare characterization of the equity trade-off.

Our simulations show that horizontal inequity is quantitatively important, creating difficult trade-offs for tax design. But whether such inequities are addressed may also depend on citizens' awareness and perceptions. How salient are these disparities, what do citizens believe drives them, and how do these beliefs shape preferences over income versus consumption taxes? Our second contribution is to provide novel evidence on citizens' beliefs about horizontal inequity and their preferences over taxing self-employed workers versus employees.

To this end, we implement two complementary randomized information experiments in large middle-income countries with high rates of self-employment at the top of the income distribution. (i) An in-person survey of 2,600 urban workers in Pakistan, about half self-employed and half employees, and (ii) an online survey experiment across five countries with over 15,000 respondents (Colombia, India, Indonesia, Nigeria, Philippines). Our sampling strategy ensures that the in-person sample is representative of middle and upper-class households in Pakistan, many of whom are likely to be liable for the PIT. The sample in the online survey is broadly representative of the population with internet access in these countries.

In Pakistan, survey responses at baseline reveal that the majority of both self-employed and employee respondents believe that governments have much stronger ability to enforce PIT on employees than on self-employed, and that the self-employed evade more of their PIT obligations. These views are consistent with the reality of PIT enforcement. The vast majority of respondents also think that differences in taxes paid between employees and self-employed who otherwise have the same income is not justifiable, and is both concerning and unfair. These beliefs are similar among employee and self-employed at baseline, suggesting a general societal concern over horizontal inequity.

Our survey contains a randomized information treatment, where some respondents were provided information based on administrative data from Pakistan which shows that employees pay nearly four times as much tax as self-employed with the same income level (Waseem, 2020). We find that random exposure to this information increases citizens' concern about horizontal inequity, but has no significant impact on individuals' policy preferences for consumption taxes over personal income tax, even though the former is more horizontally equitable.

We explore pre-specified mechanisms to understand the apparent disconnect between respondents' equity concerns and their tax policy preferences. The mechanism which receives most support in the data is that the treatment effects on equity concerns are concentrated among respondents whose baseline beliefs are inconsistent with the policy trade-off. Specifically, the effects are strongest among respondents who believe the government *can* substantially reduce self-employed tax evasion. For an individual to perceive a trade-off between direct and indirect taxes, they must believe that enforcement on the self-employed is structurally limited. Our results suggest that the treatment did not shift policy preferences because those who did update their equity concerns were precisely the respondents who did not hold these prerequisite enforcement beliefs.

Finally, the main experimental results on horizontal equity concerns and policy preferences replicate closely in a multi-country online survey experiment, implemented in Colombia, India, Indonesia, Nigeria and the Philippines. We created country-specific information content on relative tax contributions of self-employed and employees based on information from labor force surveys and tax publications, and designed to be conceptually consistent with the information provided in Pakistan. Despite the different types of countries studied, we find similar experimental results to Pakistan: highlighting the gap in income tax contributions between self-employed and employees causes people to raise their concerns about horizontal inequity, but does not impact preferences for direct versus indirect taxes.

We conclude by discussing how our results can shed light on an important current political economy challenge faced by governments around the world: despite rising inequality and

pressing revenue needs, governments persistently struggle to broaden their income tax base. Our results suggest that in order to be politically feasible and socially viable, base broadening reforms must be accompanied by credible improvements in enforcement capacity.

Related literature This paper relates to the literature on equity and taxation. While a large body of work studies preferences for vertical equity (Stantcheva, 2021; Kuziemko et al., 2015; Karadja et al., 2017; Cruces et al., 2013; Hoy and Mager, 2021; Hoy, 2025), less attention has been paid to horizontal equity. Existing contributions study horizontal equity from different angles: Stantcheva and Saez (2016) incorporate it into generalized social welfare weights; Hvidberg et al. (2023) study perceptions of inequality within reference groups; Eldrup (2025) show that horizontal inequities between taxable and untaxable workers can rationalize income tax exemptions; and Best et al. (2025) document how horizontal inequities affect property tax compliance in Brazil. We complement this literature by focusing on a salient and widespread dimension of horizontal inequity—differences in taxation between the self-employed and employees—particularly relevant in developing countries. We provide novel evidence on citizens' perceptions of horizontal inequity and how they trade off horizontal versus vertical equity in their tax preferences.

Our work also relates to the literature on the optimal tax mix between direct and indirect taxation. A central result in public finance - the Atkinson–Stiglitz theorem - shows that under some conditions, redistribution should be implemented only through the PIT, leaving no distributional role for other tax instruments, such as indirect consumption taxes (Atkinson and Stiglitz, 1976). Yet with enforcement constraints, indirect taxes may be justified on revenue and distributional grounds (Huang and Rios, 2016). This literature, however, evaluates redistribution only through the lens of vertical equity. Related political economy theories that seek to explain the tax mix also emphasize differences between direct and indirect taxes in terms of vertical redistribution (for reviews, see Kiser and Karceski, 2017; Martin and Prasad, 2014).[1] We show that accounting for horizontal equity implies that reforms to direct and indirect taxes have joint horizontal and vertical effects, helping explain how governments balance equity trade-offs in the tax mix.

Our paper builds on studies of income tax evasion among the self-employed and employees. Extending the Allingham and Sandmo (1972) model, Kleven et al. (2011b) show that compliance depends on whether income is third-party reported, with much higher compliance for such income. Kleven et al. (2016) provide a structural foundation for the role of third-party reporting, based on an agency model, while Brockmeyer and Hernandez (2022) and

[1] An alternative political economy argument is that direct and indirect taxes differ in their electoral costs (Bracco et al., 2019), partly due to salience (Chetty et al., 2009).

Garriga and Tortarolo (2024) show that third-party withholding further raises compliance.

Across countries, studies consistently find that the self-employed evade income taxes at much higher rates than employees (see Section 2.3.1). Evidence on the returns on investments (RoI) to auditing the self-employed suggests these higher evasion rates reflect structural enforcement challenges rather than deliberate political or administrative under-enforcement. Several studies find that the cost of self-employed PIT audits far exceed the recovered revenue (Advani et al., 2023; DeBacker et al., 2015; Gemmell and Ratto, 2012), generating an RoI below 1; (Boning et al., 2025) is the exception. Moreover, all of these RoIs are based on audits of randomly sampled taxpayers; RoIs for non random audits - the backbone of actual PIT enforcement - are systematically smaller (Slemrod, 2019; Christiansen, 2024).[2]

The rest of the paper is organized as follows. Section 2 uses micro-simulations to characterizes the extent of horizontal inequity in developing countries and the equity trade-off between direct and indirect taxes. Section 3 provides descriptive and experimental survey results on citizens' perceptions of horizontal equity and policy preferences based on the in-person survey in Pakistan and an online survey in five other countries. Section 4 concludes.

2 Tax Burdens of Self-Employed & Employees

This section builds tax micro-simulation models in 29 low- and middle-income countries. This allows us to simulate the horizontal and vertical equity of income and consumption taxes, and describe the equity trade-off in the choice of the tax mix.

2.1 Micro-Tax Simulations of the VAT and the PIT

We construct detailed micro-tax simulation models from household surveys in 29 developing countries. The data are sourced from representative household surveys of these countries and encompass nearly one million households. The sample covers countries at various income levels across South Asia, Southeastern Europe, Middle East, North and Sub-Saharan Africa, and Latin America and the Caribbean (see Table A.1 for details on sample countries). These countries are included because their household surveys contain both a labor module identifying salaried and self-employed workers and a detailed expenditure module.

We model both the value-added tax (VAT) and the personal income tax (PIT), which on average account for 65% of total tax revenue (Figure A.1b). We take into account the

[2]While no RoI studies exist for PIT enforcement among the self-employed in developing countries, existing evidence suggests that the return on operational audits is likely well below one (see Section 2.3.1).

main features of these two taxes: for the PIT, this includes the income exemption threshold, the marginal tax rates, and standard deductions (e.g., social security contributions and professional expenses); for the VAT, this includes differentiated commodity tax rates (e.g., reduced rates on food items) and the de facto exemption of informal sector consumption (proxied by place of purchase), as in Bachas et al. (2023).[3]

We highlight key tax features relevant to our analysis. Top PIT marginal tax rates are broadly similar (around 35 percent), though slightly higher in poorer countries (Figure A.2a). The PIT gross entry threshold—the de jure income level at which taxpayers begin to owe PIT—is located around the 70th percentile in the median country (Figure A.2b).[4] In the median country, only the richest 15 percent of the population is de jure required to pay more than 5 percent of income in PIT (Figure A.2d).

VAT systems show limited variation in standard rates (16 percent on average, with a 4 percentage-point interquartile range, Table A.1), and most countries apply reduced or zero rates on some food items. The main differences relate to informality: poorer countries, with larger informal sectors, have lower effective VAT rates and more progressivity, as poor households rely on informal purchases while rich households consume from the formal sector.[5]

Household surveys have well-known limitations for tax analysis, which we seek to mitigate. First, since income and consumption tax payments are not directly reported we simulate them based on tax rules. Second, income is sometimes missing in our surveys or misreported, so we proxy household disposable income using expenditure and reconstruct pre-tax income by adding (simulated) income tax payments and income-dependent savings rates using the Findex data (World Bank, 2021). For households with two adults, we assign half of reconstructed pre-tax income to each. Third, because survey aggregates fall short of national accounts, we scale up the full distribution to align estimated median incomes with that in the World Inequality Database (WID, 2024) (for details see Appendix A).

[3]While this analysis approximates the de facto incidence of the two main tax instruments across countries, it does not capture transfers or other taxes such as property, payroll, tariffs, or social security contributions.

[4]Most countries tax only a minority of households, but some seek to tax large segments of the population. Our results differ from Jensen (2022) due to methodological choices and samples. We construct proxy measures of income using household expenditure and scale expenditure to match national accounts, while Jensen (2022) uses unscaled individual income. Moreover, we apply individual statutory deductions in addition to the common threshold. Finally, our sample contains fewer Asian countries and fewer countries at higher GDP per capita. These methodological differences lower the position of our PIT entry threshold in the distribution relative to the exemption thresholds in Jensen (2022).

[5]Figure A.4 shows substantial heterogeneity in informal consumption patterns across development levels, ranging from almost 80% of aggregate income in low-income countries such as Burundi to roughly 10% in upper-income countries such as Chile. Consequently, the gap between statutory and (income-weighted) average VAT effective tax rates is larger in countries with high informality levels (see Figure A.5).

2.2 Stylized Facts: Employment Type & Consumption at the Top

Fact #1: The self-employed make up almost half of the top income decile. Figure 1a shows that the share of self-employed among top decile workers is 44% on average in our sample of developing countries. This share is negatively correlated with a country's GDP per capita, ranging from 60% for low-income countries to 30% for upper-middle income countries, a fact already established (Jensen, 2022). For countries where we conducted surveys (Section 3), the share of self-employment of the top decile is just below one half, with 45% in Colombia, 50% in India, 42% in Indonesia, 48% in Pakistan, and 29% in the Philippines. Figure 1b plots the self-employed share of the workforce only for individuals with income above the PIT entry threshold, showing that the share of self-employment is at 52% on average.

Fact #2: Within the top income decile, the consumption patterns of self-employed and employees are similar. Conditional on income, employment type is not correlated with consumption behavior for top income decile households. Figure 2a illustrates this for informal consumption, showing similar spending shares across self-employed and employees in most countries. Since the taxable share of consumption is comparable, the incidence of indirect taxes should be as well. Our micro-simulations also account for differentiated consumption tax rates, such as reduced rates on necessities. Figure 2b shows that effective consumption tax rates are comparable for self-employed individuals and employees at the top of the income distribution. These results suggest that consumption behavior—and thus indirect tax incidence—is driven mainly by income rather than employment status.

2.3 Magnitude of Horizontal Equity, Trade-off with Vertical Equity

These two stylized facts have important equity implications if the self-employed evade more income tax than employees at a given income level. First, their large presence in the top decile—where individuals are liable for PIT—suggests that horizontal inequity may be a first-order concern. Second, governments face an equity trade-off between income and consumption taxation: higher PIT rates may widen horizontal inequities but improve vertical equity by targeting higher-income individuals above the PIT entry threshold. By contrast, higher consumption taxes treat employees and the self-employed equally but are less progressive, as they also burden poorer households.

2.3.1 Estimates of evasion rates of self-employed and employees

Quantifying the extent of horizontal equity and the trade-off with vertical equity requires us to specify the rate at which the self-employed misreport their income, and to what extent

this evasion rate differs between self-employed and employees.

Different methods have been used to estimate the evasion rates for self-employed and employees. The most direct method to measure differences in compliance is through randomized audits of tax returns, which allow comparisons of uncovered PIT evasion between self-employed individuals and employees. In the United States, IRS (2022) found a misreporting rate of just 1 percent for income subject to substantial information reporting and withholding (such as wages), compared to 55 percent for income with little or no third-party reporting (including self-employment, such as non-farm proprietor and farm income). Similar patterns emerge elsewhere: in Denmark, Kleven et al. (2011a) estimate an evasion rate of 43 percent for self-employment income versus less than 1 percent for third-party reported income. In the United Kingdom, Advani et al. (2023) report that 47 percent of returns filed by self-assessing taxpayers - those with minimal withholding at source - contain irregularities.

To our knowledge, similar random-audit studies of PIT evasion are not publicly available for developing countries. The roughly 50% uncovered evasion rate among the self-employed in high-income countries can plausibly be viewed as a lower bound for developing countries, given weaker enforcement capacity. By the same logic, however, evasion among employees may be higher in lower-income settings.

Beyond random audits, several studies estimate tax gaps by comparing tax records to survey or other micro-data sources that are assumed not to be affected by tax-motivated misreporting. These studies consistently find much higher evasion among the self-employed than among employees. In South Africa, Dare et al. (2019) estimate evasion rates of 5% for employees and 63% for the self-employed. Similar methods in the Philippines yield rates below 5% for employees and 67% for the self-employed (Quimbo and Javier, 2015). In Mexico and Ghana, employee evasion is estimated at 18% and 6%, respectively (Kumler et al., 2020; Asiedu et al., 2017). Exploiting changes in the personal income tax schedule, Waseem (2020) estimates that in Pakistan at least 70% of self-employed income, but only 1% of wage income, goes unreported.[6] Additional evidence confirms that wage income is generally difficult to evade. In Pakistan, Best (2025) use employer third-party reports to estimate wage evasion of about 5%, while Bergolo et al. (2025) find rates of only 1–3% in Uruguay. Survey evidence from Brazil points to similar levels of noncompliance, with under-the-table payments accounting for roughly 5% of wages (Feinmann et al., 2022).

Despite the differences in methodology, studies conducted in developing countries consistently suggest much larger evasion rates for the self-employed, in the range of 60 to 75%, than

[6]These estimates for the self-employed are broadly consistent with administrative tax-gap estimates for Pakistan, which suggest evasion of 58%; for salaried income, however, the tax-gap approach yields a substantially higher estimate of 18% (FBR, 2022).

for employees, in the range of 5 to 20%. The levels of evasion rates for both self-employed and employees are larger than in high income countries (respectively of the order of 45-50% and 1-5%), but the gap in evasion rates between the two groups is similar. The fact that there is a sizable but comparable gap in evasion rates between self-employed and employees across countries at different levels of development is consistent with the notion that enforcing PIT on the self-employed is structurally more difficult than on employees and not the result of lax enforcement. Findings on the limited returns to audits of self-employed also support this interpretation (see Section 1 for a review of this work).[7]

Based on this review, we adopt a benchmark in which self-employed individuals report 50% of their income, while employees fully report theirs. The 50 percentage points gap in evasion rates falls well within the range of estimates from prior work in developing countries. Our results are robust to different measures of the reporting gap (Table A.4).

2.3.2 Horizontal and vertical equity in actual tax systems

For each country, we simulate effective tax rates (ETRs)—combining income and consumption taxes—across worker types and income groups, holding constant self-employed misreporting rates. We measure horizontal inequity as the ETR gap between top-decile employees and self-employed, and vertical equity as the gap between top-decile and median individuals. To ensure comparability, we normalize both gaps by the income-weighted average ETR, interpreting them as a gap relative to the country's overall tax burden.

Figure 3a plots vertical equity (x-axis) against horizontal inequity (y-axis) for the 29 sample countries. Two findings emerge. First, horizontal inequity is substantial: the ETR gap between top-decile employees and self-employed averages 69% of the economy-wide ETR, comparable in its magnitude to the 89% vertical gap between top- and median-decile individuals. Given an average economy-wide ETR of about 10% across countries, top-decile households pay around 13% of their income in taxes versus 5% for median households. Within the top decile, employees pay about 16% on average versus 10% for the self-employed (Table A.3). Therefore, the horizontal tax gap within the top decile (about 6 percentage points) is of comparable magnitude to the vertical gap between the top and the middle of the income distribution (about 8 percentage points), highlighting that differences in taxation across worker types are nearly as large as differences across income groups.

[7] Taken together, the studies reviewed in Section 1 suggest that the RoI of operational audits in developing countries is likely below one. Evidence from high-income countries already points to modest returns—likely an upper bound given lower administrative capacity in developing countries. Moreover, higher returns often rely on dynamic post-audit effects, which are not found in the only developing-country evidence (VAT audits in Pakistan; Best et al., 2021). Finally, successful audits of the self-employed depend on alternate third-party information (e.g. bank accounts), which is typically more limited in developing countries.

Second, horizontal inequity and vertical equity are positively correlated. As discussed earlier, this reflects in large part the role of the personal income tax: higher PIT rates applied to top incomes simultaneously increase vertical equity and horizontal inequity.

A corollary of the above findings is that expanding the personal income tax should increase vertical equity while worsening horizontal equity. We illustrate this with a fictional reform that shifts the tax mix towards income taxation and away from consumption taxes. Such reforms are frequently advocated by international organizations, given the reliance of developing countries on indirect taxes, considered vertically inequitable (Inchauste et al. (2025); Nguyen et al. (2022); Rodriguez et al. (2023); Lara Ibarra et al. (2021)). Concretely, we model a progressive reform through a proportional increase in marginal PIT rates paid by top-decile households, as to raise 1% of GDP. The reform is implemented under a balanced-budget, with consumption tax rates reduced to offset the additional 1% of GDP collected from PIT.[8] We do not model behavioral responses to the (distributional) changes in taxes.

Figure 3b shows the impact of these budget neutral tax-mix reforms on both equity measures. The arrows indicate the change in our proxy measures of vertical equity and horizontal inequity relative to their baseline levels. Most arrows point North-East such that a budget neutral reweighting of the tax mix towards PIT would indeed raise vertical equity from 89% to 101% of the economy's average ETR, but at the same time increase horizontal inequity from 69% to 86%.[9]

Robustness and Limitations. Three caveats are worth noting. First, our baseline assumes evasion rates of 0% for employees and 50% for the self-employed, implying a uniform 50-percentage-point compliance gap across countries. In practice, evasion rates and compliance gaps likely vary across settings.[10] The true gap may be larger in lower-income countries with weaker enforcement. To assess the relevance of this heterogeneity, we implement a simple imputation exercise using the few direct estimates of self-employment income miss-reporting available for Denmark, Pakistan, the Philippines, South Africa, the United Kingdom, and the United States, reviewed in Section 2.3.1. We regress these estimates on log GDP per capita and use the fitted relationship to predict country-specific miss-reporting

[8] Regarding the required policy changes, raising 1% of GDP through higher PIT on top-decile households requires a 46% increase in income tax rates on average, allowing consumption taxes to fall by 36% This reflects the broader base of consumption taxes relative to income taxes, even after accounting for informality. The PIT entry threshold is kept fixed in these simulations (Details in appendix A.3.2)

[9] Our income measure divides household expenditure by two (unless there is a single adult), which may understate individual income and taxed if earnings are concentrated in one member. Figure A.6 shows that both the level of horizontal inequity and its change after the reform are larger when we do not adjust for household size, although this alternative is an upper-bound.

[10] Table A.4 presents robustness scenarios with narrower and wider compliance gaps. The qualitative results remain robust to alternative assumptions on evasion rates and compliance gaps.

rates for all sample countries. Figure A.7 compares the resulting horizontal inequity and vertical equity proxies with the uniform baseline.[11] Relative to the baseline, horizontal inequity is substantially larger in poorer countries, while vertical equity remains broadly unchanged.

Second, our baseline abstracted from behavioral responses to both consumption and income taxes. These opposite effects might cancel out, yet empirical evidence suggests that behavioral responses to PIT at the top might be particularly strong, and larger than responses to consumption taxes throughout the distribution.[12] In this case, our baseline would constitute a lower bound on the scenario with behavioral responses, since PIT rates would need to rise even further to compensate for the behavioral changes in order to achieve the same revenue target. Compensating for behavioral responses would therefore amplify horizontal inequity to the extent that some top income earners remain compliant.

Third, the quantification of the equity trade-off is descriptive rather than normative: it does not derive from a social welfare function. A welfare characterization would require assigning weights to citizens' valuation of horizontal and vertical equity.

Interpretation Our results show that horizontal tax inequity between employee and self-employed is substantial in developing countries, based on evasion rates from the literature. These evasion patterns also imply a trade-off between horizontal and vertical equity. A revenue-neutral shift in the tax mix from consumption to income taxation enhances vertical equity but comes at the cost of greater horizontal inequity. This trade-off confirms the theoretical insight of Stiglitz (1982) that horizontal and vertical equity are interconnected dimensions of redistribution in a tax system.

We view the horizontal inequity between self-employed individuals and employees - and its trade-off with vertical equity - as reflecting core enforcement constraints in tax design in developing countries, rather than a deliberate choice of lax enforcement. High evasion among the self-employed appears to stem from structural difficulties in taxing income that escapes third-party reporting. This interpretation is supported by the literature (Section 1), including in high enforcement capacity settings such as the US, where self-employed are found to evade at 55%. In other words, fundamentally reducing evasion of self-employed through enforcement reform is not considered a viable, alternative policy option. This notion is consistent with the Indian finance minister's quote (Section 1), and with other policymakers' statements in the context of PIT reform (Jensen, 2022): for example, Cordell Hull, the legislator who led the introduction of the US PIT in 1913, at a time where the self-employed made up a significant share of the workforce, commented that "A lower exemption would

[11] For Pakistan and the Philippines, we use the observed rather than predicted miss-reporting rates.
[12] For recent evidence, see Axelson et al. (2024) and the review of PIT studies in Bachas et al. (2024).

be difficult of enforcement and also would entail so much administrative work as to make it unprofitable (...) a lower exemption than $4,000 would embrace more complicated taxpayers while this bill proposes to collect satisfactorily at the source [i.e on employees]."

Notwithstanding, the adoption of policies to curb horizontal inequity depends not only on its actual magnitude but also on citizens' knowledge and perceptions. If citizens believe that the lower taxes paid by the self-employed reflect lax or politically motivated policies - rather than binding enforcement constraints - they may view such inequity as less acceptable and express weaker support for shifting the tax mix from indirect to direct taxation. This raises two key empirical questions: (i) to what extent are citizens aware of the differential tax burdens borne by self-employed individuals and employees? and (ii) how does awareness of horizontal inequity - and beliefs about its underlying causes - shape citizens' attitudes and policy preferences? To address these questions, we now turn to our information experiments.

3 Citizen Beliefs and Policy Preferences

We conducted two large-scale survey experiments to examine citizens' beliefs about horizontal equity between employees and the self-employed, and to assess how these beliefs shape their policy preferences. The first experiment, carried out in person in Lahore, Pakistan, surveyed over 2,600 upper- and middle-class workers, evenly split between employees and the self-employed. The second experiment, conducted online with over 15,000 respondents representative of internet users in Colombia, India, Indonesia, Nigeria, and the Philippines, aimed to provide external validation for the results of the first experiment.[13]

3.1 Experiment 1: In-person Survey in Pakistan

3.1.1 Setting

The first experiment was conducted in-person with 2,609 individuals in Lahore, Pakistan between May and July 2024. Pakistan provides an informative setting to study horizontal equity in developing countries. Almost half of top-decile earners are self-employed, with a similar share among individuals above the PIT entry threshold (Figures 1a and 1b). The horizontal inequity in ETRs between top-decile self-employed and employees in Pakistan is estimated at 27% of the economy-wide average ETR (Figure 3a).

[13] Although the online experiment was fielded in 2022 and the in-person survey was fielded in 2024, we present the latter as the primary context and interpret the cross-country sample as providing external validation.

3.1.2 Sampling

We recruited potential respondents for the survey from a representative sample of middle and upper class neighborhoods in Lahore. Neighborhoods were selected from a list of 350 neighborhoods used in Khan et al. (2022), a randomized controlled trial which studies the impacts of strengthening property tax compliance. Each neighborhood comprised 100 to 400 contiguous taxable residential or commercial properties across Lahore.[14] We used stratified sampling to select approximately 140 neighborhoods. Neighborhoods were first binned by the share of residential properties; within each bin, those with above-median log average property tax payments in fiscal year 2015 were included in the sampling frame. This selection procedure produces a sample with a high share of middle- and upper-income households, where the main income earner is likely to earn at or above the PIT exemption threshold.

Our goal was to survey the main income earner in randomly selected properties in each neighborhood. To identify potential survey respondents, we selected approximately five random points within each neighborhood. The survey team visited each point and located nearby properties using a systematic skipping rule. If the potential respondent was working—either employed or self-employed—a survey was scheduled at their convenience. Respondents could select either a mobile credit or a voucher for a food delivery service as a participation incentive. Approximately 7,750 potential respondents were identified in the listing exercise. These potential respondents were allocated into control or treatment groups using stratified randomization.[15] 3,702 potential respondents were available when the survey enumerators returned to the property for the full interview, of which 2,707 consented to the survey and 2,609 completed it (46% employee; 54% self-employed).[16]

3.1.3 Experimental Design

We embedded the information experiment within a rich survey that measured respondent attitudes towards self-employment, preferences for horizontal and vertical equity, preferred tax instruments, and beliefs about the government's capacity to enforce taxes.

Background characteristics The survey first collected respondents' demographic characteristics and beliefs about differences between the self-employed and employees. Table B.1 summarizes demographic characteristics for the full sample and by employment type

[14] The list of neighborhoods in Khan et al. (2022) excludes informal settlements at the lower tail of the property value distribution and private housing societies at the upper tail. These properties are typically exempt from property taxation in Lahore.

[15] Randomization was stratified by respondent age, education, and primary income earner status within each survey batch.

[16] Only two percent of respondents stated that they were both an employee and self-employed. These individuals were asked to identify which source of employment provided their primary income.

(self-employed versus employee). Most respondents are male; roughly half have at least a bachelor's degree (more common among employee respondents), and about half report being middle- or high-income.

We then elicited respondents' beliefs about differences in self-employed and employee income and tax payments. We also measured respondents' perceptions of the government - in particular, how much tax revenue they think is wasted and the extent to which the government has the capacity to limit tax evasion by self-employed and employees.

Treatment assignment Half of the respondents were randomly assigned to receive the information treatment, while the remaining half served as the control group. We delivered two informational messages at different points in the survey to the same set of treated respondents.

Message 1: Horizontal inequity in income taxation The first message communicated a salient and easily interpretable measure of horizontal equity in income taxation: the difference in income tax paid by self-employed and employees earning the same income. As discussed in Section 2.3.1, Waseem (2020) finds that employees pay nearly four times more income tax than self-employed individuals with similar incomes. Evidence from Waseem (2020) was used in the robustness exercise presented in Figure A.7, where the estimates form part of the set of direct measures of self-employment income miss-reporting used to calibrate predicted country-specific miss-reporting rates.[17] Figure 4a shows the information presented to respondents.

Outcomes following Message 1 To measure the impact of the first message on beliefs, we asked respondents whether they view tax differences between self-employed and salaried individuals as a serious problem, whether they consider these differences fair or justified, and which principle they see as more important for a fair tax system: equal taxation of individuals with the same income (horizontal equity) or higher tax shares for higher-income individuals (vertical equity). We also included several questions on tax morale drawn from Hoy (2025), including whether respondents agree that it is important for people to pay taxes, and whether respondents believe the act of not paying taxes owed to the government is wrong and punishable.[18]

[17] Pakistan's tax system applies separate statutory schedules to employees and self-employed, with self-employed individuals facing higher rates at every income level. Despite this, the self-employed pay much less tax than employees, making the inequity in income tax paid particularly stark and strongly suggestive of evasion. This feature makes Pakistan an especially useful context for our information treatment: respondents who understand the distinct schedules are likely to perceive the inequity more clearly, which might amplify the treatment's effect on their concerns about and support for addressing horizontal inequity.

[18] Appendix E.1 provides details on all variables used from the in-person survey and Appendix E.2 presents the full in-person survey questionnaire. The outcomes following Message 1 and preceding Message 2 are

Message 2: Horizontal equity in consumption taxation Respondents in the treatment group also received a second informational message on horizontal equity in consumption taxes. Figure 2a shows that consumption patterns of top-decile self-employed individuals and employees are similar across countries, including Pakistan, implying limited horizontal inequity in consumption taxes. We provide this information to respondents as shown in Figure 4b.

Outcomes following Message 1 and Message 2 After respondents in the treatment group received the message, we elicited a set of downstream policy preferences over tax design. We measured respondents' preferred composition of revenue between income and consumption taxes using a stylized budget allocation task in which respondents choose how to raise a fixed amount (PKR 100,000) from PIT and sales tax. We also elicited support for shifting the tax burden toward consumption taxation, for example by asking whether respondents agree that, instead of increasing income taxes on the rich, the sales tax should be raised so that employees and self-employed individuals contribute more evenly.[19] These questions capture both overall tax instrument preferences and the trade-offs respondents are willing to make between different dimensions of equity when evaluating tax policy adjustments.

Randomization balance Table B.2 reports results from a randomization balance check for demographic and pre-treatment survey response variables, including the results of a joint test of statistical significance. Across 18 tests, we find one difference significant at the 10% level and one at the 1% level, consistent with expectations under random assignment. We cannot reject the null hypothesis that the treatment and control groups are statistically similar across all covariates (joint F-test p-value = 0.842).[20]

Pre-registration The primary and secondary hypotheses were pre-registered on the AEA RCT Registry (see Appendix C). In addition, we conducted a blinded ex-ante analysis using the survey data without access to treatment assignments, following the approach outlined in Olken (2015).

3.1.4 Empirical Specification

We estimate the effect of receiving information about horizontal equity in Pakistan by comparing average survey responses between the treatment and control groups. We use the

labeled as "Primary Outcomes after first message" in Appendix E.1.

[19] The outcomes following both Message 1 and Message 2 are labeled as "Primary Outcomes after second message" in Appendix E.1.

[20] All experimental specifications control for the full set of demographic and pre-treatment survey variables reported in Table B.2. Results are robust to omitting these controls (Tables B.3 to B.6).

following specification:

$$y_{is} = \alpha + \beta Information_{is} + \mathbf{X}_{is} + \gamma_s + \varepsilon_{is}, \tag{1}$$

where y_{is} is the outcome of interest for individual i in strata group s; *Information* is an indicator equal to 1 if the respondent is in the treatment group and equal to 0 otherwise; $\mathbf{X}_{is}$ is a vector of controls including demographic variables and pre-treatment survey responses; and γ_s are stratum fixed effects. Standard errors are robust to heteroskedasticity.

In line with our pre-analysis plan, we analyze heterogeneous treatment effects by respondents' employment status (i.e., self-employed or employee) in a sub-sample restricted to all working, university-educated respondents. This group is the most likely subset of respondents to be earning above the income tax exemption threshold. In addition, we examine heterogeneity based on secondary dimensions to explore potential mechanisms underlying our main findings (see Appendix C).

3.1.5 Descriptive Findings

Employment preferences We begin by examining respondents' employment preferences and their perceptions of self-employment relative to salaried work, as these perceptions may influence how individuals interpret tax differences. Figure 5, Panel A shows that over 80 percent of respondents would prefer self-employment over salaried employment within the same occupation (Panel A, Column 1). A similar share believes self-employed workers earn more than employees in the same occupation (Panel A, Column 2), and that the richest 10 percent of workers are primarily self-employed (Panel A, Column 3). In reality, the share of self-employed in the richest 10 percent of workers in Pakistan is only around 50 percent. Far more self-employed respondents than salaried respondents believe effort is the primary reason why self-employed workers are rich (Panel A, Columns 4 and 5). Overall, these patterns are consistent with at least a subset of respondents holding meritocratic beliefs linking income to effort, which may in turn reduce their concerns about inequality (Alesina and Angeletos, 2005; Karadja et al., 2017).

Beliefs about horizontal equity between self-employed and employees Figure 5, Panel B, shows that roughly 75 percent of respondents believe that employees fully comply with their tax obligations (Panel B, Column 3), a view that is slightly more prevalent among respondents who are themselves employees. In contrast, only about one-third of respondents believe that the self-employed fully comply (Panel B, Column 4). This reveals a notable gap in perceptions: fewer than 30 percent of employees consider self-employed individuals fully compliant, whereas nearly 40 percent of the self-employed believe their peers comply.

Almost 60 percent of respondents believe that the government has "a lot of capacity" to prevent employees from evading taxes (Panel B, Column 1), with this view slightly more common among respondents who are themselves employees. By contrast, only about 40 percent of respondents believe the government has substantial capacity to prevent tax evasion among the self-employed (Panel B, Column 2), a perception somewhat more prevalent among self-employed respondents.

We can relate these survey responses to the review of empirical work from earlier on enforcement and evasion by self-employed and employees (Section 2.3.1). If we assume that respondents believe people will fully evade taxes if they are not fully compliant, then the implied evasion rates based on the survey responses are 25 percent for employees and 67 percent for self-employed. These rates are not far from the range of estimates in the literature (5-20% for employees, 60-75% for self-employed). As a result, the implied difference in evasion rates between groups, which is 42 percentage points based on the survey respondents, is not far off from the evasion gap used in the simulations (50 percentage points).

At the same time, respondents understate the difference in government's enforcement capacity for employees versus self-employed. This occurs both because survey respondents underestimate how well government can enforce taxes on employees (40 percent of respondents do not think the government has the resources to stop employee evasion), and because they overestimate how well taxes on self-employed can be enforced (40 percent of respondents believe government has "a lot of capacity" to stop self-employed evasion). Relative to respondents' compressed perception of differential enforcement capacity, the evidence from around the world based on evasion rates and returns to audits indicates that governments are able to limit evasion among employees, but unable to stop evasion among self employed (Section 2.3.1). This suggests that individuals' policy preferences may be shaped by misperceptions about the government's relative ability to enforce taxes across groups.

Perceptions of fairness Figure 5, Panel C shows respondents' views on horizontal tax equity between self-employed workers and salaried employees. About half of respondents in the control group believe that tax differences between individuals with the same income are unjustified, and roughly two-thirds strongly agreed that these differences constitute a serious problem. Most respondents also state that these differences in taxes paid between the self-employed and employees are unfair. The responses to these questions are similar for respondents who are self-employed or employees, which suggests there is a widespread preference for horizontal equity.

3.1.6 Experimental Results

We next present the results from the information experiment. Our theory of change is that the information treatment shifts beliefs about whether the tax system satisfies horizontal equity. Learning that taxpayers with similar incomes face different tax burdens may increase perceptions of unfairness. Changes in perceived fairness may, in turn, affect support for policies that reduce such disparities and, potentially, tax morale by altering the perceived legitimacy of the tax system. We trace this theory of change empirically by estimating treatment effects on perceived fairness, support for policies addressing horizontal equity, preferences over tax instruments, and tax morale.

Because downstream effects are likely to vary across individuals depending on whether they are directly affected by the tax system and their prior beliefs, we also explore heterogeneity by university education (as a proxy for tax liability), as well as across a range of prior beliefs about the tax system.

Perceptions of fairness. We begin by examining the effect of the horizontal equity information treatment on the perceived fairness of the income tax system. Fairness perceptions are measured immediately after respondents receive the first informational message. Table 1, Panel A shows that Message 1 increased respondents' agreement with four fairness-related statements: (i) that differences in taxes paid by the self-employed and employees constitute a serious problem that should be addressed (p-value = 0.008); (ii) that differences in taxes paid is unfair when both self-employed and employees earn the same income (p-value = 0.199); (iii) that, in a scenario comparing a self-employed shop owner and an employee who both earn 100,000 rupees per month, the perceived difference in income taxes paid is unfair (p-value = 0.016); and (iv) that differences in taxes paid is unjustified (p-value = 0.086). These effect sizes range from 6 to 8 percent of the control means, which are somewhat modest compared to other information provision experiments (Haaland et al., 2023). In Column 5, we estimate treatment effects on a standardized index combining the four outcomes and find that Message 1 increases perceptions of unfairness in the income tax system by 0.082 standard deviations (p-value = 0.002).

Table 1, Panels B and C, reports heterogeneous treatment effects by employment status for the full sample of respondents and the sub-sample restricted to university-educated respondents, respectively. We anticipated larger treatment effects for employees than for the self-employed, since employees do not benefit from the inequity, and for university-educated employees in particular, as these individuals are more likely to be liable for income taxes.

The treatment effects are indeed driven primarily by employees. In the sample of university-educated respondents, for example, we find that treated employees are 0.153 stan-

dard deviations more likely to believe the tax system is unfair (Column 5, p-value < 0.01). In contrast, treated self-employed workers do not update their beliefs. The difference between the two treatment coefficients is statistically significant (p-value difference $= 0.042$).

Preferences for addressing horizontal equity. The next step in the theory of change examines how changes in fairness perceptions influence support for policies addressing horizontal inequities. We focus on three related outcomes that together capture how respondents translate fairness concerns into policy preferences: general support for equal treatment of taxpayers with the same income, specific support for aligning the total tax burden of employees and self-employed individuals, and preferences for a moderately progressive tax structure, in which employees pay slightly more than self-employed individuals with the same income and richer households pay slightly more than everyone else, as opposed to much larger differences between groups.

Consistent with shifts in fairness perceptions, the information shared in Messages 1 generates positive but modest effects on these policy preferences. Table 2, Panel A shows that treated respondents are significantly more likely to agree that income and consumption taxes should be structured so that self-employed and employees with the same income pay the same amount in taxes (Column 2, p-value $= 0.028$). The effect size is sizeable corresponding to 19 percent of the control mean. In contrast, the treatment has a positive but modest and not statistically significant effect on agreement with the more general statement that a fair tax system relies on people with the same income paying the same amount in taxes (Column 1). Similarly, the information treatments have limited impact on respondents' preference for a tax system in which employees pay more than self-employed individuals with the same income, so that richer households pay more than everyone else (Column 3).

When combining these outcomes into a standardized index, we find that treated respondents are 0.044 standard deviations overall more likely to support policies to address horizontal equity (p-value $= 0.164$). While these effect sizes are larger in magnitude for employees (Table 2, Panels B and C), we fail to reject the null that the treatment effects are equivalent to those for the self-employed.

Preferences for indirect taxes. Our earlier analysis highlighted a trade-off in tax design: increasing income taxes while reducing consumption taxes can improve vertical equity but may worsen horizontal equity (Section 2.3.2). The information experiment allows us to test whether providing information about horizontal inequity in income taxes (Message 1) and horizontal equity in consumption taxes (Message 2) influences respondents' preferences over these tax instruments. We estimate treatment effects on three related outcomes that reflect this dimension of policy preferences: support for increasing sales taxes to distribute

the total tax burden more evenly across employees and self-employed individuals, preference for sales taxes over income taxes when asked to select a combination of the two, and the belief that the government should primarily rely on sales taxes for revenue.

Table 3 shows negligible treatment effects on any of the individual outcomes (Columns 1 to 3) and the standardized index (Column 4). In the full sample, the confidence interval for the average treatment effect on the standardized index rules out positive effects larger than 0.05 standard deviations. These results indicate that fairness concerns did not meaningfully shift preferences for consumption versus income taxes.

Tax morale. Finally, we examine whether changes in fairness perceptions and policy preferences translate into underlying tax morale. One might expect that highlighting horizontal inequity could reduce tax morale by undermining the perceived legitimacy of the tax system. Table 4 shows that though the treatment increased perceptions of unfairness and shifted support for addressing horizontal equity, it had limited effects on either respondents' beliefs about the importance of paying taxes (Column 1) or on the belief that failing to pay taxes owed is wrong and punishable (Column 2).

Notably, average agreement with the latter statement is substantially lower among self-employed respondents compared to employed respondents in the control group, likely because they perceive they would be most directly subject to potential penalties. The overall treatment effect on a standardized index of tax morale is modest and statistically not significant, both in the full sample (Panel A, Column 3, p-value = 0.423) and when examining heterogenous treatment effects for self-employed and employees (Panels B and C). However, there is some suggestive evidence that the belief that paying taxes is important increased among employees in the treatment group (Panel B, Column 1, p-value = 0.056).

The results reported in this section are robust to removing the demographic and pre-treatment survey controls (Tables B.3 to B.6) and to corrections for multiple hypothesis testing (Tables B.7 to B.10).[21]

Overall, the experimental results indicate that informing respondents about the tax gap between self-employed and salaried employees increases perceptions of unfairness. Information on horizontal *inequity* in income taxes and horizontal *equity* in consumption taxes strengthens support for equitable taxation, but does not change preferences for specific tax policies such as indirect taxes that could potentially address these inequities. These findings align with other studies on information provision, which often show that while information can meaningfully shift beliefs and perceptions - such as those regarding fairness, inequality,

[21] Results are robust to alternative treatments of missing values. In particular, we re-estimate all specifications using missing-value indicators for demographic and pre-treatment controls, with missing observations set to zero and accompanied by a corresponding missing dummy (results available upon request).

or government performance - it typically has limited impact on actual policy preferences or behavior (Kuziemko et al., 2015; Alesina et al., 2018).

3.1.7 Heterogeneous treatment effects

To shed light on the mechanisms underlying the experimental results, we analyze eight pre-specified secondary hypotheses.[22] We find that treatment effects are strongly moderated by baseline beliefs about the government's capacity to enforce income tax compliance among the self-employed.

Table 5 shows that increases in concern about horizontal inequity are concentrated among respondents who believed "the government can do a lot to curb tax evasion among the self-employed" at baseline, both in the full sample (Panel A, Column 1; p-value < 0.01) and among employees (Panel B, Column 1; p-value < 0.01). In contrast, the treatment has no effect among respondents who believe enforcement capacity is limited. The p-values for differences between these groups are 0.074 in the full sample and 0.099 in the employee-only sample.

We corroborate this pattern using a causal forest approach to detect systematic heterogeneity in treatment effects. As shown in Appendix Figure B.1, baseline beliefs about enforcement capacity emerge as the most important predictor of treatment-effect heterogeneity in both samples.[23]

This heterogeneity helps explain why increased fairness concerns did not translate into stronger support for policy reforms such as greater reliance on indirect taxes as seen in Table 3. For concerns about horizontal inequity to shift preferences toward consumption taxes, respondents must recognize that enforcement of income taxes on the self-employed is constrained (see Section 2.3.1). However, the treatment primarily affects respondents who believe enforcement is feasible, for whom strengthening enforcement - rather than changing the tax mix - is the more natural response. When this constraint is not salient, the case for shifting toward consumption taxes is less compelling.

We also find that beliefs about enforcement capacity are uncorrelated with support for the incumbent government.[24] Together, these results point to a central role for enforcement beliefs in shaping how fairness concerns translate into policy preferences.

[22] Appendix C lists all secondary hypotheses. Hypothesis A5.2 was dropped as the relevant survey question was mistakenly asked after treatment, rendering it unsuitable for testing the pre-specified mechanism.

[23] In our experimental design, we did not elicit support for a stand-alone "increase enforcement" policy, as enforcement in practice is a costly and multi-dimensional policy margin that is difficult to adjust (see Section 2.3.1 for further discussion). The experiment is therefore designed to capture how information about horizontal inequity translates into support for tax policy instruments, rather than evaluations of enforcement reforms in isolation.

[24] Correlation results available upon request.

In sum, the results suggest that treated respondents become more concerned about horizontal inequity in the income tax system after receiving the information, but prefer increased enforcement of self-employed income taxation rather than changes to tax policy.

3.1.8 Ruling Out Experimenter Demand Effects

A potential concern with our experimental results is that the observed increase in fairness concerns reflects experimenter demand effects rather than belief updating. Because Message 1 states that employees pay nearly four times more income tax than self-employed workers with the same income, treated respondents might infer that we expect them to view this disparity as unfair. In this subsection, we argue that this concern is unwarranted, as many features of the results cannot be explained by experimenter demand effects.

Heterogeneity by employment status The treatment effect on perceptions of unfairness is driven almost entirely by salaried employees. Table 1, Panel B, shows a treatment effect of 0.129 standard deviations on the unfairness index for employees ($p < 0.01$), compared with 0.041 standard deviations for self-employed respondents, which is statistically indistinguishable from zero. The difference between the two coefficients is significant ($p = 0.091$ in the full sample; $p = 0.042$ in the university-educated subsample in Panel C). If respondents were simply matching their perceptions of our expected answer, self-employed respondents who receive identical informational content and the same implicit normative cue should respond in the same direction. The fact that they do not, and that the treatment effect concentrates precisely in the group whose self-interest aligns with perceiving the disparity as unfair, is consistent with genuine updating about a disparity that employees view as detrimental to themselves. Demand effects would not generate this asymmetry.

Heterogeneity by enforcement-capacity priors The treatment effect on unfairness concerns varies sharply with respondents' pre-existing beliefs about the government's capacity to curb self-employed tax evasion (Table 5). The effect is 0.138 standard deviations ($p < 0.01$) among respondents with "high capacity" priors and is statistically indistinguishable from zero (0.043, $p > 0.1$) among those with "low capacity" priors, with a p-value on the difference of 0.074. A demand-cue story cannot readily explain this pattern: the perceived expectation conveyed by the information is orthogonal to a respondent's prior beliefs about administrative capacity.

Differences across outcomes If respondents were echoing what they perceived as our preferred answers, demand pressures should operate on policy items as well as attitudinal items. The policy outcomes in Table 3 include statements such as "the sales tax should be increased so that employees and self-employed individuals contribute more evenly," which directly aligns with the treatment content. Yet we find no statistically significant treatment

effects on any tax-instrument preference outcome, and the confidence interval on the standardized index rules out positive effects larger than 0.05 standard deviations. This selective pattern, in which fairness perceptions respond while policy preferences do not, is difficult to rationalize with a demand effects explanation.

Consistency across modalities. Finally, the following section shows that we find similar results in an online survey experiment across Colombia, India, Indonesia, Nigeria, and the Philippines, which provides an additional test that is less vulnerable to demand concerns than the in-person survey. Three features of the online setting attenuate demand pressures. First, respondents interact with a self-administered digital interface rather than with a human enumerator, removing the interpersonal context in which demand effects are strongest (de Quidt et al., 2018; Haaland et al., 2023). Second, the information treatment is framed less directly: rather than stating that employees pay four times more tax than self-employed individuals with the same income, it contrasts the self-employee's share of the workforce with their share of personal income tax contributions, providing a more neutral presentation of the same underlying disparity. Third, the pedagogical arm in the online experiment allows us to examine the effect of information on consumption-tax equity in isolation (i.e, without the content currently in Message 1 in the in-person experiment). Despite these differences, the online experiment replicates the core pattern observed in Pakistan: information provision increases perceptions of horizontal inequity, particularly among university-educated employees, while leaving tax preferences unchanged. The consistency across settings, despite differences in mode, framing, and delivery, suggests that the results reflect substantive belief updating rather than features of the in-person intervention.

3.2 Experiment 2: Online survey in five middle-income countries

To assess the external validity of our Pakistan in-person survey experiment, we also conducted a shorter online information experiment with around 15,000 respondents in five additional large middle-income countries, Colombia, India, Indonesia, Nigeria, and the Philippines. These countries were selected in part because we were able to obtain direct estimates of the gap in personal income tax collection between salaried employees and self-employed workers for our information treatment.[25]

[25] Appendix D discusses how we approached the cross-country survey experiment in detail, including why we implemented it online. Appendix E.3 presents all variables used in the online survey, and Appendix E.4 presents the full online survey questionnaire.

3.2.1 Design of Online Survey Experiment

As in the in-person survey in Pakistan, the online survey experiment examined how information about horizontal inequity between employees and the self-employed influences respondents' perceptions of tax fairness and their tax policy preferences. Respondents were randomly assigned to one of three treatment groups or a control group. The first treatment group received information on the share of taxes paid by self-employed individuals relative to their representation in the national workforce (Figure D.1). The second group received a pedagogical treatment explaining how consumption taxes can enhance horizontal equity in the distribution of the tax burden (Figure D.2). The third group received both treatments (Figure D.3).

Although the content of the treatments differs between the online and in-person experiments, these differences are unlikely, ex ante, to affect the underlying mechanism of interest. In both settings, the treatments are designed to convey information about horizontal inequity between salaried employees and the self-employed and to highlight differential opportunities for tax evasion. The online information treatment illustrates horizontal inequity by contrasting employees' share of the workforce with their share of PIT contributions, whereas the in-person experiment does so by comparing the tax payments of an employee and a self-employed individual with the same income. While the latter may provide a more direct illustration of inequity, both approaches communicate the same core disparity. Likewise, both the pedagogical treatment in the online experiment and the second component of the in-person treatment emphasize that employees and the self-employed bear similar consumption tax burdens; the in-person treatment offers additional detail by attributing this similarity to comparable consumption patterns. As a result, despite differences in presentation, the treatments are closely aligned in content and intent, supporting the comparability of treatment effects across settings.[26]

In the online survey experiment, respondents were asked three questions about their views on the fairness of the tax system and three questions about their support for tax policy change after the information treatment. All of these questions were also asked in the in-person survey in Pakistan. In line with our pre-analysis plan, we examine heterogeneity in treatment effects based on whether respondents are employees or self-employed and their education levels. Education levels serve as a proxy for current and future income, and thus for the likelihood of being liable for income tax.

Table D.1 presents randomization balance checks for demographic characteristics and

[26] An advantage of the online design is that it allows us to cleanly separate the two informational components into distinct treatments and to combine them in a joint treatment arm. As discussed in Section 3.2.2, we find little difference in treatment effects across the three treatment groups.

survey type. variables.[27] We compare respondents assigned to any treatment group to respondents assigned to the control group. Panel A indicates some imbalances in observable characteristics in the full sample. Panels B through F show that these imbalances are driven by a subset of countries, particularly Nigeria and the Philippines. The results are largely robust to excluding these countries from the analysis,[28] and we also report treatment effects separately by country.[29] All experimental specifications control for the set of demographic and survey type variables.

Table D.2 reports differences in respondents' characteristics by employment type. Across the five countries, self-employed respondents are more likely to be female, report slightly higher incomes, and hold a university degree. This pattern contrasts with the Pakistan context, where the self-employed are less likely to have completed higher education. Despite this difference, one perception is consistent across settings: employees are more likely than the self-employed to believe that self-employed workers pay less in taxes.

3.2.2 Results of Online Survey Experiment

The results of the online survey experiments are largely consistent with those of the in-person survey. The information treatments do not significantly affect tax policy preferences, but increase concerns about horizontal inequity, primarily among university-educated employees. Table D.3 reports the pooled treatment effects on perceived tax fairness outcomes (Columns 1 through 4) and tax policy preferences (Columns 5 through 8). These variables are constructed analogously to those in the in-person experiment. Results are presented for all respondents (Panel A), for employees and self-employed (Panel B), and for university-educated employees and self-employed (Panel C).[30]

The results indicate that respondents in the treatment group are more likely to view the difference in tax paid by self-employed and employees with the same income as unfair (Column 2). In the full sample, the effect is 0.02 percentage points and statistically significant (p-value $= 0.026$). The effect is larger among employees (0.05 percentage points, p-value $<$ 0.01) and is largest among university-educated employees (0.11 percentage points, p-value < 0.01), indicating pronounced heterogeneity by employment status and education.[31] There

[27] Survey type refers to the (i) ordering of response options for outcome variables (to mitigate potential serial correlation in responses, we randomized the order of answer choices across all outcome variables) and (ii) whether the respondent used a smartphone to complete the survey.

[28] These results are available upon request.

[29] These results are presented in Figure D.4 and Figure D.5.

[30] In the in-person survey, our sampling strategy allowed us to construct a sample with a high share of middle- and upper-income households across the city of Lahore. In contrast, we had less control over sample selection in the online survey. Thus, the subsample of university-educated respondents is particularly informative, as they are the most likely to earn incomes high enough to pay PIT over their careers.

[31] The experimental results are robust across a range of checks, including adjustments for multiple-hypothesis

are no statistically significant effects on any of the other unfairness questions.

The information treatments increase perceptions of unfairness as measured by the attitudes index by 0.04 standard deviations among employees (Panel B, Column 4, p-value = 0.075) and by 0.07 standard deviations among university-educated employees (Panel C, p-value = 0.021). Table D.3, Columns 5 through 8, also show small and statistically insignificant effects on tax policy preferences, with the same questions asked in the in-person survey. The results are similar across countries and treatments (see Figures D.4 and D.5).

Overall, consistent with the in-person experiment, information provision raises perceptions of horizontal inequity. In the in-person survey, this mainly reflects greater concern about the size of the payment gap, while in the online survey it appears as stronger perceptions of unfairness. Yet, these shifts do not translate into changes in tax policy preferences.

4 Conclusion and policy implications

In developing countries, a salient distinction is between employees and the self-employed. We document large horizontal tax inequities between these groups, examine how citizens perceive them, and show that tax reforms involve a trade-off between horizontal and vertical equity. In particular, shifting from consumption to income taxation can increase progressivity while widening tax burdens between employees and self-employed individuals with similar incomes.

We also provide some of the first causal evidence on how citizens' perceptions of horizontal equity shape tax preferences. Randomly informing participants about the extent of horizontal tax inequity in Pakistan increases concern about fairness but does not affect preferences for consumption versus income taxes. This appears to reflect baseline beliefs about the government's ability to curb evasion among the self-employed, which mediate how equity concerns translate into policy preferences. Similar results emerge in online survey experiments conducted in Colombia, India, Indonesia, Nigeria, and the Philippines.

Our results shed light on a central political-economy challenge: the persistent difficulty of expanding income tax bases despite rising inequality and fiscal pressures. Recent reforms in countries such as Brazil and India—which raised income tax thresholds and reduced the number of liable taxpayers—illustrate how fairness concerns and enforcement constraints can limit income tax broadening. In settings with large horizontal inequities, expanding the income tax base may be perceived as worsening fairness if it primarily affects compliant taxpayers and workers whose income is easier to tax. This creates political resistance, as such reforms may undermine the perceived legitimacy of the tax system. More broadly, our findings suggest that horizontal inequity is a key political constraint on income tax capacity.

testing and reweighting to match national population characteristics.

Our findings point to one possible way to alleviate these political and behavioral constraints. When taxpayers perceive horizontal inequities as stemming from weak enforcement, support for tax policy reforms may be limited. The results suggest that addressing distributional concerns may require not only changes to tax schedules, but also visible improvements in enforcement, transparency, and administrative capacity. Technological advances—such as third-party reporting, digital invoicing, and data integration—could help make it more credible that horizontal equity can be strengthened alongside vertical equity.

We focus on the distinction between employees and the self-employed because it is a broadly relevant and consistently measurable classification across countries.[32] Moreover, it is a salient and easily interpretable distinction. At the same time, our insights may extend to other group classifications that generate horizontal inequities in tax systems. For example, cross-border mobility and international tax avoidance opportunities allow some high-income individuals to reduce their tax liabilities relative to otherwise comparable compliant taxpayers. More broadly, technological change and differential tax treatment have widened horizontal inequities between capital and labor income. If left unchecked, such inequities may undermine tax collection and weaken the fiscal contract.

[32]It is also a characteristic that governments can plausibly target through tax policy, unlike sources of inequity tied to immutable individual traits such as height; see Mankiw et al. (2009).

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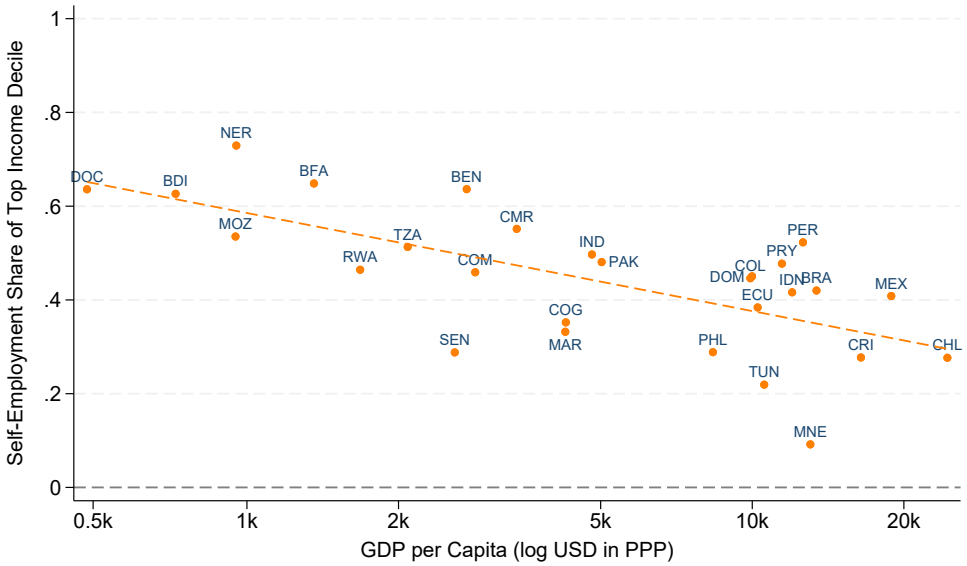
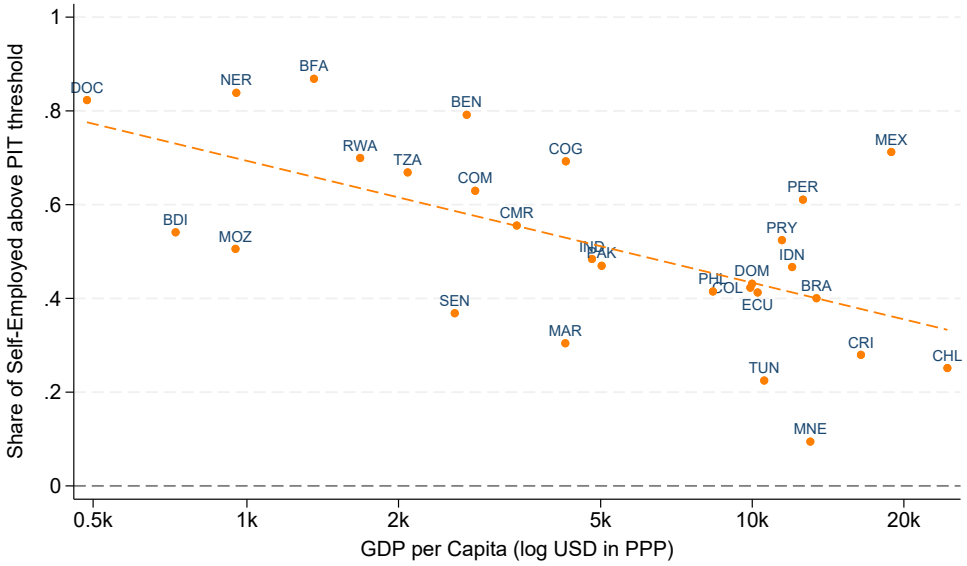
Figures and Tables

Figure 1: Cross Country Patterns for Self-Employment

(a) Share of self-employed workers in the top income decile



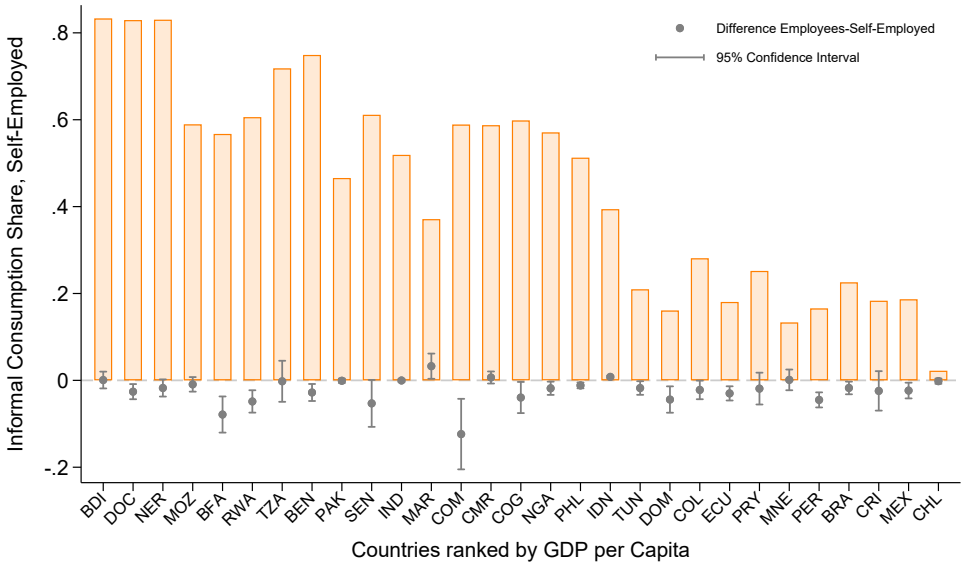
(b) Share of self-employed workers among individuals liable for PIT



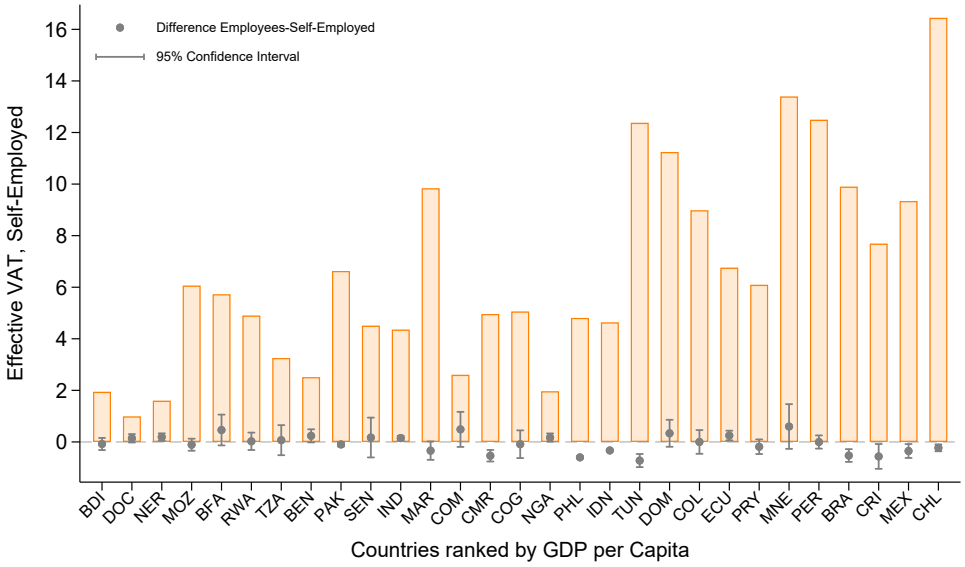
Note: This panel of figures displays cross country patterns for self-employed workers and the PIT. Figure 1a shows the share of workers that are self-employed within the top decile of our simulated imputed income distribution. Figure 1b plots the self-employed share of the workforce only for households with income above the PIT entry threshold. Both outcomes are displayed conditional on (log) country's GDP per capita, measured in USD adjusted by purchasing power parity (PPP).

Figure 2: Consumption and VAT Burden for Self-employed and Employees

(a) Informal consumption patterns of the top income decile



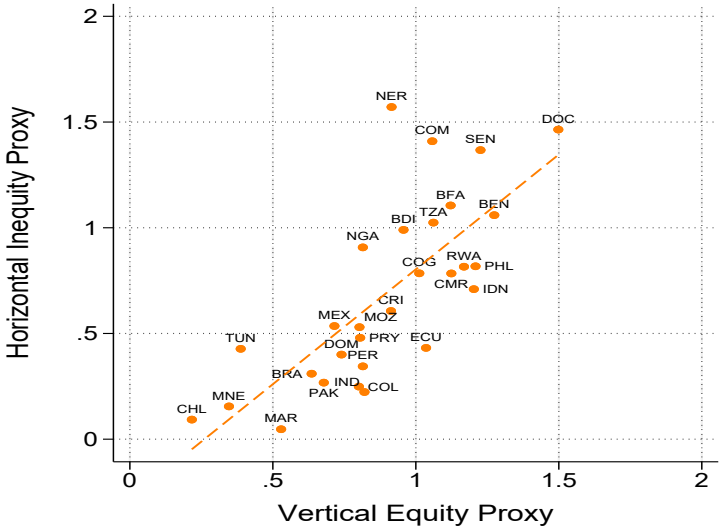
(b) Effective VAT of the top income decile



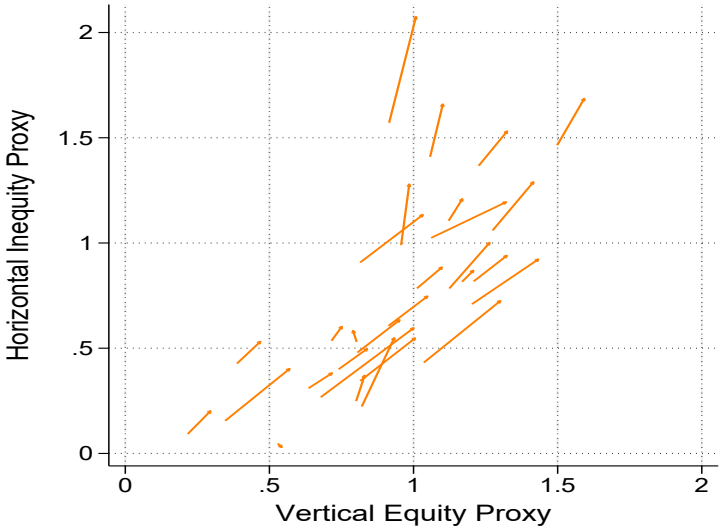
Note: This panel of figures displays cross country patterns on consumption and VAT burden for both self-employees and workers. Figure 2a shows show the consumption share in the informal sector of self-employed headed households, across countries, and the point estimate of the difference in informal consumption shares between self-employed and salaried employees as well as its confidence interval. Figure 2b shows the VAT relative to imputed income for self-employed headed households in the top income decile, across countries. Point estimates is the difference in effective VAT between self-employed and salaried workers along with confidence intervals. In both figures, point estimates are obtained from from the following linear regression for household i in country c, estimated through OLS: $y_{ic} = \alpha + \mathbf{1}(Employee)_{ic} + \mathbf{x}_{ic} + \varepsilon_{ic}$; where y_{ic} is either the share of informal consumption or the effective VAT rate; $\mathbf{1}(Employee)_{ic}$ is a dummy taking the value of 1 for salaried households and 0 for self-employees; $\mathbf{x}_{ic}$ is a vector of controls including household size and a dummy for agricultural main activities. Countries are ranked in the x-axis (lowest to highest, from left to right) by GDP per capita.

Figure 3: Tax Policy Tradeoffs of Horizontal and Vertical Equity

(a) Equity of Actual Tax Systems



(b) Budget Balanced Reform, Raising PIT to Cut VAT



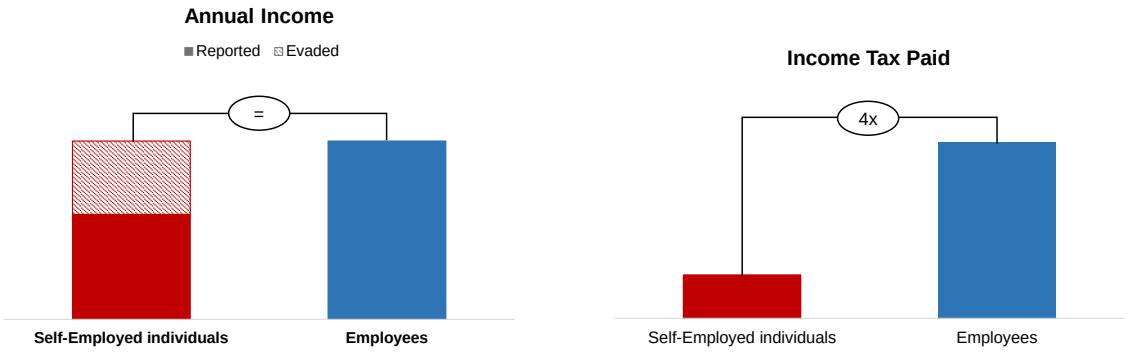
Notes: This panel of figures display the tax policy trade off between horizontal inequity and vertical equity across our sample of countries. Figure 3a plots measures of vertical equity (x-axis) and horizontal inequity (y-axis). We compute the total effective tax rate (ETR), which is the sum of total VAT plus total PIT, relative to pre-tax imputed income, defined at the tax unit level from household expenditure divided by household size (trimmed at two), inclusive of saving rates and tax payments. Horizontal inequity is proxied by the gap in ETR between top decile employees versus top decile self-employed. Vertical equity is proxied by the gap in ETR between top income decile versus median decile workers, self-employed and employees combined. Both differences are then normalized with respect to (income) weighted average ETR in the country. The PIT simulations assume that the self-employed report half of their incomes while employees report all of it. Figure 3b shows the results of a budget neutral reform that raises 1% of GDP from PIT rebated through VAT cut. The increase in PIT revenue arises from changes in the marginal tax rates paid by top-decile households to simulate a progressive tax reform.

Figure 4: In-Person Information Treatment Messages

(a) In-Person Treatment: Message 1

EMPLOYEES pay around **4 TIMES** more **INCOME TAX** on average than **SELF EMPLOYED** individuals who earn the **SAME INCOME.**

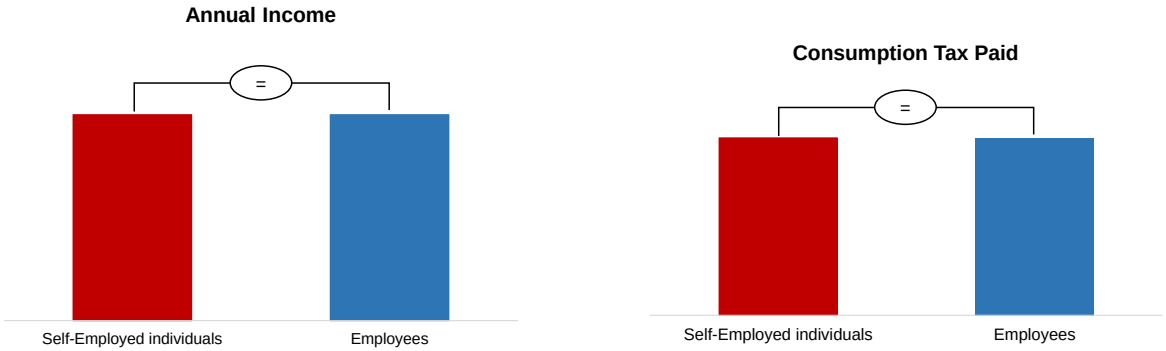
This is because **SELF EMPLOYED** individuals often under report their income to **EVADE TAX**.



(b) In-Person Treatment: Message 2

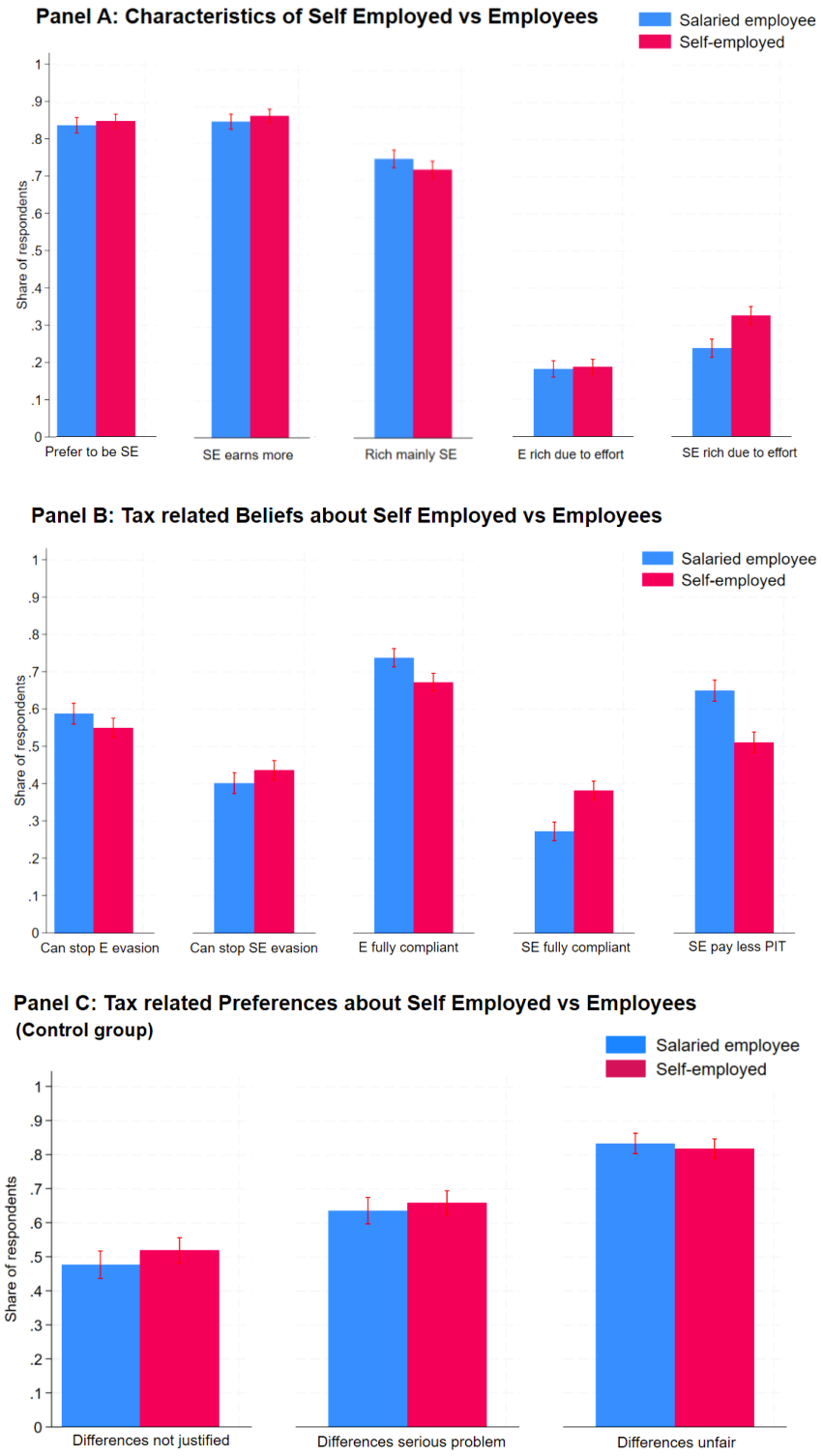
EMPLOYEES pay around the **SAME** amount of **CONSUMPTION TAX** on average as **SELF EMPLOYED** individuals who earn the **SAME INCOME.**

This is because **EMPLOYEES** and **SELF EMPLOYED** individuals who earn the **SAME INCOME** often spend their income on similar goods and services.



Notes: This figure displays the two information messages that were delivered at different points in the survey to the same set of treated respondents in Pakistan. Figure 4a is based on Waseem (2020) and presents information on a measure of horizontal equity in income taxation: the difference in income tax paid by self-employed and employees earning the same income. Figure 4b is based on our micro-simulation results for Pakistan and presents information on a measure of horizontal equity in consumption taxation: the same amount of consumption taxes paid by self-employed and employees earning the same income.

Figure 5: In-Person Survey: Respondents' beliefs and preferences for self-employed and employees, disaggregated by employment status



Note: Panel A reports beliefs about income, effort, and wealth among self-employed and employees. Panel B shows perceptions of tax compliance and government enforcement capacity. Panel C presents views on horizontal tax equity between self-employed and employees in the control group.

Table 1: Treatment Effects on Perceptions of Unfairness (In-Person Survey)

	Gap Concern	Gap Unfair	Gap Unfair Scenario	Gap Unjustified	Unfairness Index
	(1)	(2)	(3)	(4)	(5)
Panel A: Main Effects					
Treatment	0.051***	0.020	0.046**	0.035*	0.082***
	(0.019)	(0.016)	(0.019)	(0.020)	(0.026)
Observations	2093	2089	2089	2093	2093
Control mean	0.671	0.828	0.664	0.527	-0.010
Panel B: Heterogeneity by Employment Status					
Treatment X Self-employed	0.016	0.016	0.049*	-0.009	0.041
	(0.027)	(0.022)	(0.027)	(0.029)	(0.037)
Treatment X Employee	0.089***	0.025	0.042	0.083***	0.129***
	(0.027)	(0.022)	(0.026)	(0.029)	(0.036)
Observations	2093	2089	2089	2093	2093
p(Employee=Self-employed)	0.052	0.764	0.850	0.025	0.091
Control mean: Employee	0.664	0.836	0.690	0.510	-0.004
Control mean: Self-employed	0.677	0.821	0.642	0.542	-0.016
Panel C: Heterogeneity by Employment Status, Working and University Educated					
Treatment X Self-employed	-0.017	-0.023	0.035	0.004	-0.004
	(0.045)	(0.037)	(0.043)	(0.050)	(0.061)
Treatment X Employee	0.115***	0.027	0.054*	0.089**	0.153***
	(0.036)	(0.028)	(0.032)	(0.040)	(0.047)
Observations	902	902	902	902	902
p(Employee=Self-employed)	0.0228	0.286	0.730	0.184	0.0419
Control mean: Employee	0.665	0.857	0.759	0.519	0.054
Control mean: Self-employed	0.725	0.860	0.713	0.528	0.067

Note: This table reports OLS estimates of β in equation (1). The dependent variable is: in column 1, *Gap Concern:* indicator for whether the respondent strongly agrees "In Pakistan, differences in taxes paid by self-employed individuals and salaried employees are a serious problem that needs to be addressed"; in column 2, *Gap Unfair:* indicator for whether the respondent believes differences in taxes paid is unfair when both earn the same income; in column 3, *Gap Unfair Scenario:* indicator for whether the respondent believes a scenario where a self-employed individual earns the same income as an employed individual and pays less taxes is unfair; in column 4, *Gap Unjustified:* indicator for whether the respondent strongly agrees "It is not justified for self-employed individuals and employees to pay different amounts of tax if they have the same income"; in column 5, *Unfairness Index:* average of z-scores of four questions on perceptions of fairness, with higher values indicating higher unfairness concerns. Panels A and B reports results for the full sample. Panel C restricts the sample to working, university-educated respondents. All regressions include stratum fixed effects, demographic controls (gender, head of household status, education, income, employment status) and pre-treatment survey question controls (beliefs and preferences about self-employment, beliefs about tax policies, perceptions of government capacity). See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table 2: Treatment Effects on Perceptions of Horizontal Equity (In-Person Survey)

	Fair Tax System	Same Income Same Tax	Rich Pays More	Equity Index
	(1)	(2)	(3)	(4)
Panel A: Main Effects				
Treatment	0.005	0.041**	0.014	0.044
	(0.018)	(0.019)	(0.022)	(0.031)
Observations	2093	2080	2033	2093
Control mean	0.206	0.220	0.527	-0.038
Panel B: Heterogeneity by Employment Status				
Treatment X Self-employed	0.009	0.018	0.009	0.024
	(0.025)	(0.026)	(0.030)	(0.044)
Treatment X Employee	0.000	0.067**	0.019	0.066
	(0.026)	(0.027)	(0.032)	(0.045)
Observations	2093	2080	2033	2093
p(Employee=Self-employed)	0.810	0.192	0.828	0.502
Control mean: Employee	0.213	0.215	0.516	-0.046
Control mean: Self-employed	0.201	0.225	0.538	-0.032
Panel C: Heterogeneity by Employment Status, Working and University Educated				
Treatment X Self-employed	-0.036	-0.025	-0.041	-0.083
	(0.045)	(0.050)	(0.052)	(0.081)
Treatment X Employee	-0.000	0.051	0.024	0.053
	(0.039)	(0.039)	(0.044)	(0.067)
Observations	902	898	873	902
p(Employee=Self-employed)	0.552	0.231	0.346	0.193
Control mean: Employee	0.278	0.263	0.527	0.055
Control mean: Self-employed	0.242	0.337	0.614	0.137

Note: This table reports OLS estimates of β in equation (1). The dependent variable is: in column 1, *Fair Tax System:* an indicator for whether the respondent believes "To achieve a fair tax system, it is important that people with the SAME income paying the same amount in taxes"; in column 2, *Same Income Same Tax:* an indicator for whether the respondent believes "It is more important that the combination of PIT and sales tax be set so that employees and self-employed individuals with the SAME income pay a similar amount in taxes"; in column 3, *Rich Pays More:* an indicator for whether the respondent selects "Employees pay slightly more tax than Self-employed individuals with the same income, and Richer taxpayers pay slightly more tax than everyone else" as their preferred combination of income and sales tax; and in column 4, *Equity Index:* an unweighted average of the z-scores of three questions on preferences for tax policies to address horizontal inequity, with higher values indicating greater concern for horizontal equity. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects, demographic controls (gender, head of household status, education, income, employment status) and pre-treatment survey question controls (beliefs and preferences about self-employment, beliefs about tax policies, perceptions of government capacity). See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table 3: Treatment Effects on Preferences for Sales Tax (In-Person Survey)

	Increase Sales Tax	Sales Tax Scale	Sales Tax Support	Sales Tax Pref. Index
	(1)	(2)	(3)	(4)
Panel A: Main Effects				
Treatment	0.028	-0.034	-0.013	-0.010
	(0.019)	(0.022)	(0.022)	(0.031)
Observations	2093	2061	2074	2093
Control mean	0.275	0.535	0.503	0.007
Panel B: Heterogeneity by Employment Status				
Treatment X Self-employed	0.003	-0.066**	0.000	-0.041
	(0.027)	(0.030)	(0.030)	(0.043)
Treatment X Employee	0.057**	-0.000	-0.028	0.024
	(0.028)	(0.032)	(0.032)	(0.045)
Observations	2093	2061	2074	2093
p(Employee=Self-employed)	0.166	0.136	0.520	0.299
Control mean: Employee	0.243	0.490	0.508	-0.043
Control mean: Self-employed	0.305	0.575	0.498	0.052
Panel C: Heterogeneity by Employment Status, Working and University Educated				
Treatment X Self-employed	-0.029	-0.081	-0.038	-0.100
	(0.046)	(0.053)	(0.051)	(0.074)
Treatment X Employee	0.036	-0.017	-0.056	-0.021
	(0.037)	(0.045)	(0.044)	(0.064)
Observations	902	888	896	902
p(Employee=Self-employed)	0.268	0.353	0.794	0.421
Control mean: Employee	0.226	0.481	0.496	-0.069
Control mean: Self-employed	0.287	0.563	0.483	0.019

Note: This table reports OLS estimates of β in equation (1). The dependent variable is: in column 1, *Increase Sales tax:* an indicator for whether the respondent strongly agrees with the statement "Instead of raising income taxes on the rich, the sales tax should be increased so that employees and self-employed individuals contribute more evenly"; in column 2, *Sales Tax Scale:* an indicator for whether the respondent prefers sales tax more than income tax when asked to select a combination of the two taxes; in column 3, *Sales Tax Support:* an indicator for whether the respondent believes the government should primarily collect tax from the sales tax; and column 4, *Sales Tax Preference Index:* an unweighted average of the z-scores of three questions on preferences for the sales tax relative to the income tax, with higher values indicating higher sales tax preference. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects, demographic controls (gender, head of household status, education, income, employment status) and pre-treatment survey question controls (beliefs and preferences about self-employment, beliefs about tax policies, perceptions of government capacity). See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table 4: Treatment Effects on Tax Morale (In-Person Survey)

	Taxes Important	Non-Compliance Wrong	Tax Morale Index
	(1)	(2)	(3)
Panel A: Main Effects			
Treatment	0.023	-0.000	0.025
	(0.020)	(0.022)	(0.031)
Observations	2093	2088	2093
Control mean	0.624	0.487	0.007
Panel B: Heterogeneity by Employment Status			
Treatment X Self-employed	-0.005	0.044	0.039
	(0.028)	(0.030)	(0.044)
Treatment X Employee	0.055*	-0.049	0.008
	(0.029)	(0.031)	(0.043)
Observations	2093	2088	2093
p(Employee=Self-employed)	0.137	0.0313	0.618
Control mean: Employee	0.605	0.559	0.058
Control mean: Self-employed	0.641	0.422	-0.040
Panel C: Heterogeneity by Employment Status, Sample = University Educated			
Treatment X Self-employed	-0.072	0.044	-0.031
	(0.047)	(0.052)	(0.077)
Treatment X Employee	-0.006	-0.064	-0.067
	(0.038)	(0.042)	(0.059)
Observations	902	901	902
p(Employee=Self-employed)	0.276	0.111	0.705
Control mean: Employee	0.680	0.630	0.207
Control mean: Self-employed	0.725	0.489	0.114

Note: This table reports OLS estimates of β in equation (1). The dependent variable is: in column 1, *Taxes Important:* an indicator for whether the respondent strongly agrees with the statement "It is important for people to pay taxes"; in column 2, *Taxes Owed:* an indicator for whether the respondent believes "People not paying the taxes they owe to the government is wrong and punishable"; in column 3, *Tax Morale Index:* an unweighted average of the z-scores of two questions on the importance of paying taxes, with higher values indicating higher tax morale. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects, demographic controls (gender, head of household status, education, income, employment status) and pre-treatment survey question controls (beliefs and preferences about self-employment, beliefs about tax policies, perceptions of government capacity). See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table 5: Heterogeneous Effects by Government Capacity Beliefs (In-Person Survey)

	Unfairness Index	Equity Index	Sales Tax Pref. Index	Tax Morale Index
	(1)	(2)	(3)	(4)
Panel A: Full Sample				
Treatment × High Capacity	0.138***	0.102**	0.056	0.049
	(0.041)	(0.050)	(0.048)	(0.047)
Treatment × Low Capacity	0.043	0.002	-0.056	0.007
	(0.034)	(0.040)	(0.041)	(0.041)
Observations	2093	2093	2093	2093
p(High Capacity=Low Capacity)	0.0740	0.122	0.0775	0.510
Panel B: Employees				
Treatment × High Capacity	0.205***	0.099	0.103	0.011
	(0.056)	(0.076)	(0.075)	(0.066)
Treatment × Low Capacity	0.083*	0.051	-0.022	0.010
	(0.048)	(0.057)	(0.058)	(0.059)
Observations	998	998	998	998
p(High Capacity=Low Capacity)	0.0988	0.617	0.189	0.999

Note: This table reports OLS estimates of heterogeneous treatment effects on the four indices in tables 1 to 4. Heterogeneous treatment effects are estimated by respondents' beliefs about the government's capacity to prevent tax evasion among the self-employed, distinguishing between those who perceive government capacity to be high or low. Panel A reports results for the full sample, while Panel B restricts the sample to employees. All regressions include stratum fixed effects, demographic controls (gender, head of household status, education, income, employment status) and pre-treatment survey question controls (beliefs and preferences about self-employment, beliefs about tax policies, perceptions of government capacity). See Section 3.1.7 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Appendix (For Online Publication)

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A Tax Micro-simulations Based on Household Surveys

A.1 Data Sources

Household Surveys. We build tax micro-simulations by relying on a selected sample of the household expenditure surveys for which there is a labor activity module. Our final data set consists of 29 nationally representative household budget surveys. We select the surveys based on the following criteria:

- It has a comprehensive module on labor activities that allow us to identify households who are wage earners, self-employed, or business owners.
- The expenditure module(s) in the survey is structured as an open consumption diary, rather than a pre-filled diary covering a limited set of products.
- The expenditure survey includes a variable for the place of purchase (data on where each item was purchased). The place of purchases are detailed enough for us to apply the taxonomy of store types, as in Bachas et al. (2023).

Most household expenditure surveys are accessed from the restricted access from internal data systems of the World Bank. If a survey was listed without its microdata on the World Bank platform, we directly contacted the country's' statistical agency.

Statutory tax structures. We complement household survey data with statutory tax schedules for the personal income tax (PIT) and the value-added tax (VAT) standard rate and reduced rates by products (food, water, gas, electricity, medical services, and public transportation). Statutory tax rates and standard deductions (i.e. social security contributions and/or professional expenses deductible from gross taxable income) for the PIT in each country are collected from the EITD – TaxDev employment income taxes dataset (2022) Dataset[33] and official government files. VAT parameters were retrieved from Worldwide Tax Summaries[34] and complemented with official government data sources for each country.

Saving rates. We rely on income-dependent savings rates at the country level collected from Findex database (World Bank, 2021). The data available includes the average saving rate across income deciles, which later are used in our simulations to back out disposable income. In cases where the country is missing in the Findex dataset, we replace the i-th decile with the global average saving rate in that same decile.

National Accounts. To align survey-based household expenditure with national accounts aggregates, we construct country-specific adjustment factors. We gather households and NPISHs final consumption expenditure in current local currency units (LCU), drawn from

[33] McNabb, K. (2022). *The TaxDev employment income taxes dataset: Technical guide v1.0.* https://odi.org/en/publications/the-taxdev-employment-income-taxes-dataset-and-technical-guide.

[34] PwC (2025). *Worldwide Tax Summaries.* https://taxsummaries.pwc.com/quick-charts/value-added-tax-vat-rates

the World Bank Development Indicators.[35] In order to split the components of private consumption, we further collect data on specific final consumption by non-profit institutions serving households (NPISH) in current local currency units.[36] We also collect data on financial intermediation services indirectly measured (FISIM, in current LCU).[37] All indicators are extracted for the 29 countries in the sample corresponding to the survey reference year.

Median Income. To match our simulated measure of imputed income with actual observed pre-tax income, we collect the median of annual pre-tax income for adults (aged above 20 years old) from the World Inequality Database (WID, 2024) for each of the 29 countries in the sample corresponding to the survey reference year.

Table A.1 provides detailed description of the 29 countries in our final sample.

[35] The World Bank. *Households and NPISHs Final consumption expenditure (current LCU)* [Dataset]. World Development Indicators. https://data.worldbank.org/indicator/NE.CON.PRVT.CN (Accessed on January 2026).

[36] This data was retrieved in House from the World Bank Development Economics Research Group (DECRG) and from OECD public records such as *National Accounts at a Glance: GDP and Components – Expenditure Approach*, https://data-explorer.oecd.org (Accessed on February 2026).

[37] The World Bank. *Financial intermediary services indirectly Measured (FISIM) (current LCU)* [Dataset]. World Development Indicators. https://data.worldbank.org/indicator/NV.FSM.TOTL.CN (Accessed on February 2026).

Table A.1: Descriptive Statistics on Countries in Sample

Country	Code	Survey	Year	N Households	GDP pc (USD)	VAT rate (%)	PIT max rate (%)
Benin	BEN	EICVN	2015	19,901	1,002.42	18.0	30.0
Brazil	BRA	POF	2009	56,058	8,678.66	17.0	27.5
Burkina Faso	BFA	EICVM	2009	8,438	601.57	18.0	30.0
Burundi	BDI	ECVM	2014	6,681	250.54	18.0	30.0
Cameroon	CMR	ECAM	2014	10,304	1,649.44	19.2	35.0
Chile	CHL	EPF	2017	15,239	14,879.91	19.0	35.0
Colombia	COL	ENIG	2007	42,373	4,769.93	19.0	34.0
Comoros	COM	EDMC	2013	3,139	1,603.33	10.0	30.0
Congo, Rep.	COG	ECOM	2005	5,002	1,799.00	18.9	50.0
Costa Rica	CRI	ENIGH	2014	5,705	10,911.50	13.0	25.0
DR Congo	COD	E123	2005	12,098	267.90	16.0	50.0
Dominican Rep	DOM	ENIGH	2007	8,363	4,649.65	18.0	25.0
Ecuador	ECU	ENIGHUR	2012	39,617	5,634.08	12.0	35.0
India	IND	NSS	2012	101,651	1,429.32	18.0	30.0
Indonesia	IDN	SUSENAS	2019	315,672	4,106.95	11.0	30.0
Mexico	MEX	ENIGH	2014	19,479	11,391.38	16.0	35.0
Montenegro	MNE	HBS	2009	1,223	6,727.11	21.0	9.0
Morocco	MAR	ENCDM	2001	14,244	1,506.25	20.0	44.0
Mozambique	MOZ	IOF	2009	10,832	547.70	17.0	32.0
Niger	NER	ENBCM	2007	4,000	387.17	19.0	45.0
Nigeria	NGA	GHS	2018	4,979	2,057.88	7.5	24.0
Pakistan	PAK	PSLM	2019	24,807	1,390.42	17.0	35.0
Paraguay	PRY	EIGyCV	2011	5,417	5,805.40	10.0	10.0
Peru	PER	ENAHO	2017	43,545	6,736.17	18.0	30.0
Philippines	PHL	FIES	2018	147,717	3,168.51	12.0	32.0
Rwanda	RWA	EICV	2014	14,419	724.96	18.0	30.0
Senegal	SEN	EDMC	2008	2,503	1,398.79	18.0	50.0
Tanzania	TZA	HBS	2012	10,186	861.97	18.0	30.0
Tunisia	TUN	EBC	2010	11,281	4,291.86	19.0	35.0

Note: This table provides information on the surveys from the 29 countries in our sample. Code refers to the three digit country-ISO code we use across the paper. The original name of the survey is provided. The sample size refers to the number of households in the survey. GDP per capita is measured in PPP USD in the year of the survey. VAT rate refers to the value added tax standard rate in the country, and PIT max rate is the highest marginal rate in the personal income tax schedule.

A.2 Household Surveys Details

Definitions of employee and self-employed. We proceed to define employment category based on main activity of household head. We differentiate between households in agricultural and non-agricultural activities. Then, we define as salaried workers to any household whose main source of income is a salary from any public or private institution; self-employees are households whose main source of income comes from being an employer

or being an independent or domestic worker.[38]

Definition of informal consumption. This stage mirrors the processes followed in Bachas et al. (2023). We summarize several differences across countries:

- The number of consumption modules ranges from 1 to 17 across countries. Except for Pakistan, all surveys have a module which is a diary of consumption over two weeks or a month. Some countries complement it with recall modules for infrequent purchases. Surveys with multiple modules often ask for consumption by frequency of expenditures (monthly, quarterly). Home production is included as a "place of purchase". Self-production purchases are valued using the local market value.

- All surveys have product codes for each consumption item, which typically follow the United Nations COICOP taxonomy. In three countries (Brazil, Paraguay, Peru), we could not find a product crosswalk and used the country's own classification scheme.

- Household surveys for India, Indonesia, Nigeria, Pakistan, and Philippines do not include a module on place of purchase. For these countries, we predict the share of informal consumption indirectly using data from the remaining 24 countries for which such module is available. Specifically, we stack harmonized expenditure modules into a cross-section and predict informality shares for six expenditure groups (g) — food, water, gas, electricity, medical services, and public transportation — running regressions of the form:

$$\text{share informal}_{igc} = \alpha_0 + \alpha_1 \cdot \log(inc)_c + \alpha_2 \cdot \{D_{ic} \times \log(inc)_c\} + \alpha_3 \cdot \mathbf{1}\{Urban\}_{ic} + \varepsilon_{igc} \quad \text{(A.2)}$$

  Where $\text{share informality}_{igc}$ is the share of expenditure of household i on good category g from country c. $\log(income)_c$ represents the logarithm of income per capita for country c in the year of the survey. D_{ic} is a categorical variable including the expenditure decile of household i from country c. $\mathbf{1}\{Urban\}_{ic}$ is a dummy taking the value of 1 if household i lives in an urban location. ε_{igc} are robust standard errors. Then, we predict shares of informality for each country using our vector of coefficients $\hat{\boldsymbol{\alpha}}_g$ for every basket of goods g. Finally, we predict formal expenditure at the household level multiplying predicted $(1 - \text{share } \hat{\text{informality}}_{igc})$ by the observed total household expenditure.

For the remaining countries, all surveys include information on the place of purchase for each transaction; while these categories differ across surveys, we harmonize them to ensure cross-country comparability. Our classification mirrors the taxonomy of places of purchases across countries of the International Price Comparison (IPC) project and Bachas et al. (2023), as the consumption of goods pertains to five categories: (1) non-market consumption; (2) Market consumption, no store front; (3) Market consumption, corner and convenience shops; (4) Market consumption, specialized shops; (5) Market consumption, large stores. Consumption of services is classified in four categories: (6) Services by institutions; (7) Service by individuals; (8) Entertainment; (9) Informal Entertainment.

[38] For Nigeria, the General Household Survey is primarily an agricultural survey rather than a labor force survey, so we apply a three-tier classification: wage workers are identified from the wage employment module, followed by non-farm enterprise owners, and finally household heads engaged in crop cultivation or fishing not captured by either module are classified as self-employed agricultural workers.

In some cases, services have an "unspecified" place of purchase: in the data, over half of these products are utilities, and the remaining is education and health spending. We assign those to formal. A few places of purchase are hard to categorize (e.g. purchases from internet). These represent a small amount of total expenditure and are assigned to formal.

A.3 Micro-simulations Details

We build detailed micro-tax simulations from household surveys for the 29 developing countries in our sample. We model both the PIT and VAT, taking into account the main features of these two taxes: for the PIT, we include the income exemption threshold, standard deductions (e.g. social security contributions and professional expenses), and marginal tax rates; for the VAT, we include reduced commodity tax rates and the *de facto* exemption of informal sector consumption, based on the place of purchase.

In terms of notation, ex_{ic} represents expenditure of individual $i \in \mathcal{I}$ in country $c \in \mathcal{C}$. The number of individuals at home refer to household size n_{ic}. We use $t(y)$ and $t(\hat{y})$ whenever we refer to PIT liabilities based on baseline taxable income y or imputed income $\hat{y}$, respectively. VAT liabilities are expressed by $t(\hat{ex})$, where $\hat{ex}$ represents consumption expenditure derived from imputed income in our simulations. For consistency, and with some abuse of notation, we index both household- and individual-level outcomes with i. Country-level tax rates in the PIT schedule are denoted by τ_{kc}. Statutory standard VAT rate is represented by $\tau_{c,vat}$, while $\tau_{gc,vat}$ represents reduced rates. We create expenditure deciles $d \in \mathcal{D}$ at the country level. Hence, average saving rates at the decile level for each country are expressed by r_{dc}.

A.3.1 Simulation of Effective Tax Rates

Adjustment Factor to Match Aggregate Consumption. We follow Havinga et al. (2010) discussion and World Bank (2017) recommendations to harmonize final consumption in national accounts in order to make it comparable to household expenditure in the survey data. Since private consumption in national accounts (C) includes elements that are not captured by household surveys, a harmonized and comparable measure of consumption ($\hat{C}$) is constructed by netting out three components: the aggregate consumption share of NPISH (κ_{NPISH}), the consumption share attributed to FISIM (κ_{FISIM}) and the share of consumption attributed to imputed rent (κ_{RENT})[39]. We build country-specific adjustment factors (λ_c) to match household expenditure with final consumption in national accounts as follows:

$$\lambda_c = \frac{ex_c}{\hat{C}_c} \equiv \frac{\sum_{i \in c} ex_i}{C_c \cdot (1 - \kappa_{c,NPISH} - \kappa_{c,FISIM} - \kappa_{RENT})} \tag{A.3}$$

We rescale all household expenditure measures for each country –including total expenditure and expenditure on differentiated goods from both formal and informal retailers– by multiplying them by the country-specific adjustment factor (λ_c). Then, we proceed to calculate PIT and VAT liabilities using this re-scaled measure of household expenditure.

[39] We apply a uniform share of consumption attributed to imputed rent of 15%, consistent with averages levels estimated in the literature Ceriani et al. (2019).

Calculation of Tax Burden in the PIT. We calculate the PIT liability $t(\hat{y})_{ic}$ based on imputed income $(\hat{y})$, at the individual tax unit-country level ic, following a transparent and systematic approach, described in the pseudo-code of algorithm 1. As discussed in 2.3.1, our simulations include a uniform miss-reporting rate θ_i based on worker type, as follows:

$$\theta_i = \begin{cases} 1 & \text{if } i \in \text{Worker} \\ 0.5 & \text{if } i \in \text{Self-Employed} \end{cases}$$

Algorithm 1: Computation of the PIT liability

for $i \in c$ **do**

// Step 1: Build individual gross taxable income at the tax unit level based on household size

$$y(ex)_{ic} = \begin{cases} \frac{ex_{ic}}{n_{ic}(1-r_{dc})} & \text{if } n_{ic} \leq 2 \\ \frac{ex_{ic}}{2(1-r_{dc})} & \text{if } n_{ic} > 2 \end{cases}$$

// Step 2: Build baseline net taxable income by removing standard deductions

$$y_{ic} = y(ex)_{ic} - Deductions_c;$$

// Step 3: Compute baseline PIT liability inclusive of miss-reporting

$$t(y)_{ic} = \tau_{kc}(\theta_i y_{ic} - a_{kc}) + \sum_{j=1}^{k-1} \tau_{kc}(a_{j+1,c} - a_{jc});$$

// Step 4: Predict baseline PIT ETR based on baseline gross taxable income

$$ETR_{ic} = \frac{t(y)_{ic}}{y(ex)_{ic}};$$

// Step 5: Back-out unadjusted imputed income at the tax unit level based on household size

$$y'_{ic} = \begin{cases} \frac{ex_{ic}}{n_{ic}(1-r_{dc})(1-ETR_{ic})} & \text{if } n_{ic} \leq 2 \\ \frac{ex_{ic}}{2(1-r_{dc})(1-ETR_{ic})} & \text{if } n_{ic} > 2 \end{cases}$$

// Step 6: Match imputed income to the median pre-tax income in the World Inequality Database

$$\hat{y}_{ic} = y'_{ic} \cdot \left[\frac{median(y_{c,WID})}{median(y'_{ic})}\right];$$

// Step 7: Calculate final PIT liability $t(\hat{y})_{ic}$ as in Step 3, based on matched imputed income $\hat{y}_{ic}$

The micro-simulations include an additional adjustment in Step 6, which matches the median of our simulated imputed income to the median of pre-tax annual income of adults in the World Inequality Database, our targeted moment. Table A.2 displays the results of this exercise and the goodness of fitness for our simulated distribution of income.

Calculation of the VAT Burden. We calculate the VAT burden $t(\hat{ex})_{ic}$, at the individual-country level ic, based on imputed formal consumption expenditure $\hat{ex}$, standard rates $\tau_{c,vat}$, and reduced $\tau_{gc,vat}$ for six categories $g \in \mathcal{G}$ of differentiated goods (food, water, gas, electricity, medical services, public transportation), as described in the pseudo-code of algorithm 2:

Algorithm 2: Computation of the VAT liability

for $i \in c$ **do**

`// Step 1: Re-calculate expenditure at the household level using matched imputed income`

$\hat{ex}_{ic} = \hat{y}_{ic}(1 - r_{dc})(1 - ETR_{ic})$

`// Step 2: Re-calculate formal (informal) expenditure subject to (exempted from) reduced VAT rates using baseline expenditure shares`

$\hat{ex}_{g,ic} = \hat{ex}_{ic} \times share_{g,ic};$

`// Step 3: Re-calculate formal expenditure that is subject to standard VAT rate`

$standard\ \hat{ex}_{ic} = \hat{ex}_{ic} - \sum_{g=1}^{6} informal\ \hat{ex}_{g,ic} - \sum_{g=1}^{6} formal\ \hat{ex}_{g,ic};$

`// Step 4: Calculate VAT liability` $t(\hat{ex})_{ic}$ `at the individual level`

$$t(\hat{ex})_{ic} = \begin{cases} \frac{1}{n_{ic}} \cdot \left[\tau_{c,vat}(standard\ \hat{ex}_{ic}) + \sum_{g=1}^{6} \tau_{gc,vat} \cdot formal\ \hat{ex}_{g,ic}\right] & if\ n_{ic} \leq 2 \\ \frac{1}{2} \cdot \left[\tau_{c,vat}(standard\ \hat{ex}_{ic}) + \sum_{g=1}^{6} \tau_{gc,vat} \cdot formal\ \hat{ex}_{g,ic}\right] & if\ n_{ic} > 2 \end{cases}$$

Calculating Vertical Equity and Horizontal Inequity. In our baseline, we define vertical equity and horizontal inequity as ratios. We build effective tax rates (ETR) as the sum of PIT and VAT liability $t(\hat{y}) + t(\hat{ex})$ relative to imputed income ($\hat{y}$). Then, we compute the percentage points difference between the average ETR of these two groups $\{\overline{G}, \underline{G}\}$:

$$\Delta \text{ETR}_c = \frac{1}{N} \cdot \left\{ \underbrace{\sum_{i \cap \overline{G} \in c} \left(\frac{t(\hat{y})_i + t(\hat{ex})_i}{\hat{y}_i} \right)}_{ETR_{\overline{G} \in c}} - \underbrace{\sum_{i \cap \underline{G} \in c} \left(\frac{t(\hat{y})_i + t(\hat{ex})_i}{\hat{y}_i} \right)}_{ETR_{\underline{G} \in c}} \right\} \tag{A.4}$$

Where $ETR_{G \in c}$ represents the (unweighted) average ETR of individuals i in group G of country c. Then, to interpret our results relative to the average tax burden in the economy, we re-scale the differences in Equation A.4 with respect to (income weighted) average ETR:

$$\text{Equity}_c = \frac{\Delta \text{ETR}_c}{\frac{\sum_{i \in c}[t(\hat{y})_i + t(\hat{ex})_i]}{\sum_{i \in c} \hat{y}_i}} \tag{A.5}$$

- In horizontal inequity $\overline{G}$ are top decile *workers* and $\underline{G}$ are top decile *self-employees*.
- In vertical equity $\overline{G}$ are *both individuals* (workers + self-employees) in the top decile and $\underline{G}$ are *both individuals* (workers + self-employees) in the median decile.

A.3.2 Simulation of Budget-Neutral Reform

We model a fictional progressive reform that shifts the tax mix toward income taxation and away from consumption taxes. We increase marginal tax rates paid by top-decile households in the PIT as to raise 1% of GDP. We implement the following steps for each country c:

- We first identify the marginal tax rates (MTR) in the PIT schedule paid by top-decile earners in each country. We set the lowest MTR paid by top-decile earners as the largest MTR paid by the 9th decile. For example, consider a country whose PIT schedule includes k brackets; if the 9th decile pays up to the $k-j$ bracket MTR (τ_{k-j}), then we set tax rates of the $k-j, ..., k-1, k$ brackets as the MTR paid by the top-decile.

- We aim to compute how sensitive are PIT and VAT revenue to changes in statutory tax rates. We first simulate total revenue after 1% changes in the corresponding tax rates using a grid of $\Delta \in \{-0.05, -0.04, \ldots, 0.20\}$. For the PIT, we compute the revenue that results after changing, in $\tau_{ck}(1+\Delta)$, the MTR paid by top-decile households. For the VAT we apply $\tau_{c,vat}(1+\Delta)$ to the standard rate only. The result is one vector of changes Δ and another vector of resulting revenue $\hat{t}(\Delta)_{jc}$ for the j-th tax $j \in \{PIT, VAT\}$. Then, we estimate the slope between marginal rate changes and revenue using OLS, independently for the j-th tax $j \in \{PIT, VAT\}$, in each country:

$$\hat{t}(\Delta)_{jc} = \alpha_{jc} + \beta_{jc} \cdot \Delta + \varepsilon_{jc}$$

  Where α_{jc} is the intercept; β_{jc} is the slope coefficient of interest; ε_{jc} is the error.

- We compute a linear first-guess for the change in PIT marginal tax rates paid by top-decile households that is required to raise 1% of total income in country c:

$$\text{Target}\Delta_{PIT,c} = \frac{0.01 \cdot GDP_c}{\hat{\beta}_{PIT,c}}$$

  Using this linear guess we compute counterfactual PIT revenue $t(\hat{y})'_c$ as the sum of individual PIT liabilities that result from the targeted change in the PIT rate:

$$t(\hat{y})'_c = \sum_{i \in c} \left(\tau_{kc}(1 + \text{Target}\Delta_{PIT,c})(\theta_i \hat{y}_{ic} - a_{kc}) + \sum_{j=1}^{k-1} \tau_{kc}(1 + \text{Target}\Delta_{PIT,c})(a_{j+1,c} - a_{jc}) \right)$$

- We back-out an additional linear-guess for the change in the VAT rate that is required to offset increase in the PIT collection:

$$\text{Target}\Delta_{VAT,c} = \frac{1}{\hat{\beta}_{VAT,c}} \cdot (t(\hat{ex})_c - t(\hat{y})'_c + t(\hat{y})_c - \hat{\alpha}_{VAT,c})$$

  Where $t(\hat{ex})_c$ and $t(\hat{y})_c$ are aggregate VAT and PIT revenue in baseline scenario (without changes in statutory tax rates), respectively. Using this new target change in VAT rates,

we re-compute counterfactual VAT burden:

$$t(\hat{ex})'_{ic} = \tau_{c,vat}(1 + \text{Target}\Delta_{VAT,c}) \cdot (\text{standard } \hat{ex}_{ic}) + \sum_{g=1}^{6}(\tau_{gc,vat} \cdot \text{formal } \hat{ex}_{g,ic})$$

- We re-calculate counterfactual imputed income $\hat{y}'_{ic}$ and counterfactual effective tax rates ETR'_{ic} for the i-th individual in country $c \in \mathcal{C}$ using counterfactual revenue:

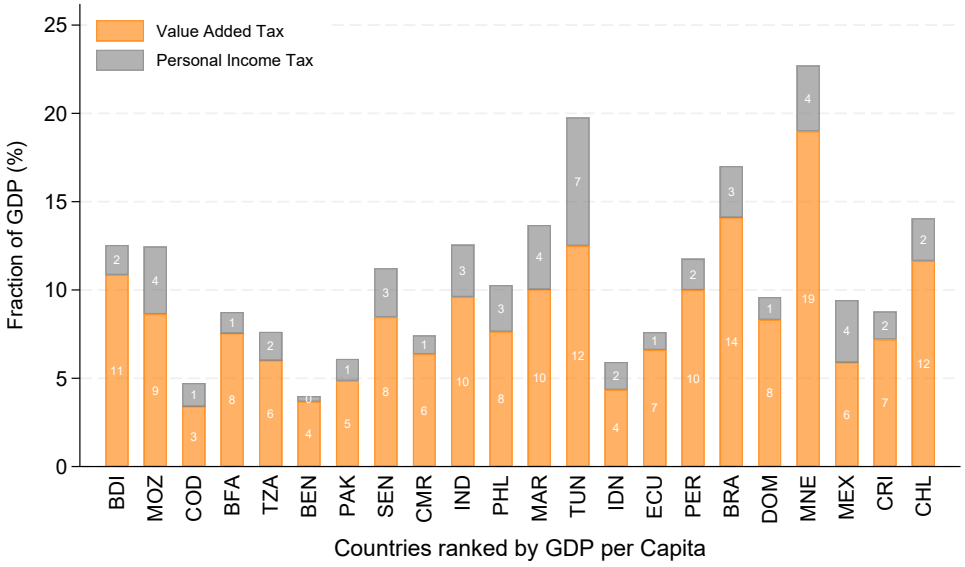
$$ETR'_{ic} = \frac{t(\hat{y})'_{ic} + t(\hat{ex})'_{ic}}{\hat{y}'_{ic}}$$

- Finally, we use this counterfactual burden to calculate new measures of horizontal inequity and vertical equity, as in Equations A.4 and A.5.

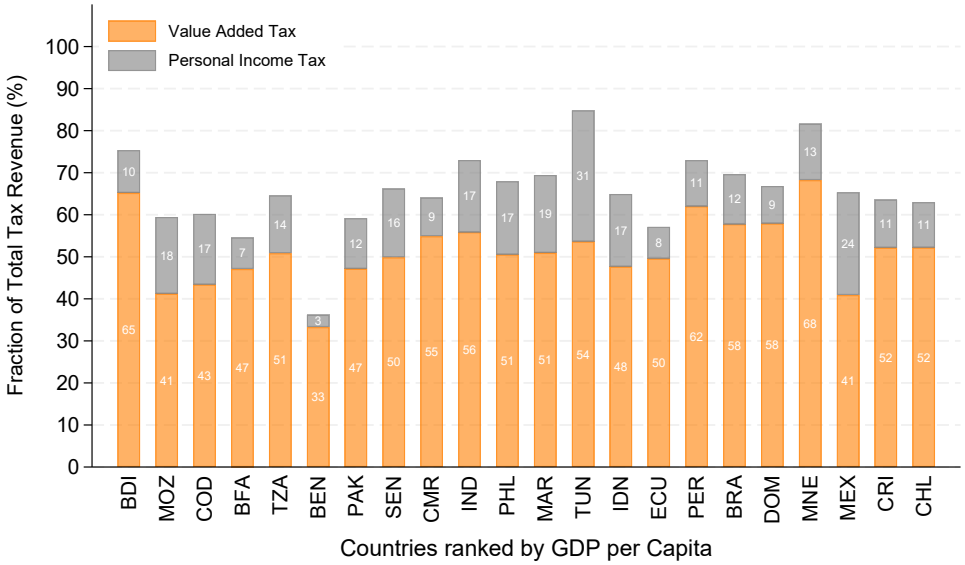
A.4 Micro-simulations Results: Supplemental Figures

Figure A.1: VAT and PIT Collection Across Sample Countries

(a) As Fraction of GDP



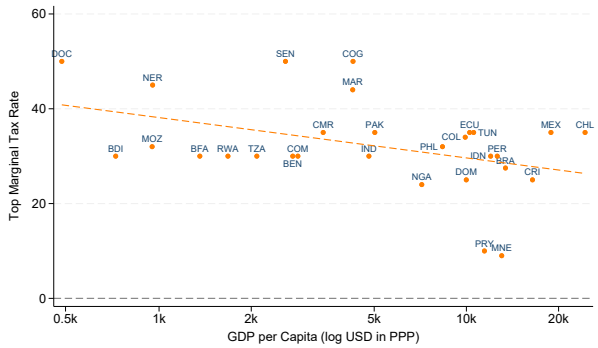
(b) As Fraction of Total Revenue



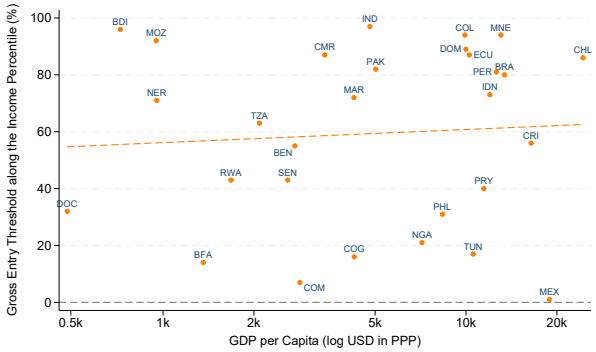
Notes: This figure displays the fraction of Value-Added Tax (VAT) and Personal Income Tax (PIT) as percentage of total tax revenue and Gross Domestic Product (GDP), respectively. Both figures include values from 2021 across 22 countries included in our micro-simulations. Countries are ranked in the x-axis by GDP per capita (lowest to highest, from left to right). Selection of countries depends on PIT revenue data availability. Data source of tax collection is World Revenue Longitudinal Database from the International Monetary Fund.

Figure A.2: Features of the Personal Income Tax Across Sample Countries

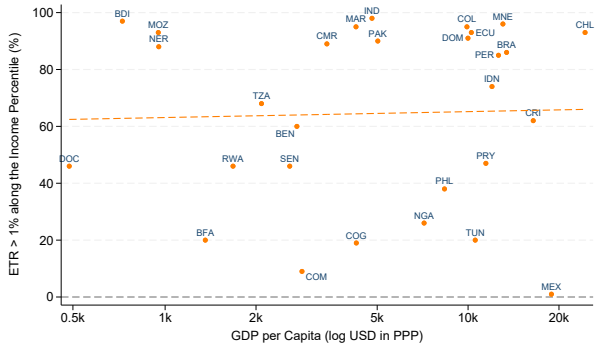
(a) Top Marginal PIT Rate



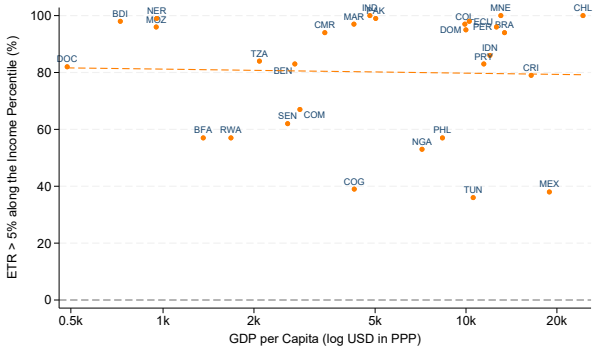
(b) PIT Gross Entry Thresholds



(c) Fraction Above 1% PIT ETR

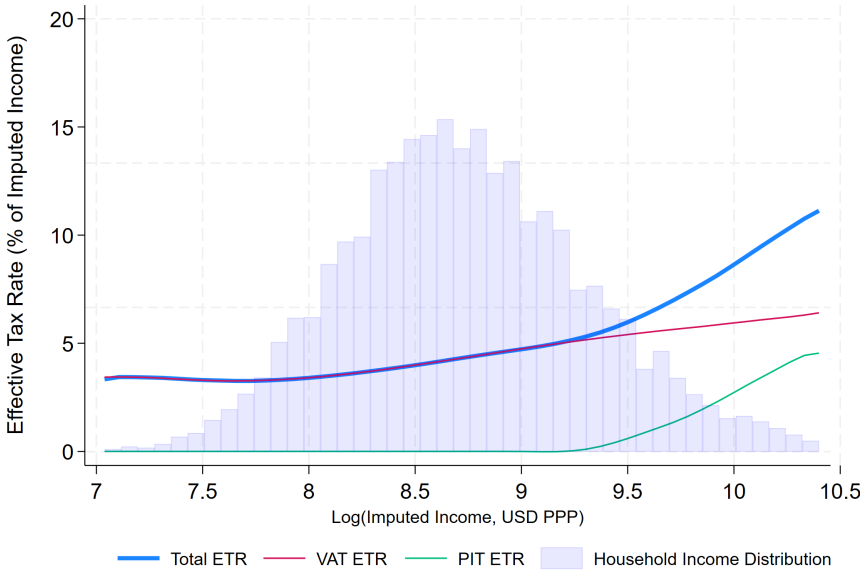


(d) Fraction Above 5% PIT ETR



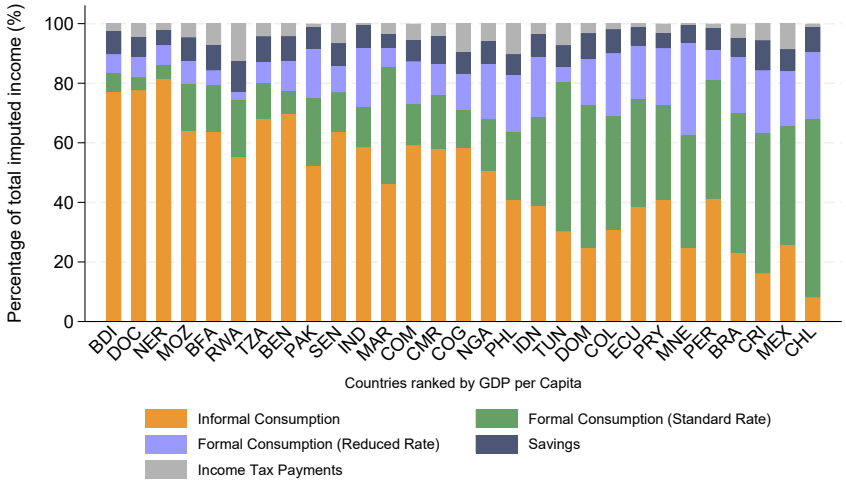
Note: These figures display the main features of the PIT across sample countries. Figure A.2a illustrates the top marginal tax rates in the PIT schedule across countries. Figure A.2b shows the gross entry threshold –defined as the statutory exemption threshold inclusive of standard deductions– along the income distribution for each country. Figure A.2c displays the percentile of the income distribution where individuals start paying an effective tax rate in the PIT that is greater than 1% of the pre-tax imputed income. Figure A.2d displays the percentile of the income distribution where individuals start paying an effective tax rate in the PIT that is greater than 5% of the pre-tax imputed income. Figures A.2c and A.2d are both *de jure* ETRs as for their calculation we assume zero income miss-reporting. All figures are represented conditional on (log) GDP per capita measured in USD adjusted by purchasing power parity (PPP).

Figure A.3: Total Tax Burden in Pakistan
50% Compliance for Self-Employed



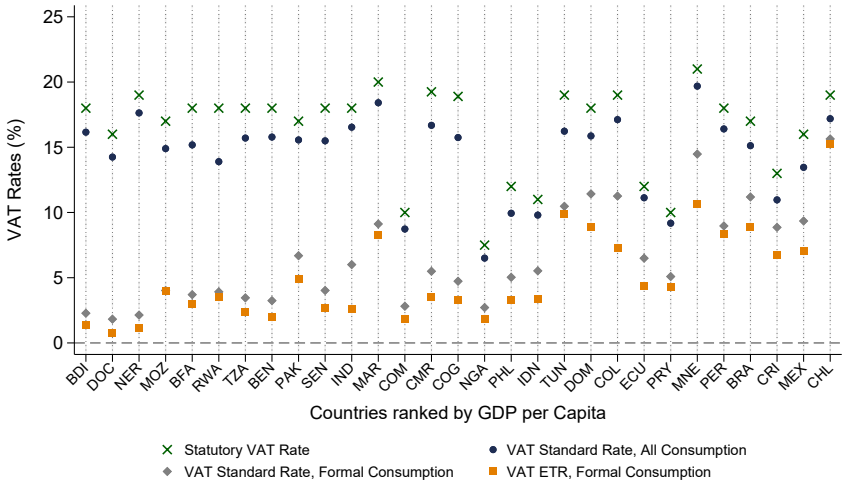
Notes: This figure displays the tax burden for Pakistan in 2019 resulting from tax micro-simulations. Effective tax rates (ETR) are displayed in the y-axis as percentage of imputed income. The ETR for the PIT is obtained assuming that the self-employed report 50% of their income and employees all of it. ETRs in the VAT account for informality in consumption patterns. Finally, individual imputed income (light blue in x-axis) is defined at the tax unit level from household expenditure divided by household size (trimmed at two), inclusive of saving rates and tax payments. For visualization purposes, imputed income was converted to USD adjusted by purchasing power parity (PPP) in 2019 –the year of the survey used in simulations. For visualization purposes, ETRs were adjusted using a second order local polynomial regression.

Figure A.4: Composition of Imputed Income



Notes: This figure presents the decomposition of aggregate pre-tax imputed income –matched to the WID median pre-tax income– for all countries in our simulation sample. For each country, we aggregate total imputed income and its components at the country level, then compute the share of each component in the total. "Informal consumption" represents total household expenditure that is bought at informal stores, as in Bachas et al. (2023). "Formal consumption (standard rate)" includes all formal consumption that is liable to the VAT standard rate. "Formal consumption (reduced rate)" is the fraction of formal consumption that is also liable to the VAT but subject to differentiated/reduced rates (food, water, electricity, medicines, gas, transportation). "Savings" are the fraction of imputed income destinated to savings using rates from FINDEX. "Income tax payments" represents the fraction of imputed income that is destinated to the personal income tax. Countries are ranked in the x-axis (lowest to highest, from left to right) by GDP per capita.

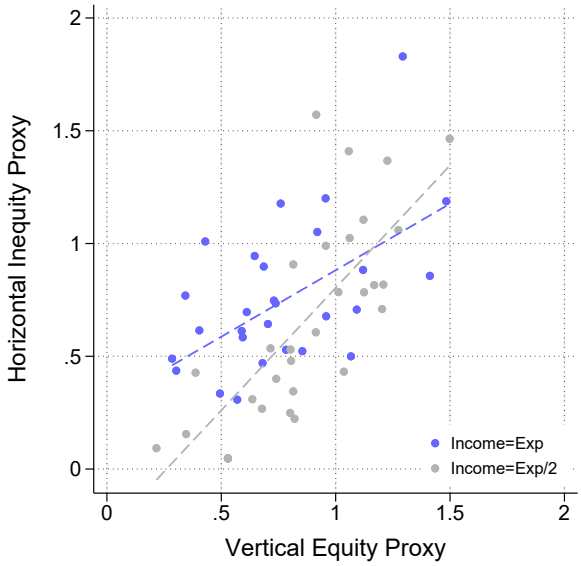
Figure A.5: VAT Rates Across Countries



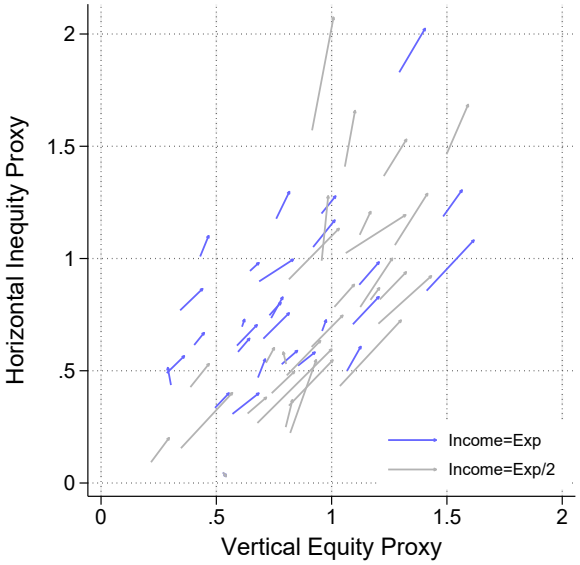
Notes: This figure presents different VAT rates for all countries in our simulation sample. The "statutory VAT rate" is the rate established in each country's tax code for the year of the household survey used in the micro-simulations. The "VAT standard rate, all consumption" is an (income-weighted) average of the VAT rate that each individual would face if all consumption – both formal and informal – were taxed uniformly at the standard VAT rate. The "VAT standard rate, formal consumption" is an (income-weighted) average of the VAT rate that each individual would face if only formal consumption were taxed uniformly at the standard VAT rate. The "VAT ETR, formal consumption" is an (income-weighted) average of the empirical VAT effective tax rate underlying our baseline measures of horizontal inequity and vertical equity, which removes informality and accounts for differentiated VAT rates across goods. All rates –except the statutory VAT rate– are expressed as the ratio between aggregate VAT revenue and aggregate imputed income, and therefore represent income-weighted average VAT rates for the economy. Countries are ranked in the x-axis (lowest to highest, from left to right) by GDP per capita.

Figure A.6: Tax Policy Tradeoffs of Horizontal and Vertical Equity Robustness Checks

(a) Equity of Actual Tax Systems

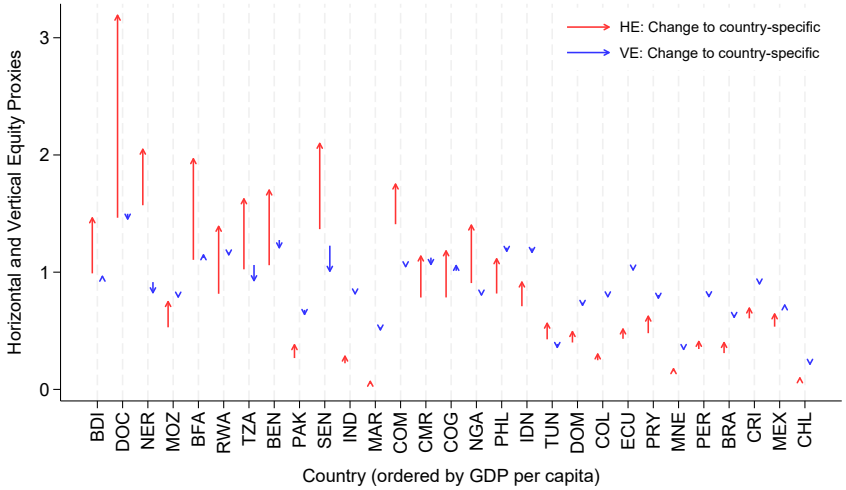


(b) Budget Balanced Reform, Raises PIT to Cut VAT



Notes: This panel of figures display robustness checks for our baseline results on the tax policy trade off between horizontal inequity and vertical equity across our sample of countries. Figure A.6a plots measures of vertical equity (x-axis) and horizontal inequity (y-axis) for different definitions of individual income in our micro-simulations. In both cases, the PIT simulations assume that the self-employed only report half of their incomes while employees report all of it. Figure A.6b shows the results of a budget neutral reform that raises 1% of GDP from PIT rebated through VAT cut for different definitions of individual income in our micro-simulations. The increase in PIT revenue arises from changes in the marginal tax rates paid by top-decile households to simulate a progressive tax reform. In both figures, blue color represents an scenario where individual income equals total household expenditure. Our baseline results in the paper, where individual income is defined at the tax unit level from household expenditure divided by household size (trimmed at two), are displayed in gray.

Figure A.7: Robustness Check: From Uniform to Country-Specific Self-Employment Evasion Rates



Notes: This figure compares estimates of horizontal inequity (HE, red) and vertical equity (VE, blue) proxies under two alternative miss-reporting assumptions. Each arrow starts at the estimate obtained under a uniform miss-reporting rate of 50% (common across countries) for the self-employed and points toward the estimate obtained in a robustness exercise under country-specific miss-reporting rates. For Pakistan and the Philippines, we display the observed rather than predicted miss-reporting rates. An upward arrow indicates that the country-specific assumption yields a higher value than the uniform assumption, and vice versa. In both scenarios, we assume that wage earners report 100% of their income. Countries are ranked on the x-axis from left to right by GDP per capita (lowest to highest).

A.5 Micro-simulations Results: Supplemental Tables

Table A.2: Fitness of Targeted Moments

		Targeted Moments			Simulated Moments	
Country	Year	(A) Gross Entry Threshold	(B) Median Pre-Tax Income	(A)/(B)	(A)/Simulated Median Taxable Income	(A)/Simulated Median Imputed Income
Burundi	2014	1,872,000.0	397,828.6	470.6	357.7	474.5
Benin	2015	621,600.0	552,048.5	112.6	74.8	114.9
Burkina Faso	2009	126,600.0	304,120.5	41.6	27.7	42.2
Brazil	2009	20,658.0	9,182.8	225.0	211.3	226.3
Chile	2017	9,821,196.0	3,977,001.7	246.9	93.0	248.0
Cameroon	2014	2,056,000.0	780,964.8	263.3	208.7	263.3
Congo	2005	240,000.0	532,345.2	45.1	47.4	45.8
Colombia	2007	24,690,960.0	5,562,846.9	443.9	198.0	443.9
Comoros	2013	158,250.0	514,182.0	30.8	10.9	31.3
Costa Rica	2014	4,206,941.0	3,728,320.9	112.8	89.8	113.8
DR Congo	2005	74,520.0	100,054.2	74.5	43.2	75.3
Dominican Republic	2007	307,396.4	119,099.0	258.1	194.6	259.0
Ecuador	2012	10,638.5	4,891.4	217.5	230.4	218.7
Indonesia	2019	55,000,000.0	35,198,515.2	156.3	121.5	157.2
India	2012	210,000.0	53,357.3	393.6	317.5	395.7
Morocco	2001	20,858.0	14,020.5	148.8	950.7	149.6
Mexico	2014	6,515.4	58,513.8	11.1	5.4	11.4
Montenegro	2009	9,660.0	4,188.1	230.7	215.7	231.9
Mozambique	2009	43,260.0	13,026.1	332.1	306.3	336.5
Niger	2007	310,800.0	224,649.1	138.3	118.8	139.2
Nigeria	2018	363,000.0	759,508.8	47.8	39.7	48.4
Pakistan	2019	404,000.0	224,123.7	180.3	87.1	181.4
Peru	2017	24,300.0	13,259.0	183.3	142.3	183.6
Philippines	2018	100,000.0	145,304.7	68.8	58.8	69.4
Paraguay	2011	14,922,898.0	17,843,636.5	83.6	75.2	84.5
Rwanda	2014	370,800.0	423,348.3	87.6	83.4	88.2
Senegal	2008	633,600.0	648,282.8	97.7	12.1	98.8
Tunisia	2010	1,637.7	3,305.4	49.5	32.1	50.1
Tanzania	2012	1,782,000.0	1,379,423.9	129.2	117.2	129.3

Note: This table provides goodness of fitness from our simulations with respect to targeted moments. Third column (A) represents the PIT exemption threshold inclusive of standard allowances. Fourth column (B) is the median annual pre-tax income, retrieved from World Inequality Database (WID). Both (A) and (B) are measured in local currency for the year. Fifth column (A/B) is the ratio between gross entry threshold and median annual pre-tax income. Fourth column is the ratio between gross entry threshold and median taxable income in our micro-simulations, where taxable income is defined as household expenditure (matched to aggregate consumption in national accounts), divided by 2 and inclusive of saving rates. Sixth column is the ratio between gross entry threshold and median pre-tax imputed income in our micro-simulations, where imputed income is defined as household expenditure (matched to aggregate consumption in national accounts), divided by 2 and inclusive of saving rates and taxes.

Table A.3: Micro-Simulation Baseline Results

		(A)	(B)	(C)	(D)	(E)	(A)-(B)	(C)-(D)	[(A)-(B)]/(E)	[(C)-(D)]/(E)
		ETR Top	**ETR Top**	**ETR Top**	**ETR Median**	**Weighted Average**	**Horizontal**	**Vertical**	**Horizontal**	**Vertical**
Country	**Code**	**Employee**	**Self-Employed**	**Decile**	**Decile**	**ETR**	**Inequity (p.p.)**	**Equity (p.p)**	**Inequity (%)**	**Equity (%)**
Benin	BEN	13.4	6.9	9.2	1.3	6.2	6.5	7.9	106.0	127.4
Brazil	BRA	18.4	14.2	16.6	8.0	13.6	4.2	8.6	31.0	63.6
Burkina Faso	BFA	22.2	11.1	14.7	3.4	10.1	11.1	11.3	110.5	112.2
Burundi	BDI	6.6	2.9	4.2	0.7	3.7	3.7	3.6	99.0	95.7
Cameroon	CMR	14.4	8.5	11.1	2.6	7.6	5.9	8.5	78.4	112.4
Chile	CHL	18.3	16.8	17.8	14.3	16.2	1.5	3.5	9.3	21.7
Colombia	COL	13.1	10.8	12.1	4.7	9.2	2.3	7.3	24.9	80.1
Comoros	COM	15.6	5.5	10.4	2.8	7.2	10.1	7.6	140.9	105.7
Congo	COG	22.7	12.7	18.8	5.9	12.7	10.0	12.9	78.4	101.2
Costa Rica	CRI	19.4	12.0	17.3	6.0	12.3	7.5	11.2	60.6	91.3
DR Congo	DOC	13.9	6.2	8.9	1.0	5.3	7.7	7.9	146.4	149.8
Dominican Rep	DOM	18.3	13.5	16.1	7.2	12.1	4.8	8.9	40.0	74.0
Ecuador	ECU	9.6	7.2	8.7	2.9	5.5	2.4	5.7	43.2	103.6
India	IND	4.5	3.8	4.2	1.7	3.0	0.7	2.5	22.3	82.0
Indonesia	IDN	13.1	8.3	11.0	2.8	6.8	4.8	8.2	71.0	120.3
Mexico	MEX	23.9	15.6	20.1	8.9	15.6	8.3	11.1	53.5	71.5
Montenegro	MNE	14.6	12.9	13.5	9.7	11.1	1.7	3.9	15.5	34.6
Morocco	MAR	12.2	12.8	12.4	6.2	11.7	0.6	6.2	4.7	52.9
Mozambique	MOZ	11.0	6.5	8.6	1.7	8.6	4.5	6.9	53.0	80.3
Niger	NER	7.5	2.5	3.8	0.9	3.2	5.1	3.0	157.1	91.5
Nigeria	NGA	15.0	8.0	10.3	4.0	7.6	6.9	6.2	90.7	81.5
Pakistan	PAK	9.0	7.4	8.2	4.2	5.9	1.6	4.0	26.7	67.8
Paraguay	PRY	12.1	8.6	10.4	4.5	7.3	3.5	5.9	48.0	80.5
Peru	PER	16.2	12.9	14.4	6.5	9.7	3.3	7.9	34.5	81.5
Philippines	PHL	25.0	14.0	21.1	4.8	13.5	11.1	16.3	81.8	120.9
Rwanda	RWA	28.2	15.1	21.8	3.0	16.1	13.1	18.8	81.6	116.8
Senegal	SEN	23.5	10.8	14.5	3.2	9.2	12.6	11.3	136.7	122.6
Tanzania	TZA	13.4	6.7	9.4	2.4	6.6	6.8	7.0	102.4	106.1
Tunisia	TUN	25.1	17.8	20.5	13.9	17.1	7.3	6.6	42.7	38.8
Cross Country	Average	15.9	10.1	12.8	4.8	9.5	5.9	8.0	68.6	89.3

Note: This table displays average tax burden for the 29 countries in our sample based on the micro-simulations described in Appendix A. We define income equal to total household expenditure divided by household size (trimmed at two) and adjusted to match aggregate household final consumption expenditure in national accounts. Results are based on the assumption that, for PIT calculation, the self-employed report 50% of their income and employees all of it. We also compute VAT burden adjusting for informality in consumption patterns. Hence, Effective Tax Rate (ETR) are the sum of PIT and VAT with respect to imputed income. Column (A) displays (unweighted) average ETR for employees in the top decile. Column (B) displays (unweighted) average ETR for self-emplyed in top decile. Column (C) displays the (unweighted) average ETR of top decile housholds, including both employees and self-employed. Column (D) displays (unweighted) average ETR of median decile households, including both employees and self-employed. Column (E) displays (income weighted) average total ETR in the country.

Table A.4: Micro-Simulation Robustness Checks

Miss-Reporting (%)							
Self Employed	**Employees**	**HI (%)**	**VE (%)**	**HI′ (%)**	**VE′ (%)**	**Δ HI (p.p.)**	**Δ VE (p.p.)**
50	0	68.6	89.3	86.4	101.1	17.7	11.8
50	25	45.7	86.3	59.5	100.7	13.8	14.3
75	25	80.2	82.7	112.7	98.0	32.5	15.3
75	50	53.1	77.9	82.7	97.3	29.6	19.4

Note: This table displays average Horizontal Inequity (HI) and Vertical Equity (VE) under different miss-reporting scenarios. Each row represents a different and independent exercise. The first two columns display the rates of miss-reporting assumed in each micro-simulation. The first row displays our main results discussed in the paper. The third and fourth column (HI, VE) are baseline results. Fifth and sixth columns (HI′, VE′) show the results of a budget neutral reform that raises 1% of GDP from PIT (by increasing tax rates paid by top decile income households in the PIT) rebated through VAT cut. The last two columns (Δ HI, Δ VE) are the changes between budget neutral reform and baseline scenarios. In all simulations, we define income equal to total household expenditure divided by household size (trimmed at two) and adjusted to match aggregate household final consumption expenditure in national accounts. We also compute VAT burden adjusting for informality in consumption patterns.

B Additional Analysis of In-person Survey in Pakistan

Table B.1: In-Person Survey: Respondent characteristics by employment status

Characteristic	Overall	Salaried Employee	Self-employed
demographics			
Male	0.95	0.93	0.97
Head of household	0.75	0.72	0.78
Age (in years)	37.80	35.83	39.45
education			
Primary/less	0.12	0.08	0.15
Secondary	0.42	0.35	0.48
Post-secondary	0.03	0.03	0.03
Bachelor's	0.26	0.31	0.22
Master's/higher	0.17	0.23	0.12
income			
Middle-high income	0.47	0.48	0.46
Low income	0.53	0.52	0.54

Note: This table presents demographic characteristics of respondents, disaggregated by their employment status (salaried employee vs. self-employed). The means for key variables, such as gender, age (in years), education levels, and income categories, are reported. Education and income categories are presented as proportions of the respective groups.

Table B.2: In-person Survey: Randomization balance

Variable	Total N	Total Mean	Control N	Control Mean/(SE)	Treatment N	Treatment Mean/(SE)	P-value
Demographic							
Male	2596	0.949	1296	0.951 (0.006)	1300	0.948 (0.006)	0.805
Head of household	2596	0.753	1296	0.745 (0.012)	1300	0.762 (0.012)	0.423
Age 40 and below	2596	0.636	1296	0.637 (0.013)	1300	0.635 (0.013)	0.484
College degree and above	2594	0.429	1294	0.421 (0.014)	1300	0.438 (0.014)	0.376
Middle-High income	2311	0.472	1158	0.472 (0.015)	1153	0.473 (0.015)	0.868
Self-employed	2596	0.546	1296	0.546 (0.014)	1300	0.546 (0.014)	0.992
Beliefs about self-employment							
Prefer self-employment	2590	0.845	1292	0.840	1298	0.850 (0.010)	0.402
Self earns more	2453	0.834	1223	0.832 (0.011)	1230	0.836 (0.011)	0.736
Self is richer	2576	0.742	1290	0.728 (0.012)	1286	0.756 (0.012)	0.077*
Employee tax more	2554	0.520	1278	0.526 (0.014)	1276	0.514 (0.014)	0.420
Beliefs about tax policies							
Imran pays less	2527	0.523	1257	0.527 (0.014)	1270	0.518 (0.014)	0.439
Self pays less	2590	0.442	1293	0.443 (0.014)	1297	0.440 (0.014)	0.759
Effort (self-employed)	2593	0.286	1294	0.291 (0.013)	1299	0.280 (0.012)	0.586
Evasion	2596	0.478	1296	0.478 (0.014)	1300	0.479 (0.014)	0.983
High PIT Few Businesses	2596	0.225	1296	0.230 (0.012)	1300	0.220 (0.011)	0.544
PIT reduces inequality	2558	0.372	1274	0.367 (0.014)	1284	0.377 (0.014)	0.662
Perceptions of government capacity							
High perceived tax waste	2527	0.626	1265	0.627 (0.014)	1262	0.626 (0.014)	0.985
Capacity to prevent evasion (relative)	2580	0.303	1283	0.328 (0.013)	1297	0.279 (0.012)	0.008***
F-test of joint significance (F-stat): 0.842							
F-test, number of observations: 2087							

Note: The table tests for the balance of covariates by information treatment assignment using survey responses prior to the experiment. **Male** indicates whether the respondent is male. **Head of Household (Head of household)** identifies respondents who are heads of household. **Age 40 and below** represents those aged 40 years or less. **College Degree** is coded 1 for respondents with a college degree or higher. **Middle-High Income** denotes households in the middle or high-income group. **Self-Employed** captures whether the respondent identifies as self-employed. **Prefer Self-Employment** indicates preference for self-employment if income were equal. **Self Earns More** reflects the belief that self-employed doctors earn more than employed doctors. **Self is Richer** measures whether the respondent believes the richest 10 percent are primarily self-employed. **Employee Tax More** coded 1 if the respondent believes employees pay higher effective tax than the self-employed. **Imran Pays Less** and **Self Pays Less** coded 1 if the respondent believes that self-employed individuals pay less taxes than employees.**Effort (self-employed)** indicates whether respondents attribute wealth of the self-employed to effort. **Evasion** captures beliefs that increasing PIT for the richest encourages tax evasion, while **High PIT Few Businesses** reflects beliefs that higher PIT discourages businesses. **PIT Reduce Inequality** coded as 1 if the respondent believes a progressive PIT has a significant impact on reducing inequality. **Wasted N** reflects perceptions of high tax waste (over 800 rupees per 1000). **Capacity to Prevent** coded 1 if a respondent believes the government is more effective preventing employees from evading PIT.

Table B.3: In-Person Survey: Treatment Effects on Perceptions of Unfairness (Excluding Controls)

	Gap Concern	Gap Unfair	Gap Unfair Scenario	Gap Unjustified	Unfairness Index
	(1)	(2)	(3)	(4)	(5)
Panel A: Main Effects					
Treatment	0.049***	0.019	0.047**	0.031	0.078***
	(0.018)	(0.014)	(0.018)	(0.020)	(0.026)
Observations	2606	2601	2565	2606	2606
Control mean	0.649	0.826	0.653	0.500	-0.042
Panel B: Heterogeneity by Employment Status					
Treatment X Self-employed	0.011	0.012	0.038	-0.011	0.027
	(0.025)	(0.020)	(0.025)	(0.027)	(0.035)
Treatment X Employee	0.095***	0.027	0.057**	0.082***	0.140***
	(0.027)	(0.021)	(0.027)	(0.029)	(0.038)
Observations	2606	2601	2565	2606	2606
p(Employee=Self-employed)	0.023	0.604	0.616	0.019	0.029
Control mean: Employee	0.636	0.834	0.669	0.477	-0.047
Control mean: Self-employed	0.660	0.819	0.640	0.520	-0.038
Panel C: Heterogeneity by Employment Status, Sample = University Educated					
Treatment X Self-employed	0.006	0.009	0.026	0.000	0.022
	(0.043)	(0.034)	(0.041)	(0.046)	(0.058)
Treatment X Employee	0.125***	0.027	0.068**	0.095**	0.169***
	(0.036)	(0.026)	(0.033)	(0.040)	(0.049)
Observations	1117	1116	1102	1117	1117
p(Employee=Self-employed)	0.0340	0.676	0.428	0.119	0.0530
Control mean: Employee	0.656	0.859	0.738	0.489	0.023
Control mean: Self-employed	0.699	0.835	0.712	0.525	0.034

Note: This table reports OLS estimates of β in equation (1). The dependent variable is: in column 1, *Gap Concern:* indicator for whether the respondent strongly agrees "In Pakistan, differences in taxes paid by self-employed individuals and salaried employees are a serious problem that needs to be addressed"; in column 2, *Gap Unfair:* indicator for whether the respondent believes differences in taxes paid is unfair when both earn the same income; in column 3, *Gap Unfair Scenario:* indicator for whether the respondent believes a scenario where a self-employed individual earns the same income as an employed individual and pays less taxes is unfair; in column 4, *Gap Unjustified:* indicator for whether the respondent strongly agrees "It is not justified for self-employed individuals and employees to pay different amounts of tax if they have the same income"; in column 5, *Unfairness Index:* average of z-scores of four questions on perceptions of fairness, with higher values indicating higher unfairness concerns. Panels A and B reports results for the full sample. Panel C restricts the sample to working, university-educated respondents. All regressions include stratum fixed effects. See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table B.4: In-Person Survey: Treatment Effects on Perceptions of Horizontal Equity (Excluding Controls)

	Fair Tax System	Same Income Same Tax	Rich Pays More	Equity Index
	(1)	(2)	(3)	(4)
Panel A: Main Effects				
Treatment	0.002	0.026	0.009	0.025
	(0.016)	(0.017)	(0.020)	(0.029)
Observations	2606	2576	2487	2606
Control mean	0.215	0.238	0.535	-0.010
Panel B: Heterogeneity by Employment Status				
Treatment X Self-employed	-0.001	0.005	-0.006	-0.009
	(0.022)	(0.023)	(0.027)	(0.039)
Treatment X Employee	0.005	0.052**	0.027	0.066
	(0.024)	(0.025)	(0.030)	(0.042)
Observations	2606	2576	2487	2606
p(Employee=Self-employed)	0.849	0.177	0.406	0.196
Control mean: Employee	0.213	0.228	0.511	-0.037
Control mean: Self-employed	0.216	0.246	0.556	0.011
Panel C: Heterogeneity by Employment Status, Sample = University Educated				
Treatment X Self-employed	-0.043	0.001	-0.020	-0.057
	(0.040)	(0.044)	(0.046)	(0.072)
Treatment X Employee	0.022	0.064*	0.035	0.092
	(0.036)	(0.036)	(0.041)	(0.062)
Observations	1117	1106	1057	1117
p(Employee=Self-employed)	0.224	0.268	0.373	0.116
Control mean: Employee	0.264	0.261	0.522	0.038
Control mean: Self-employed	0.275	0.336	0.620	0.172

Note: This table reports OLS estimates of β in equation (1). The dependent variable is: in column 1, *Fair Tax System:* an indicator for whether the respondent believes "To achieve a fair tax system, it is important that people with the SAME income paying the same amount in taxes"; in column 2, *Same Income Same Tax:* an indicator for whether the respondent believes "It is more important that the combination of PIT and sales tax be set so that employees and self-employed individuals with the SAME income pay a similar amount in taxes"; in column 3, *Rich Pays More:* an indicator for whether the respondent selects "Employees pay slightly more tax than Self-employed individuals with the same income, and Richer taxpayers pay slightly more tax than everyone else" as their preferred combination of income and sales tax; and in column 4, *Equity Index:* an unweighted average of the z-scores of three questions on preferences for tax policies to address horizontal inequity, with higher values indicating greater concern for horizontal equity. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects. See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table B.5: In-Person Survey: Treatment Effects on Preferences for Sales Tax (Excluding Controls)

	Increase Sales Tax	Sales Tax Scale	Sales Tax Support	Sales Tax Pref. Index
	(1)	(2)	(3)	(4)
Panel A: Main Effects				
Treatment	0.023	-0.027	-0.021	-0.012
	(0.017)	(0.020)	(0.020)	(0.028)
Observations	2606	2562	2565	2606
Control mean	0.263	0.540	0.507	0.002
Panel B: Heterogeneity by Employment Status				
Treatment X Self-employed	-0.002	-0.051*	-0.008	-0.038
	(0.024)	(0.027)	(0.027)	(0.038)
Treatment X Employee	0.054**	0.002	-0.036	0.019
	(0.026)	(0.029)	(0.029)	(0.042)
Observations	2606	2562	2565	2606
p(Employee=Self-employed)	0.106	0.180	0.474	0.317
Control mean: Employee	0.235	0.502	0.509	-0.041
Control mean: Self-employed	0.285	0.573	0.504	0.038
Panel C: Heterogeneity by Employment Status, Sample = University Educated				
Treatment X Self-employed	-0.011	-0.051	-0.037	-0.066
	(0.040)	(0.046)	(0.046)	(0.066)
Treatment X Employee	0.052	-0.006	-0.048	0.003
	(0.034)	(0.040)	(0.040)	(0.058)
Observations	1117	1098	1105	1117
p(Employee=Self-employed)	0.234	0.467	0.859	0.432
Control mean: Employee	0.215	0.479	0.477	-0.091
Control mean: Self-employed	0.271	0.545	0.494	0.003

Note: This table reports OLS estimates of β in equation (1). The dependent variable is: in column 1, *Increase Sales tax:* an indicator for whether the respondent strongly agrees with the statement "Instead of raising income taxes on the rich, the sales tax should be increased so that employees and self-employed individuals contribute more evenly"; in column 2, *Sales Tax Scale:* an indicator for whether the respondent prefers sales tax more than income tax when asked to select a combination of the two taxes; in column 3, *Sales Tax Support:* an indicator for whether the respondent believes the government should primarily collect tax from the sales tax; and column 4, *Sales Tax Preference Index:* an unweighted average of the z-scores of three questions on preferences for the sales tax relative to the income tax, with higher values indicating higher sales tax preference. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects. See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table B.6: In-Person Survey: Treatment Effects on Tax Morale (Excluding Controls)

	Taxes Important	Taxes Owed	Tax Morale Index
	(1)	(2)	(3)
Panel A: Main Effects			
Treatment	0.030	-0.002	0.030
	(0.019)	(0.020)	(0.029)
Observations	2606	2595	2606
Control mean	0.603	0.484	-0.019
Panel B: Heterogeneity by Employment Status			
Treatment X Self-employed	0.003	0.032	0.034
	(0.026)	(0.026)	(0.039)
Treatment X Employee	0.063**	-0.042	0.025
	(0.028)	(0.029)	(0.043)
Observations	2606	2595	2606
p(Employee=Self-employed)	0.113	0.060	0.872
Control mean: Employee	0.577	0.548	0.017
Control mean: Self-employed	0.624	0.431	-0.049
Panel C: Heterogeneity by Employment Status, Sample = University Educated			
Treatment X Self-employed	-0.037	0.019	-0.019
	(0.042)	(0.046)	(0.066)
Treatment X Employee	0.012	-0.052	-0.038
	(0.037)	(0.040)	(0.058)
Observations	1117	1112	1117
p(Employee=Self-employed)	0.377	0.243	0.826
Control mean: Employee	0.662	0.613	0.172
Control mean: Self-employed	0.712	0.489	0.099

Note: This table reports OLS estimates of β in equation (1). The dependent variable is: in column 1, *Taxes Important:* an indicator for whether the respondent strongly agrees with the statement "It is important for people to pay taxes"; in column 2, *Taxes Owed:* an indicator for whether the respondent believes "People not paying the taxes they owe to the government is wrong and punishable"; in column 3, *Tax Morale Index:* an unweighted average of the z-scores of two questions on the importance of paying taxes, with higher values indicating higher tax morale. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects. See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table B.7: In-Person Survey: Treatment Effects on Perceptions of Unfairness (Multiple Hypothesis Testing)

	Gap Concern	Gap Unfair	Gap Unfair Scenario	Gap Unjustified	Unfairness Index
	(1)	(2)	(3)	(4)	(5)
Panel A: Main Effects					
Treatment	0.051	0.020	0.046	0.035	0.082
	[0.026]	[0.169]	[0.045]	[0.157]	[0.007]
Observations	2093	2089	2089	2093	2093
Control mean	0.671	0.828	0.664	0.527	-0.010
Panel B: Heterogeneity by Employment Status					
Treatment × Self-employed	0.016	0.016	0.049	-0.009	0.041
	[0.838]	[0.838]	[0.357]	[0.838]	[0.722]
Treatment × Employee	0.089	0.025	0.042	0.083	0.129
	[0.005]	[0.722]	[0.459]	[0.034]	[0.003]
Observations	2093	2089	2089	2093	2093
Control mean: Employee	0.664	0.836	0.690	0.510	-0.004
Control mean: Self-employed	0.677	0.821	0.642	0.542	-0.016
Panel C: Heterogeneity by Employment Status, Working and University Educated					
Treatment × Self-employed	-0.017	-0.023	0.035	0.004	-0.004
	[0.953]	[0.917]	[0.875]	[0.994]	[0.994]
Treatment × Employee	0.115	0.027	0.054	0.089	0.153
	[0.017]	[0.875]	[0.447]	[0.188]	[0.015]
Observations	902	902	902	902	902
Control mean: Employee	0.665	0.857	0.759	0.519	0.054
Control mean: Self-employed	0.725	0.860	0.713	0.528	0.067

Note: This table reports OLS estimates of β in equation (1). Brackets report Romano–Wolf stepdown adjusted p-values accounting for multiple hypothesis testing within each panel. The dependent variable is: in column 1, *Gap Concern:* indicator for whether the respondent strongly agrees "In Pakistan, differences in taxes paid by self-employed individuals and salaried employees are a serious problem that needs to be addressed"; in column 2, *Gap Unfair:* indicator for whether the respondent believes differences in taxes paid is unfair when both earn the same income; in column 3, *Gap Unfair Scenario:* indicator for whether the respondent believes a scenario where a self-employed individual earns the same income as an employed individual and pays less taxes is unfair; in column 4, *Gap Unjustified:* indicator for whether the respondent strongly agrees "It is not justified for self-employed individuals and employees to pay different amounts of tax if they have the same income"; in column 5, *Unfairness Index:* average of z-scores of four questions on perceptions of fairness, with higher values indicating higher unfairness concerns. Panels A and B reports results for the full sample. Panel C restricts the sample to working, university-educated respondents. All regressions include stratum fixed effects. See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table B.8: In-Person Survey: Treatment Effects on Perceptions of Horizontal Equity (Multiple Hypothesis Testing)

	Fair Tax System	Same Income Same Tax	Rich Pays More	Equity Index
	(1)	(2)	(3)	(4)
Panel A: Main Effects				
Treatment	0.005	0.041	0.014	0.044
	[0.799]	[0.091]	[0.796]	[0.349]
Observations	2093	2080	2033	2093
Control mean	0.206	0.220	0.527	-0.038
Panel B: Heterogeneity by Employment Status				
Treatment × Self-employed	0.009	0.018	0.009	0.024
	[0.980]	[0.968]	[0.980]	[0.972]
Treatment × Employee	0.000	0.067	0.019	0.066
	[0.986]	[0.082]	[0.972]	[0.567]
Observations	2093	2080	2033	2093
Control mean: Employee	0.213	0.215	0.516	-0.046
Control mean: Self-employed	0.201	0.225	0.538	-0.032
Panel C: Heterogeneity by Employment Status, Working and University Educated				
Treatment × Self-employed	-0.036	-0.025	-0.041	-0.083
	[0.938]	[0.938]	[0.938]	[0.824]
Treatment × Employee	-0.000	0.051	0.024	0.053
	[0.994]	[0.708]	[0.938]	[0.938]
Observations	902	898	873	902
Control mean: Employee	0.278	0.263	0.527	0.055
Control mean: Self-employed	0.242	0.337	0.614	0.137

Note: This table reports OLS estimates of β in equation (1). Brackets report Romano–Wolf stepdown adjusted p-values accounting for multiple hypothesis testing within each panel. The dependent variable is: in column 1, *Fair Tax System:* an indicator for whether the respondent believes "To achieve a fair tax system, it is important that people with the SAME income paying the same amount in taxes"; in column 2, *Same Income Same Tax:* an indicator for whether the respondent believes "It is more important that the combination of PIT and sales tax be set so that employees and self-employed individuals with the SAME income pay a similar amount in taxes"; in column 3, *Rich Pays More:* an indicator for whether the respondent selects "Employees pay slightly more tax than Self-employed individuals with the same income, and Richer taxpayers pay slightly more tax than everyone else" as their preferred combination of income and sales tax; and in column 4, *Equity Index:* an unweighted average of the z-scores of three questions on preferences for tax policies to address horizontal inequity, with higher values indicating greater concern for horizontal equity. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects, demographic controls (gender, head of household status, education, income, employment status) and pre-treatment survey question controls (beliefs and preferences about self-employment, beliefs about tax policies, perceptions of government capacity). See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Note: This table reports OLS estimates of β in equation (1). Brackets report Romano–Wolf stepdown adjusted p-values accounting for multiple hypothesis testing within each

Table B.9: In-Person Survey: Treatment Effects on Preferences for Sales Tax (Multiple Hypothesis Testing)

	Increase Sales Tax	Sales Tax Scale	Sales Tax Support	Sales Tax Pref. Index
	(1)	(2)	(3)	(4)
Panel A: Main Effects				
Treatment	0.028	-0.034	-0.013	-0.010
	[0.283]	[0.281]	[0.732]	[0.764]
Observations	2093	2061	2074	2093
Control mean	0.275	0.535	0.503	0.007
Panel B: Heterogeneity by Employment Status				
Treatment × Self-employed	0.003	-0.066	0.000	-0.041
	[1.000]	[0.184]	[1.000]	[0.840]
Treatment × Employee	0.057	-0.000	-0.028	0.024
	[0.221]	[1.000]	[0.860]	[0.970]
Observations	2093	2061	2074	2093
Control mean: Employee	0.243	0.490	0.508	-0.043
Control mean: Self-employed	0.305	0.575	0.498	0.052
Panel C: Heterogeneity by Employment Status, Working and University Educated				
Treatment × Self-employed	-0.029	-0.081	-0.038	-0.100
	[0.885]	[0.520]	[0.885]	[0.624]
Treatment × Employee	0.036	-0.017	-0.056	-0.021
	[0.799]	[0.885]	[0.664]	[0.885]
Observations	902	888	896	902
Control mean: Employee	0.226	0.481	0.496	-0.069
Control mean: Self-employed	0.287	0.563	0.483	0.019

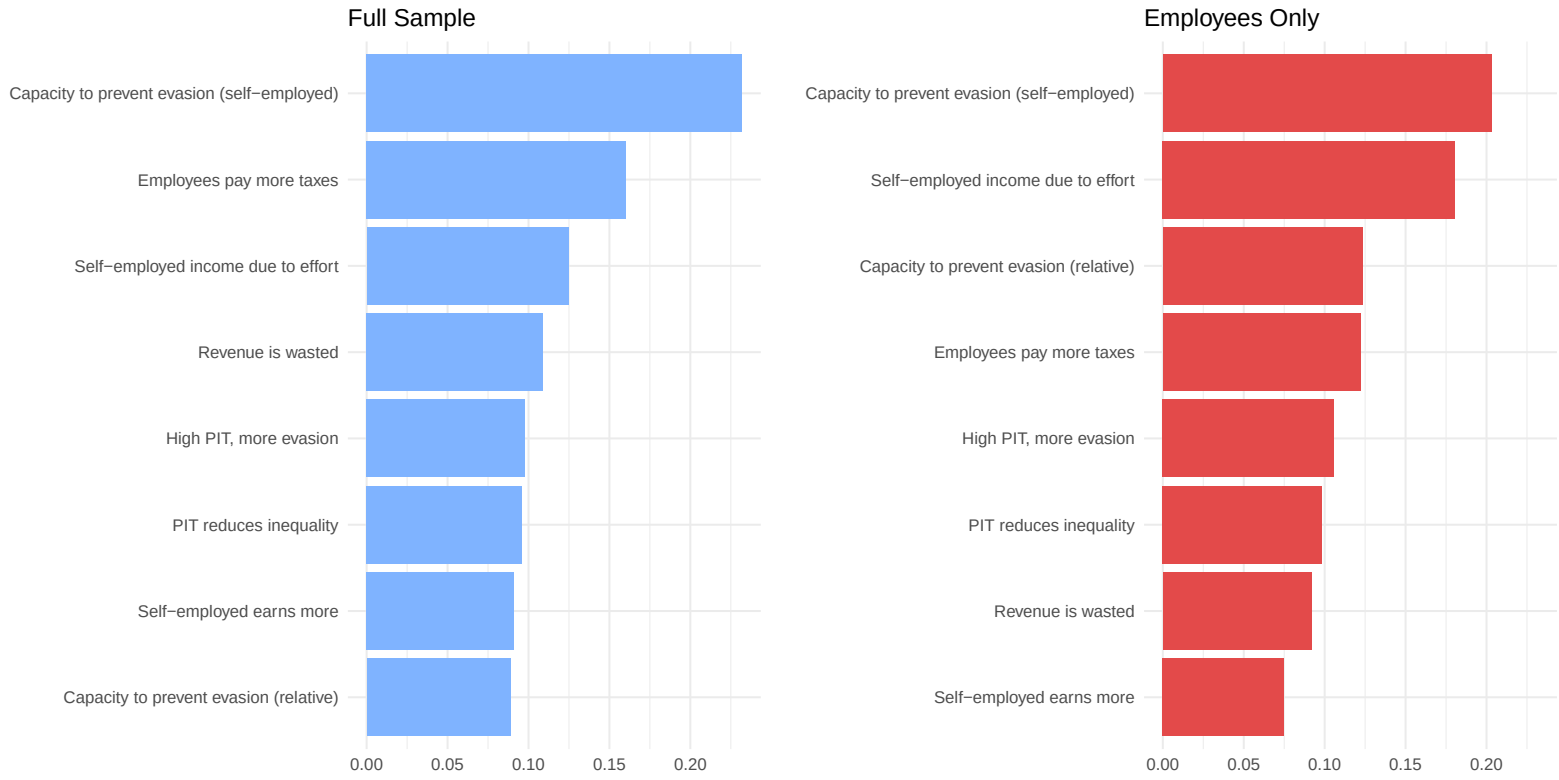
panel. The dependent variable is: in column 1, *Increase Sales tax:* an indicator for whether the respondent strongly agrees with the statement "Instead of raising income taxes on the rich, the sales tax should be increased so that employees and self-employed individuals contribute more evenly"; in column 2, *Sales Tax Scale:* an indicator for whether the respondent prefers sales tax more than income tax when asked to select a combination of the two taxes; in column 3, *Sales Tax Support:* an indicator for whether the respondent believes the government should primarily collect tax from the sales tax; and column 4, *Sales Tax Preference Index:* an unweighted average of the z-scores of three questions on preferences for the sales tax relative to the income tax, with higher values indicating higher sales tax preference. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects, demographic controls (gender, head of household status, education, income, employment status) and pre-treatment survey question controls (beliefs and preferences about self-employment, beliefs about tax policies, perceptions of government capacity). See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table B.10: In-Person Survey: Treatment Effects on Tax Morale (Multiple Hypothesis Testing)

	Taxes Important	Non-Compliance Wrong	Tax Morale Index
	(1)	(2)	(3)
Panel A: Main Effects			
Treatment	0.023	-0.000	0.025
	[0.426]	[0.998]	[0.579]
Observations	2093	2088	2093
Control mean	0.624	0.487	0.007
Panel B: Heterogeneity by Employment Status			
Treatment × Self-employed	-0.005	0.044	0.039
	[0.977]	[0.386]	[0.714]
Treatment × Employee	0.055	-0.049	0.008
	[0.225]	[0.385]	[0.977]
Observations	2093	2088	2093
Control mean: Employee	0.605	0.559	0.058
Control mean: Self-employed	0.641	0.422	-0.040
Panel C: Heterogeneity by Employment Status, Sample = University Educated			
Treatment × Self-employed	-0.072	0.044	-0.031
	[0.455]	[0.756]	[0.908]
Treatment × Employee	-0.006	-0.064	-0.067
	[0.908]	[0.455]	[0.599]
Observations	902	901	902
Control mean: Employee	0.680	0.630	0.207
Control mean: Self-employed	0.725	0.489	0.114

Note: This table reports OLS estimates of β in equation (1). Brackets report Romano–Wolf stepdown adjusted p-values accounting for multiple hypothesis testing within each panel. The dependent variable is: in column 1, *Taxes Important:* an indicator for whether the respondent strongly agrees with the statement "It is important for people to pay taxes"; in column 2, *Taxes Owed:* an indicator for whether the respondent believes "People not paying the taxes they owe to the government is wrong and punishable"; in column 3, *Tax Morale Index:* an unweighted average of the z-scores of two questions on the importance of paying taxes, with higher values indicating higher tax morale. Panel A reports results for the full sample. Panels B and C restrict the sample to working and working, university-educated respondents, respectively, and estimate treatment heterogeneity by employment status. All regressions include stratum fixed effects, demographic controls (gender, head of household status, education, income, employment status) and pre-treatment survey question controls (beliefs and preferences about self-employment, beliefs about tax policies, perceptions of government capacity). See Section 3.1.6 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Figure B.1: In-Person Survey: Top Predictors of Heterogeneous Treatment Effects (Causal Forest)



Note: This figure displays variable importance rankings from causal forests estimating heterogeneous treatment effects on the Unfairness Index. The importance scores show which pre-treatment beliefs and perceptions best predict variation in treatment effects. The left panel uses the full sample, while the right panel restricts the sample to employees. The eight moderators are ordered from highest to lowest importance. See Section 3.1.7 for details.

C Pre-Registered Hypotheses for In-person Survey Experiment

C.1 Primary hypotheses

- **Hypothesis 1**: Respondents think that the difference in tax contributions between the self-employed and employees is not fair. This hypothesis will be tested by examining the impact of the Treatment on the outcome variables contained in the Unfairness Index (Gap Concern, Gap Unfair, Gap Unfair Scenario, Gap Unjustified) shown in Table Table 1 (Panel A).

- **Hypothesis 2**: Concern about differences in tax contributions between self-employed and employees reduces tax morale. This hypothesis will be tested by examining the impact of the Treatment on the outcome variables contained in the Tax Morale Index (Taxes Important, Taxes Owed) shown in Table 4 (Panel A).

- **Hypothesis 3**: Concern about differences in tax contributions between self-employed and employees raises support for policies addressing horizontal equity. This hypothesis will be tested by examining the impact of the Treatment on the outcome variables contained in the Horizontal Equity Index (Fair Tax System, Same Income Same Taxes, Rich Pays Slightly More) shown in Table 2 (Panel A).

- **Hypothesis 4**: Concern about differences in tax contributions between self-employed and employees raises support for indirect taxes relative to direct taxes. This hypothesis will be tested by examining the impact of the Treatment on the outcome variables contained in the Sales Tax Preference Index (Sales Tax Support, Sales Tax Scale, Increase Sales Tax) shown in Table 3 (Panel A).

- **Hypothesis 5**: Support for the Theory of Change is more likely by salaried employees. This hypothesis will be tested by examining how the treatment effect varies by by answers to employment type: **Self-employed** (based on question q_1) on outcome variables: Unfairness Index (Panel B in Table 1), Tax Morale Index (Panel B in Table 4), Horizontal Equity Index (Panel B in Table 2), and Sales Tax Preference Index (Panel B in Table 3

- **Hypothesis 6**: Support for the Theory of Change is more likely by people of high socio-economic status (i.e., University education and/or higher income levels). This hypothesis will be tested by examining how the treatment effect varies by socio-economic status: **High SES** (based on interaction of college degree and middle-to-high income variables) on outcome variables : Unfairness Index (Panel C in Table 1), Tax Morale Index (Panel C in Table 4), Horizontal Equity Index (Panel C in Table 2), and Sales Tax Preference Index (Panel C in Table 3

C.2 Secondary hypotheses

- **Hypothesis A1**: Support for the Theory of Change is less likely among people who believe that government revenue is wasted. This hypothesis will be tested by examining how the treatment effect varies based on responses to **Wasted** (based on question q_31, which asks how many rupees, out of every 1000 collected in taxes, are wasted. Answers 800 and over is coded as 1).

- **Hypothesis A2.1**: Support for the Theory of Change is more likely among people who believe that the government has a higher capacity to prevent income tax evasion from salaried employees than self-employed individuals. This hypothesis will be tested by examining how the treatment effect varies based on responses to **Capacity to Prevent** (based on questions q_new3 and q_new4, which asks whether the respondent believes the government can do more to prevent income tax evasion by salaried employees compared to self-employed individuals).

- **Hypothesis A2.2**: Support for the Theory of Change is less likely among people who believe that the government has a high capacity to prevent income tax evasion from self-employed individuals. This hypothesis will be tested by examining how the treatment effect varies based on responses to **Prevent Self** (based on the question q_new3, which asks how much a government can do to stop tax evasion by self-employed individuals).

- **Hypothesis A3**: Support for the Theory of Change is less likely among people who believe that self-employed people's income is primarily due to effort rather than other factors. This hypothesis will be tested by examining how the treatment effect varies based on responses to **Effort_self** (based on q_34_se, which asks what factors contribute most to a self-employed individual's income).

- **Hypothesis A4**: Support for the Theory of Change is more likely among people who believe that higher income taxes on the rich lead to greater evasion. This hypothesis will be tested by examining how the treatment effect varies based on responses to **Evasion** (based on q_37_a, which measures whether the respondent believes that increasing the personal income tax rate for the richest people would encourage tax evasion).

- **Hypothesis A5.1**: Support for the Theory of Change is less likely among people who believe income taxes reduce inequality. This hypothesis will be tested by examining how the treatment effect varies based on responses to **PIT Reduce Inequality** (based on q_36_new this variable is coded as 1 if the respondent answers "A lot" to the question: "How much impact do you think a progressive PIT has on reducing inequality?").

- **Hypothesis A5.2**: Support for the Theory of Change is more likely among people who believe that imposing higher taxes on self-employed individuals with high incomes is an effective way to reduce income inequality. This hypothesis will be tested by examining how the treatment effect varies based on responses to **Tax Reduce Inequality** (based on q_new_5, which asks whether respondents believe that higher taxes on self-employed individuals with high incomes reduce inequality).

- **Hypothesis A6.1**: Support for the Theory of Change is more likely among people who believe self-employed individuals earn more than salaried employees. This hypothesis will be tested by examining how the treatment effect varies by answers to **Self Earns More** (based on questions q_14 and q_15, asking respondents if they believe a self-employed doctor earns more than a salaried employee doctor).

- **Hypothesis A6.2**: Support for the Theory of Change is more likely among people who believe that salaried employees pay more income taxes than self-employed individuals with the same income. This hypothesis will be tested by examining how the treatment effect varies based on responses to **Employee Tax More** (based on q_new_1 and q_new_2, which compare the perceived effective tax rates paid by salaried employees versus self-employed individuals).

D Online Survey Experiments: Implementation Details and Results

D.1 Key Hypothesis

In this section, we want to test the hypothesis that horizontal inequity acts as a barrier to the political acceptance of a progressive income tax when a large share of workers are self-employed. Indeed, in low and middle-income countries income taxes are withheld from the salaries of employees in large firms and from those of civil servants, but other segments of the population escape income taxation. This includes individuals at upper-income echelons, such as hard-to-tax liberal professionals and owners of pass-through businesses. The inequitable treatment of individuals with the same realized income— schematically employee versus self-employed—could reduce societies' preferences for progressive income taxes. Instead, citizens and decision-makers might prefer less progressive taxes on consumption, as they do not discriminate between upper-income employees versus upper-income self-employed workers.

Our first hypothesis is that providing information on the extent of the unbalance in tax contributions between employees versus self-employed might make respondents more likely to view this tax gap as unfair. In turn, this could shift their tax policy preferences: individuals might reduce their support for taxation in general, and prefer consumption taxes at the expense of income taxes. This later choice involves a trade-off between horizontal equity (at same income levels, same taxes paid) versus vertical equity (at higher income levels, a higher share of taxes paid).

Our second hypothesis is that the treatment should be particularly effective for the group that is more likely to currently pay the income tax. We expect that employee workers should respond more than the self-employed and individuals not-working. Further, given the high exemption thresholds of the income tax in these countries, only employees with sufficient income are liable for income taxes. We thus, expect that employee workers in the top deciles of the income distribution are the most responsive to the treatment.

These hypothesis, together with the specifications we run, are specified in our pre-registered analysis plan.

D.2 Motivation for the use of online survey experiments

The ideal method for this study would have been to conduct face-to-face surveys in each country, collecting data from a representative sample of the general population using a census as the sampling frame. However, this approach would be costly and we would be less likely to get a representative sample of hard-to-reach populations. Phone surveys, although commonly used, are not suitable for the present survey due to the visual nature of the treatments being studied. They cannot be effectively communicated over the phone. Therefore, online surveys emerge as the most viable option for data collection, despite the representativeness challenges that need to be acknowledged and mitigated to some extent.

Collecting a representative sample of the total population is a significant challenge when conducting online randomized surveys in low- and middle-income countries. In contrast to high-income countries where nearly everyone has internet access, the percentage of the total population with internet access in the countries studied in this study varies from 38 to 75 percent. Additionally, there is a shortage of existing online survey infrastructure, such as what is prevalent in high-income countries where market research companies conduct daily online opinion polls from a large group of pre-registered participants who frequently complete surveys. This is not as widespread in low- and

middle-income countries, which leads to concerns about the limited subset of the population that may participate in such an online survey. Similar concerns exist regarding the use of online labor platforms, such as MTurk, in the context of low- and middle-income countries.

Alternative approaches to online data collection in low- and middle-income countries can roughly be categorized into "opt-in" or "opt-out" approach. The difference between these concepts, lay in the type of decision respondents face when choosing to (not) participate in the survey. Under the "opt-in" approach, respondents choose to participate in the survey, in other words "opt-in" based on some sort of invitation, example would be social media advertisements. The "opt-in" approach has two main limitations, which could ultimately compromise the validity of our results. Firstly, it is prone to selection bias as those who choose to participate may have distinct unobservable characteristics, which could drive their decision to take part in the survey. Secondly, it can lead to potential dishonesty in answers for sensitive topics (such as fairness or tax compliance), as participants can be easily identified through the platform (i.e Facebook). Due to these shortcomings we decided to implement "opt-out" approach in our study. Additionally, Hoy (2022) tested a non-incentivised, "opt-in" approach via online social media advertisements, in similar context as our study. Although the advertisements reached millions of unique social media users over a period of two months, it was not possible to solicit even half of the total respondents required for the survey. Therefore, due to the discussed shortcomings we decided to implement an "opt-out" approach in our study.

To perform the survey experiment via an "opt-out" approach we partnered with RIWI, a survey firm that uses Random Domain Intercept Technology (RDIT) to recruit respondents. This technology works by guiding users to the survey after they accidentally stumble onto inactive web domains.[40] When respondents enter a website within the inventory, instead of a regular error message, they are invited to take part in a quick, anonymous survey. Research suggests the likelihood of accessing an inactive domain is approximately proportional to having access to the internet (**?**). RIWI exploits this by redirecting users from inactive domains to a website inviting them to take part in a survey. At this point people can decide whether to continue to participate in the survey or "opt-out". The system auto-detects several pieces of information about respondents, including their geographic location, which allows us to provide access to the survey only in the countries of interest.

The main drawback of the "opt-out" approach is a high attrition rate occurring in the initial stages of the survey. For this reason, the very first question within the survey asks for basic characteristics (age and gender). This allows us to track variation in attrition by the characteristics of respondents. In addition, we employed a strategy of real-time randomization in our experiment, wherein participants were allocated to the treatment and control groups immediately prior to the experiment.

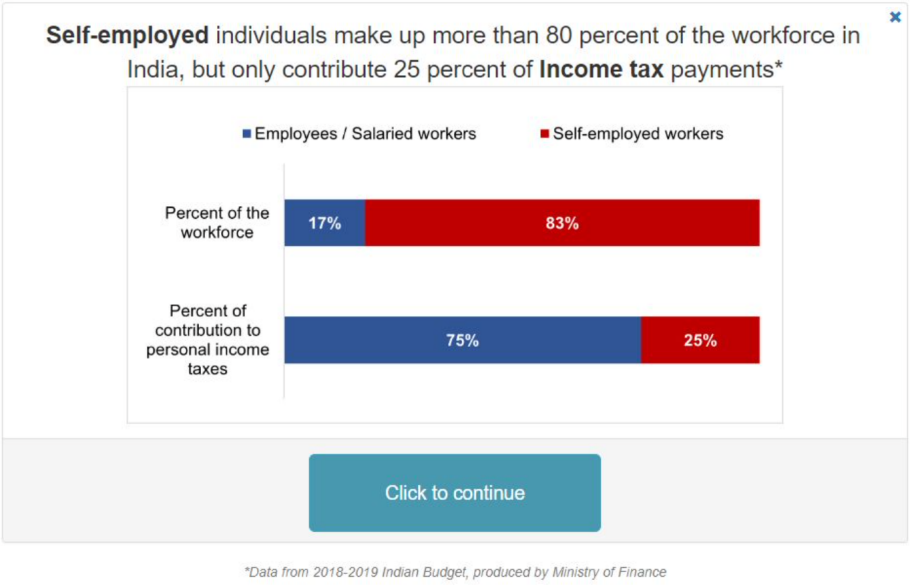
D.3 Additional details about the online survey design

D.3.1 Questions

The first section of our survey captured fundamental self-reported demographic characteristics, such as age, gender, employment status (salaried worker/employee, self-employed, not working), income quantile and level of education. We also included a question in which we asked all respondents, prior to the treatment, whether they believed that self-employed individuals and salaried employees with the same income should pay the same amount of tax. In this way, all respondents were exposed to the concept of fairness prior to the administration of the treatment. This reduces the likelihood

[40]For this purpose, RIWI holds an extensive inventory of unused, expired, or abandoned web domains.

Figure D.1: Online Survey: Information treatment message



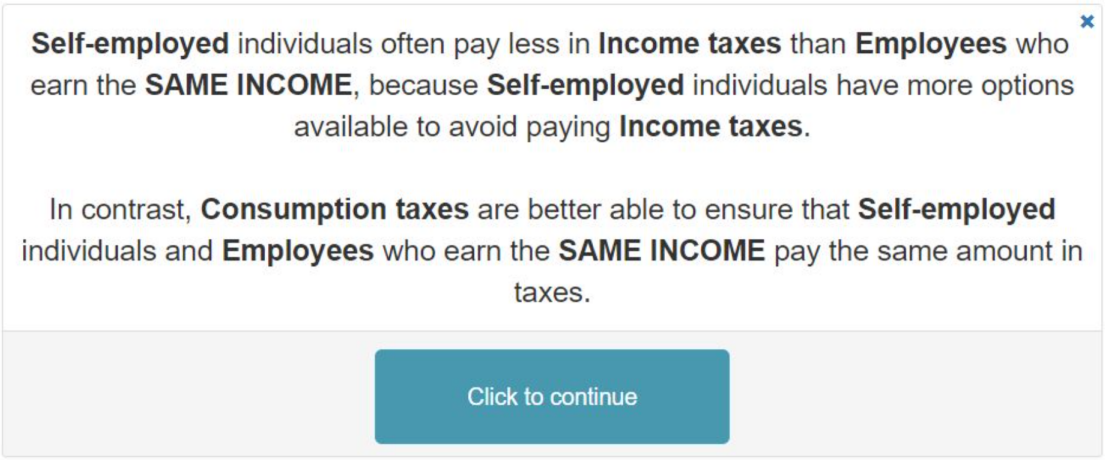
that any treatment effect we observe is purely due to respondents in the treatment groups being "primed" to think about fairness (i.e. this question prior to the treatment means that both the treatment and control groups were "primed" to think about fairness). To reduce attrition, midway through the survey, and just before treatment, we ask respondents if they are willing to complete the remaining six questions in the survey and only let them continue if they say yes. We then randomized remaining respondents into one of three treatment arms or a control group. Finally, the final set of questions are our outcome variables of interest - views of the fairness of tax systems and the extent of support for different policy changes. To ensure there are no problems with serial correlation in answer choices we randomize the answer order for all outcome variables.

D.3.2 Treatments

The objective of the information message was to confront the participants with the imbalance distribution of the tax burden in the workforce. As discussed in the hypotheses section, this information is expected to influence respondents' willingness to support different tax tools and their effect on horizontal equity. To generate this information, we synthesized data on personal income tax collected from employee workers, which we obtained from official statistical sources[41], and the proportion of employee workers in the active national workforce, as reported by Jensen (2022). To enhance comprehension of the information, a graph was included to illustrate the disparity in the first and third treatment (see Figure D.1).

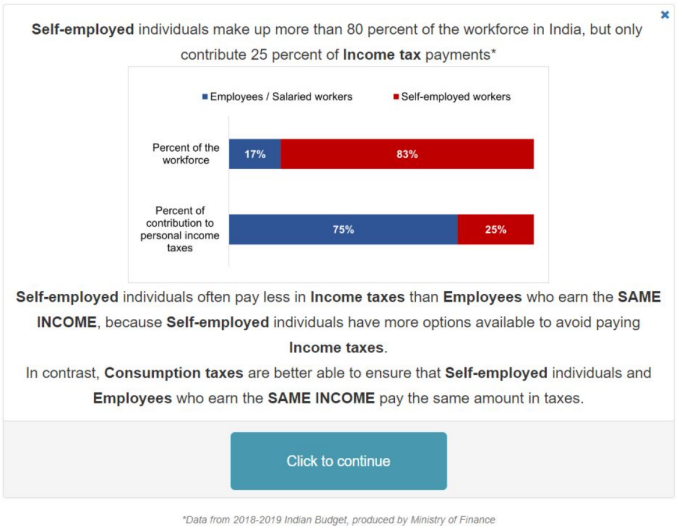
[41] National statistical agencies and OECD (n.d.)

Figure D.2: Online Survey: Pedagogical treatment message



The pedagogical message emphasizes that salaried employees bear a disproportionate share of the tax burden with an income tax, but not with a consumption tax. It also explains that there are more options available to avoid paying income taxes, in contrast to consumption tax, which ensures that individuals with the same income pay the same amount of tax (see Figure D.2).

Figure D.3: Online Survey: Combined treatment message



The integration of information and pedagogical treatments aimed to assess the joint effect of two treatments (see Figure D.3). The objective was to enhance the understanding of the pedagogical messages in relation to the potential implications for equity, illustrated by the current state of the distribution of tax burden among the workforce in the country.

We randomized our sample into these three treatments and one control group. In the field, 24.59% of individuals received T1, 24.04% received T2, and 23.04% received T3 (pooled treatment 71.67%), and 28.33% received the control. It's important to note that the treatment was stratified by the intersection of the age groups defined above and gender. Table D.1 shows the characteristics of respondents in the treatment and control groups.

D.4 Pilot

Assessing fairness is a complex and subjective process, influenced by the individual's characteristics (such as cultural background, ethical principles, geographic location, prior experiences, etc.) and the specific context of the situation at hand. Navigating complex topics such as tax policy and its impact on societal equity imposes numerous cognitive difficulties, as individuals may have (on average) limited familiarity with these issues. This issue might be particularly prevalent in poorer societies, where individuals may not possess the necessary resources such as time, education, or information to form opinions that accurately reflect their moral convictions.

In recognition of these factors and the impact they may have on the quality of the data we could collect, we conducted two rounds of pilot testing prior to launching the full survey, to maximise the likelihood that respondents would comprehend the questions they were asked and the information they received.

Our primary focus during the piloting was to investigate whether respondents adequately understood the treatments and the questions within the survey. In addition, piloting provided an opportunity to verify the assumptions made regarding the size of the treatment effects and to determine the ways in which we can minimize attrition.

We conducted two rounds of the pilot in India in July and August 2022. India was selected as a target country for our pilot for two reasons. First, the survey firm typically conducts their pilots in India due to the availability of a large, diverse population where English is widely used on the internet. Second, India exhibits a comparable level of GDP per capita to the majority of the countries in our study sample.

The first round of pilot was performed at the end of July 2022 with a sample of 52,269 respondents. In this round of the pilot, we asked respondents to answer 19 questions (including the option to leave the feedback). The pilot round consisted of two phases. In first phase we collected responses from approximately half of the respondents and paused the pilot. We evaluated the preliminary results, introduced minor changes (i.e we rephrased the answers to make the answer choice set more consistent, changed the order of the questions) and continued with the second phase of thew pilot. In addition, we employed an A-B testing methodology on a series of questions. In particular, we closely observed relative performance of two types of choice set: Likert scale (i.e. completely fair / somewhat fair / neither fair nor unfair / somewhat unfair / completely unfair) and restricted scale (i.e. fair/ neither fair nor unfair/ unfair).

Following the initial round of pilot testing, we evaluated the outcomes and identified the areas for improvement for the next round of pilot survey. Firstly, in the initial design we implemented only two treatment arms: information treatment and combined treatment (providing pedagogical and information message together). However, within the treatment group which received the combined treatment[42] only 52 % of respondents exposed to the treatment finished the survey, which is less in comparison to the information treatment group (56 %) or the control group (57 %). In response, we simplified the this treatment and reduced the amount of detail to mitigate the loss of interest and attention. In addition, we decided to add a purely pedagogical treatment, resulting in three treatment arms. Secondly, we observed an overall a high rate of attrition, only 2 % of respondents completed the survey, presumably due to the length of the survey. As a result we decided to reduce the number of questions to 13 (including an option for feedback). Thirdly, we evaluated the performance of different questions in terms of the distribution of answers. Some questions with likert scale options had almost uniformly distributed of answers in comparison to restricted choice set questions, which were simplier for respondents to answer. This suggests that in some instances

[42]Pedagogical part of the treatment was formally longer and more detailed than the final version.

Table D.1: Online Survey: Randomization balance

	Control		Treatment		P-value
	N	Mean	N	Mean	
Panel A: All countries					
College degree and above	4342	0.337	10986	0.355	0.007***
		(0.007)		(0.005)	
Middle-High income	4342	0.642	10986	0.654	0.147
		(0.007)		(0.005)	
Answer order	4342	1.494	10986	1.496	0.862
		(0.008)		(0.005)	
Used smartphone	4342	0.683	10986	0.658	0.007***
		(0.007)		(0.005)	
F-test of joint significance					3.162**
Number of observations					15328
Panel B: Colombia					
College degree and above	827	0.156	2228	0.137	0.300
		(0.013)		(0.007)	
Middle-High income	827	0.588	2228	0.609	0.203
		(0.017)		(0.010)	
Answer order	827	1.514	2228	1.510	0.871
		(0.017)		(0.011)	
Used smartphone	827	0.509	2228	0.501	0.623
		(0.017)		(0.011)	
F-test of joint significance					0.881
Number of observations					3055
Panel C: India					
College degree and above	918	0.453	2146	0.465	0.523
		(0.016)		(0.011)	
Middle-High income	918	0.635	2146	0.655	0.327
		(0.016)		(0.010)	
Answer order	918	1.483	2146	1.473	0.601
		(0.017)		(0.011)	
Used smartphone	918	0.715	2146	0.713	0.917
		(0.015)		(0.010)	
F-test of joint significance					0.364
Number of observations					3064
Panel D: Indonesia					
College degree and above	892	0.312	2203	0.324	0.665
		(0.016)		(0.010)	
Middle-High income	892	0.717	2203	0.702	0.291
		(0.015)		(0.010)	
Answer order	892	1.493	2203	1.484	0.695
		(0.017)		(0.011)	
Used smartphone	892	0.667	2203	0.679	0.433
		(0.016)		(0.010)	
F-test of joint significance					0.607
Number of observations					3095
Panel E: Nigeria					
College degree and above	867	0.367	2188	0.424	0.010***
		(0.016)		(0.011)	
Middle-High income	867	0.700	2188	0.708	0.704
		(0.016)		(0.010)	
Answer order	867	1.486	2188	1.494	0.734
		(0.017)		(0.011)	
Used smartphone	867	0.855	2188	0.807	0.001***
		(0.012)		(0.008)	
F-test of joint significance					3.749***
Number of observations					3055
Panel F: Philippines					
College degree and above	838	0.383	2221	0.432	0.018**
		(0.017)		(0.011)	
Middle-High income	838	0.562	2221	0.595	0.089*
		(0.017)		(0.010)	
Answer order	838	1.495	2221	1.520	0.238
		(0.017)		(0.011)	
Used smartphone	838	0.661	2221	0.596	0.001***
		(0.016)		(0.010)	
F-test of joint significance					3.865***
Number of observations					3059

the likert scale questions may have imposed a higher cognitive load on the respondents and we were capturing higher amount of "noise" in our sample. Therefore, we decided to include two restricted choice set questions following this round of the pilot.

After two weeks we implemented discussed changes and performed a second round of pilot on a sample of 21,706 respondents. As discussed, in the second round of pilot had significantly lower number of questions which resulted in slightly higher response rate, 4 % of respondents completed the survey. In addition, after simplifying the pedagogical treatment and adding treatment arm, we observed similar attrition rate among all the treatment groups.In the second pilot, we aimed to reduce the mental strain on respondents by incorporating part of the question into the answer options. Instead of asking the respondent to choose between objectives "A" and "B" after listing various tax policy objectives, we presented the objectives directly in the answer options and asked the respondent to select their preferred one. This change was made to avoid potential errors that might occur as the respondent switches back and forth between the question and answer options.

The results of the two phases of the pilot study revealed three key insights that were incorporated into the final survey experiment. Firstly, it was imperative to keep the survey instrument as straightforward and simple as possible, despite the potential loss of details. This was due to the nature of the study setting where respondents were unable to provide feedback on their understanding or interact with the treatment in any other manner. However, this limitation could be at least partially mitigated through an in-person survey.

Secondly, the initial long survey with complex questions proved to be unwelcome by the respondents. The introduction of a shorter survey version led to a doubling of the completion rate, with a 4% completion rate observed.

Finally, it was challenging to accurately capture complex policy preferences through the Likert answer choice set in an online survey. The observed flat distribution of answers for more nuanced questions, which required participants to consider the consequences of their choices rather than solely relying on their moral judgments, suggests that respondents were unable to synthesize complete preferences within the confines of an online survey setting.

D.5 Data Description

D.5.1 Sample Demographics

113,719 participants were invited to the survey, out of which 75.84% (86,245) started the survey. Out of those who start the survey, 61.10% (52,692) continue on all the way to question 5, at which point they are offered to exit the survey or continue. If they answer yes, they are randomly allocated to a treatment or control group. 18,747 participants continue through to answer the post-treatment question. Finally, 16155 respondents finish the survey to the very end, which makes 14.21% of invited participants.

We primarily analyze these 16155 respondents that completed the survey. 32.70% completed the survey on a desktop, 65.99% on a smartphone, and 1.31% on remaining devices. We ran the survey in five countries - Colombia (N = 3218), India (N = 3240), Indonesia (N = 3254), Nigeria (N = 3222), and the Philippines (N = 3221). The respondents are 64.88% male and 35.12% female. We restricted the survey on individuals older that 18, thus the minimum age was 18, the maximum was 98, and the mean was 32.70133. We further split age into three strata categories, 18-34 (66.8%), 35-54 (26.52%), and 55-and-over (6.68%).

D.5.2 Employment and Education

In our effective sample, 33.86% of respondents were employed, 29.07% were self-employed and 37.07% were out of work. Table D.2 illustrates the variation in respondent characteristics according to their type of employment. We also ask respondents to self-identify with one of five income groups: the poorest (15.09%), second poorest (20.01%), middle (58.56%), second richest (3.84%), and richest (2.5%). When it comes to education, 8.58% had primary or less than primary education, 34.00% had secondary education, 22.31% had post-secondary vocational education, and 35.11% had an advanced degree (26.91% bachelor's, 8.20% master's).

Table D.2: Online Survey: Respondent characteristics by employment status

Characteristic	Overall	Salaried Employee	Self-employed
demographics			
Female	0.35	0.35	0.31
Age (in years)	0.33	0.34	0.34
education			
Primary/less	0.09	0.08	0.09
Secondary	0.34	0.26	0.34
Post-secondary	0.22	0.21	0.24
Bachelor's	0.27	0.33	0.25
Master's/higher	0.08	0.12	0.08
income			
Middle-high income	0.65	0.70	0.68
Low income	0.35	0.30	0.32

Note: This table presents demographic characteristics of respondents, disaggregated by their employment status (salaried employee vs. self-employed). The means for key variables, such as gender, age (in years), education levels, and income categories, are reported. Education and income categories are presented as proportions of the respective groups.

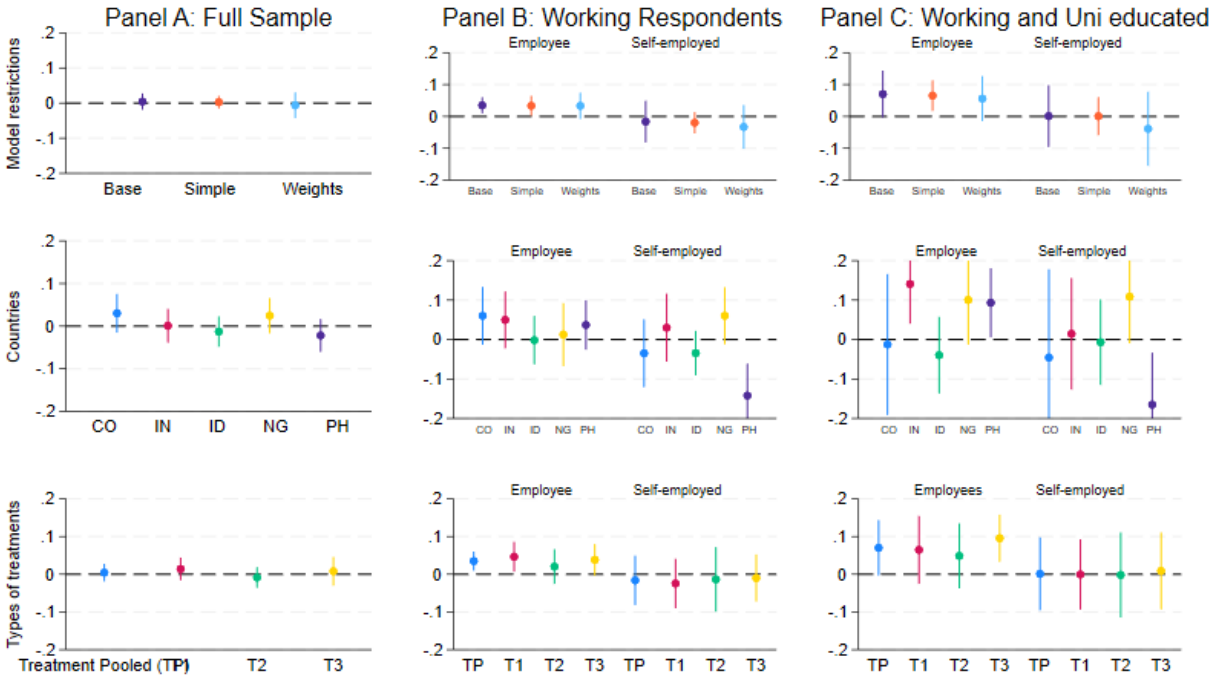
D.6 Main results of the online survey

Table D.3: Online Survey: Experimental results

	Gap Concern	Gap Unfair	Gap Unjustified	Unfairness Index	Taxes Important	Fair Tax System	Increase Sales Tax	Tax Policy Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Main Effects								
Treatment	-0.010	0.019**	0.000	0.005	-0.002	-0.014*	-0.005	-0.018
	(0.007)	(0.009)	(0.005)	(0.011)	(0.008)	(0.008)	(0.006)	(0.012)
Observations	15328	15328	15328	15328	15328	15328	15328	15328
Control mean	0.198	0.355	0.095	-0.003	0.251	0.274	0.129	0.018
Panel B: Heterogeneity by Employment Status, Working								
Treatment X Self-employed	-0.015	0.008	-0.006	-0.014	-0.005	-0.023	-0.004	-0.025
	(0.013)	(0.016)	(0.009)	(0.020)	(0.014)	(0.014)	(0.011)	(0.022)
Treatment X Employee	-0.004	0.050***	0.003	0.035*	-0.003	-0.007	0.005	-0.002
	(0.012)	(0.015)	(0.009)	(0.019)	(0.013)	(0.013)	(0.010)	(0.021)
Observations	9643	9643	9643	9643	9643	9643	9643	9643
p(Employee=Self-employed)	0.540	0.052	0.468	0.081	0.908	0.412	0.528	0.433
Panel C: Heterogeneity by Employment Status, Working and University Educated								
Treatment X Self-employed	0.030	-0.047*	0.007	0.000	0.005	-0.020	0.021	0.010
	(0.021)	(0.028)	(0.015)	(0.034)	(0.027)	(0.025)	(0.017)	(0.036)
Treatment X Employee	0.002	0.111***	-0.007	0.070**	0.012	-0.027	-0.009	-0.020
	(0.018)	(0.022)	(0.013)	(0.030)	(0.021)	(0.020)	(0.015)	(0.031)
Observations	3773	3773	3773	3773	3773	3773	3773	3773
p(Employee=Self-employed)	0.328	0.000	0.500	0.122	0.834	0.842	0.186	0.526

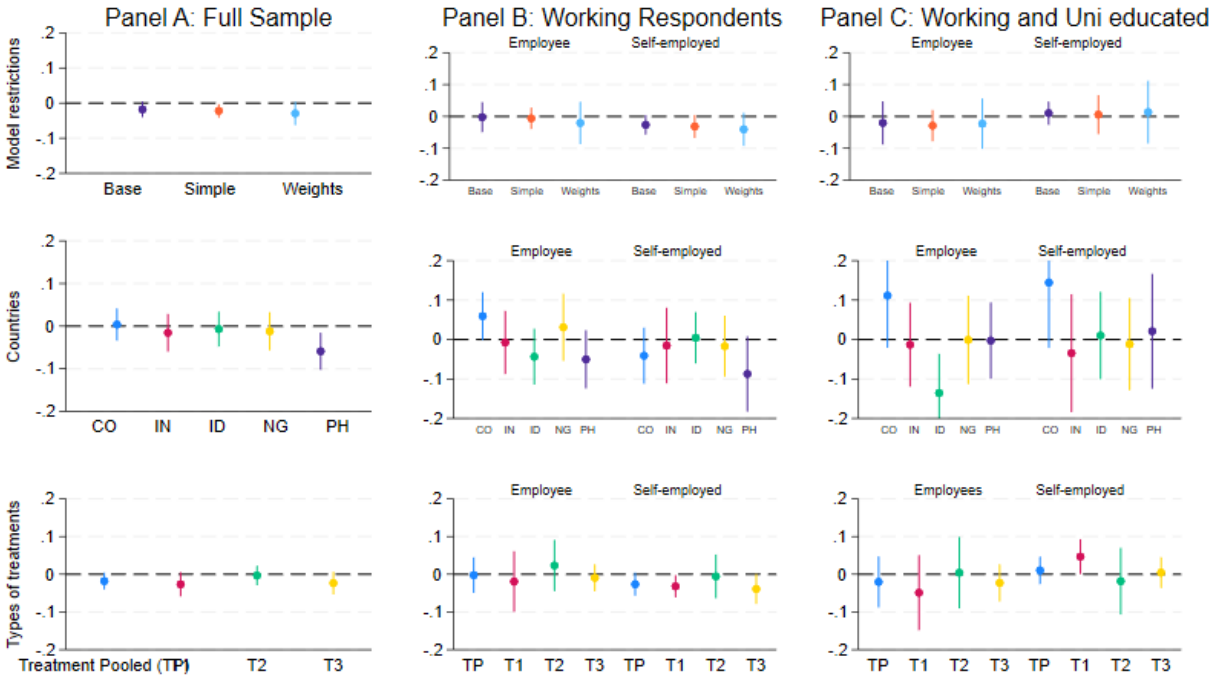
Notes: This table reports the pooled treatment effects on perceived tax fairness outcomes (Columns 1 through 4) and tax policy preferences (Columns 5 through 8). The dependent variable is: in column 1, *Gap Concern*: indicator for whether the respondent strongly agrees that differences in taxes paid by self-employed individuals and employees are a serious problem (takes value 1 if "Strongly Agree" or "Agree", and 0 otherwise); in column 2, *Gap Unfair*: indicator for whether the respondent believes that differences in taxes paid by self-employed individuals and employees with the same income are unfair (takes value 1 if "Unfair", and 0 otherwise); in column 3, *Gap Unjustified*: indicator for whether the respondent believes it is not justified for self-employed individuals and employees with the same income to pay different amounts of taxes (takes value 1 if "Strongly disagree" or "Disagree", and 0 otherwise); in column 4, *Unfairness Index*: unweighted average of z-scores of Gap Concern, Gap Unfair, and Gap Unjustified, with higher values indicating greater perceived unfairness; in column 5, *Taxes Important*: indicator for whether the respondent considers it important for people to pay taxes (takes value 1 if "Strongly Agree" or "Agree", and 0 otherwise); in column 6, *Fair Tax System*: indicator for whether the respondent selects "People with the SAME income paying the SAME taxes" as the most important objective to achieve a fair tax system (takes value 1 if selected, and 0 otherwise); in column 7, *Increase Sales Tax*: indicator for whether the respondent supports an increase in consumption tax instead of an increase in income tax on the rich (takes value 1 if "Strongly Agree" or "Agree", and 0 otherwise); in column 8, *Tax Policy Index*: unweighted average of z-scores of Taxes Important, Fair Tax System, and Increase Sales Tax. Panel A reports results for the full sample, including all respondents who completed the survey. Panel B restricts the sample to respondents who are currently employed (self-employed or employees). Panel C further restricts the sample to respondents who are currently employed and university-educated. Panels B and C estimate treatment heterogeneity by employment status. All regressions include country fixed effects, stratum fixed effects, demographic controls (university education, middle/high income), and survey controls (answer order and whether the respondent used a smartphone). See Section 3.2.2 for details. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Figure D.4: Online Survey: Country and Treatment Heterogeneity (Unfairness Index)



Note: The figure reports estimated average treatment effects on the Unfairness Index, with 95 percent confidence intervals. Estimates are obtained from separate regression specifications. Column (A) presents results for the full sample; Column (B) restricts the sample to employees; Column (C) further restricts the sample to employees with university education. In Columns (B) and (C), results are presented separately for employees and the self-employed. Rows summarize heterogeneity across (i) alternative model specifications (baseline, parsimonious, and weighted), (ii) country, and (iii) treatment arm. See Section 3.2.2 for details.

Figure D.5: Online Survey: Country and Treatment Heterogeneity (Tax Policy Index)



Note: The figure reports estimated average treatment effects on the Tax Policy Index, with 95 percent confidence intervals. Estimates are obtained from separate regression specifications. Column (A) presents results for the full sample; Column (B) restricts the sample to employees; Column (C) further restricts the sample to employees with university education. In Columns (B) and (C), results are presented separately for employees and the self-employed. Rows summarize heterogeneity across (i) alternative model specifications (baseline, parsimonious, and weighted), (ii) country, and (iii) treatment arm. See Section 3.2.2 for details.

E Surveys

E.1 In-Person Survey: Survey Variables

Demographics

- **Age** (Answers: 18-99)
- **Gender** (Answers: Male/Female)
- **Education** What is the highest level of education you completed? (Answers: Primary or less/ Secondary/ Post-secondary vocational training/ Bachelor's degree/ Master's degree or higher)
- **Employment status** What is your current employment status?*(Answers: Salaried employee / Self-employed (own account, small business owner, family worker, casual daily labourer) / Not working)*
- **Occupation** *(Answers: list of jobs)*
- **Income group**: Imagine the total population of the [Country] is divided into 5 income groups from poorest to richest, each with the same number of people. In which of these income groups do you place your household? *(Answers: Poorest group / 2nd poorest group / Middle group / 2nd richest group / Richest group)*
- **Household size**
- **Total Income in typical month in 2023** *(Answers: bins of income adjusted by household size)*

Knowledge and understanding

- **Knowledge of differences: self-employed vs employees** An individual is an employee if they work for someone else, whereas an individual is self-employed if they do not work for someone else. Do you understand the difference between being self-employed vs an employee?
- **Knowledge of differences: income tax vs sales tax**

Prior Beliefs

- **Extent of Self-employment** Asked for three different income groups (Richest 10%, middle 10%, poorest 10%). Consider the [income group] workers in Pakistan. What share of them would you say are self-employed compared to employees?
- **Income differences: self-employed vs employees**: compare question: How much do you think a [worker type] doctor earns in a typical month (in PKR)?
- **Own work preference: self-employed vs employee** Suppose you could earn the same income as either an employee or while self-employed. Which would you choose ?
  - **Reason for own preference**
- **Others work preference: self-employed vs employee** What do you think most people in Pakistan would choose if they could do the identical kind of work and receive the same amount of income as either an employee or self-employed?

- **Income tax differences: self-employed vs employee** Think of two people with the same income, one is self-employed and one is a salaried employee. How do you think the PIT taxes paid by these individuals differ?
  - **Income tax differences specific: self-employed vs employee** same example, specific in the case of lawyers
- **Effective tax rate: self-employed vs employee** Compare answers to: Consider a [worker type] individual who earns PKR 130,000 in true income and therefore owes PKR 5,000 in personal income taxes. How much of this do you think the [worker type] individual will actually pay?
- **Government waste** Of every 1000 rupee that the government collects in taxes, how many would you say are wasted?
- **Government capacity to limit income tax evasion** How much do you think that the government can do to stop [worker type] from evading personal income tax?
- **Reasons for being rich** Which has more to do with why a [worker type] is rich?
- **Vertical equity of income taxation** How much of an impact do you think a progressive personal income tax system (in which people with higher incomes pay a higher share of income in taxes than people with lower incomes) has on reducing inequality?
- **Behavioral impacts of income taxation** If the personal income tax rate were to increase for the richest people in the economy, would it encourage them towards the following behaviors? *Likeart scale for following ANSWERS: Evade Taxes, Work Less, Work More, Be Less entrepreunarial and create fewer businesses*
- **Horizontal equity of taxation** Do you agree or disagree with the following statement: People should refuse to pay taxes until their fellow citizens with the same income pay the same amount in taxes

Primary Outcomes after first message (information on income tax gap SE vs employees)
GROUP 1 of outcomes: concern, fairness, justification

- **Gap concern**: Do you agree or disagree with the following statement: In Pakistan, differences in taxes paid between self-employed individuals and employees is a serious problem that needs to be addressed. *(Answers: Likert scale)*
- **Gap Unfair** Consider a self-employed individual earning the same income as an employee. Differences in taxes paid between these people are: *(Answers: Fair/ Unfair / Neither fair nor unfair)*
  - **Gap Unfair Scenario**: examples with self-employed vs salaried lawyers
- **Gap Unjustified**: Do you agree or disagree with the following statement: It is NOT justified for self-employed individuals and employees to pay different amounts of tax, even if they have the SAME INCOME *(Answers: Likert scale)*

- **Gap index**: constructed index that measures the impact of the treatments on people's perceptions across the first three outcomes (Gap concern, gap unfair, gap unjustified). Note that we aslo have the more specific question for gap unfair (based on an example), to verify the understanding of this particular question and its coherence.

GROUP 2 of outcomes tax perception and tax policy views:

- **Importance of paying taxes** Do you agree or disagree with the following statement: It is important for people to pay taxes?

- **Justifiable to not pay taxes**: Which best describes your thoughts on the following action: People not paying the taxes they owe to the government: *ANSWERS: This is wrong and punishable; This is wrong but understandable; This is not wrong at all*

- **Increasing taxes on self-employed**: Do you agree or disagree with the statement: Reforms which increase the amount of tax self employed individuals with high incomes have to pay is a good way to reduce income inequality

- **Tax perception index**: constructed index that measures the impact of the treatments on people's tax perceptions. Combine the previous three questions on importance of paying taxes, justifiable to not pay taxes, and increasing taxes on self-employed into an index

- **Horizontal vs Vertical equity**: To achieve a fair tax system, which is more important? : *ANSWERS: People with the SAME income paying the same amount in taxes; RICHER people paying a HIGHER share of income in taxes; They are equally important*

Primary outcomes after second message (information on consumption tax equality between self-employed and employees)

- **Support for income vs sales tax** Suppose the government is raising PKR100,000, from a combination of PIT and sales tax. Which combination would you choose?

- **Support raising sales tax rather than income tax** Do you agree or disagree with the following statement: Instead of raising income taxes on the rich, the sales tax should be increased so that employees and self employed individuals contribute more evenly

- **Relative importance horizontal vs vertical equity, absolute scenarios**

  - **Relative importance horizontal vs vertical equity, relative scenarios** Note: this question is harder because it is about relative changes, such that the tax system is never fully horizontally equitable.

- **Index Policy Support for Horizontal Equity** constructed index that measures the impact of the treatments on people's support for horizontally equitable tax policies. Combines the previous three questions on support for income vs sales tax, Relative importance horizontal vs vertical equity, Index Policy Support for Horizontal Equity.

Further beliefs, to test mechanisms:

- **Sales tax effect on economic activity** What effect do you think increasing the sales tax rate would have on economic activity?

- **Increasing income tax of self-employed effect on economic activity** What effect do you think increasing the effective amount of taxes paid by self employed individuals (with high incomes) would have on economic activity?
- **Political party support** Which party did you vote for in recent election?

E.2 In-Person Survey: Full Questionnaire

	Question	Answer	
q_1 *(required)*	*What is your age?* *Enter -99 if Don't Know and -90 if Refused to answer/left the survey* *Response constrained to: .>17 and .<101*		
q_2 *(required)*	What is your gender?	1	Male
		2	Female
q_3 *(required)*	*What is the highest level of education you have completed?*	1	Primary or less
		2	Secondary
		3	Post-secondary vocational training
		4	Bachelor's degree
		5	Master's degree or higher
		90	Refused/Respondent left the survey
q_new_8 *(required)*	*Are you the head of household/primary income earner?*	0	No
		1	Yes
q_4 *(required)*	*What is your current employment status?*	1	Salaried employee
		2	Self-employed (own account small business owner, family worker, casual daily laborer)
		3	Not working/student/retired
		4	Both (salaried employee and self-employed)
q_4_1 *(required)*	*What is your primary employment status/source of income (i.e which status/occupation brings you the most income)?* *Question relevant when: selected(${q_4} , '4')*	1	Salaried employee
		2	Self-employed
		3	Both are equal
q_new_prof *(required)*		1	Teacher
		2	Researcher
		3	Government jobs (civil servant)
		4	Banking and Finance
		5	Marketing and Sales
		6	Human Resources (HR)
		7	Communications / Customer Relations
		8	Project Management / Strategic Planning
		9	Information Technology (IT)
		10	Fashion and Design
		11	Media and Journalism
		12	Law and Legal(Lawyer) Professions
		13	Engineer
		14	Doctor
		15	Nurse
		16	Pharmaceutical Industry / Pharmacist
		17	Psychologist
		18	Consultant

			19	Social Work and Non-profit Organizations
			20	Entrepreneurship (own business)
			21	Administration / Operations Officer
			22	Content Writer / Content Creator
			23	Cashier / Receptionist
			24	Call Centre Operator
			88	Other, specify
			99	Don't know
			90	Refused/Respondent left the survey
q_new_prof_o *(required)*	Other Specify *Question relevant when: selected(${q_new_prof} ,88)*			
q_5 *(required)*	Imagine the total population of Pakistan is divided into 5 income groups from poorest to richest, each with the same number of people. In which of these income groups do you place your household?		1	Poorest group
			2	2nd poorest group
			3	Middle group
			4	2nd richest group
			5	Richest group
			99	Don't know
			90	Refused/Respondent left the survey
q_6 *(required)*	Including yourself, how many people live in your home?		1	1
			2	2
			3	3
			4	4
			5	5
			6	6
			7	7
			8	8
			9	9
			10	10
			11	11
			12	12
			13	More than 12
			90	Refused/Respondent left the survey
q_7_1 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '1')*		1	<9,300
			2	9,300-12,500
			3	12,501-16,700
			4	16,701-30,000

			5	>30,001
			99	Don't know
			90	Refused/Respondent left the survey
q_7_2 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '2')*		1	<18,600
			2	18,600-25,000
			3	25,002-33,400
			4	33,402-60,000
			5	>60,002
			99	Don't know
			90	Refused/Respondent left the survey
q_7_3 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '3')*		1	<27,900
			2	27,900-37,500
			3	37,503-50,100
			4	50,103-90,000
			5	>90,003
			99	Don't know
			90	Refused/Respondent left the survey
q_7_4 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '4')*		1	<37,200
			2	37,200-50,000
			3	50,004-66,800
			4	66,804-120,000
			5	>120,004
			99	Don't know
			90	Refused/Respondent left the survey
q_7_5 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '5')*		1	<46,500
			2	46,500-62,500
			3	62,505-83,500
			4	83,505-150,000
			5	>150,005
			99	Don't know
			90	Refused/Respondent left the survey
q_7_6 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '6')*		1	<55,800
			2	55,800-75,000
			3	75,006-100,200
			4	100,206-180,000
			5	>180,006
			99	Don't know
			90	Refused/Respondent left the survey
q_7_7 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '7')*		1	<65,100
			2	65,100-87,500
			3	87,507-116,900
			4	116,907-210,000
			5	>210,007
			99	Don't know
			90	Refused/Respondent left the survey

q_7_8 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '8')*	1	< 74,400
		2	74,400 - 100,000
		3	100,008 - 133,600
		4	133,608 - 240,000
		5	> 240,008
		99	Don't know
		90	Refused/Respondent left the survey
	- *Question relevant when: selected(${q_6} , '9')*	2	83,700 - 112,500
		3	112,509 - 150,300
		4	150,309 - 270,000
		5	> 270,009
		99	Don't know
		90	Refused/Respondent left the survey
q_7_10 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '10')*	1	< 93,000
		2	93,000 - 125,000
		3	125,010 - 167,000
		4	167,012 - 300,000
		5	> 300,010
		99	Don't know
		90	Refused/Respondent left the survey
q_7_11 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '11')*	1	< 102,300
		2	102,300 - 137,500
		3	137,511 - 183,700
		4	183,715 - 330,000
		5	> 330,011
		99	Don't know
		90	Refused/Respondent left the survey
q_7_12 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '12')*	1	< 111,600
		2	111,600 - 150,000
		3	150,012 - 200,400
		4	200,412 - 360,000
		5	> 360,012
		99	Don't know
		90	Refused/Respondent left the survey
q_7_13 *(required)*	What was your total household income in a typical month in 2023 (in PKR)? - *Question relevant when: selected(${q_6} , '13')*	1	< 111,600
		2	111,600 - 150,000
		3	150,012 - 200,400
		4	200,412 - 360,000
		5	> 360,012
		99	Don't know
		90	Refused/Respondent left the survey
q_8 *(required)*		0	No
		1	Yes

	An individual is an employee if they work for someone else, whereas an individual is self-employed if they do not work for someone else. Do you understand the difference between being self-employed vs an employee? *Enumerator: If the respondent says no: Explain again using more comprehensive definition: An individual is an employee if they hold explicit or implicit employment contracts that give them a basic remuneration not directly dependent on the revenue of the unit for which they work, whereas an individual if self-employed if they work on their own account or with one or a few partners or in a cooperative, holding jobs such as employers, own-account workers, family workers, and members of producers' cooperatives.*	
q_8_assist *(required)*	For the enumerator: Did the respondent require extra assistance in the previous question? (For example, did you have to repeat the question or explain the question?)	0 No 1 Yes
q_9 *(required)*	Consider the richest 10% of workers in Pakistan. What share of them would you say are self-employed compared to employees?	1 Most to all of them (>= 75%) 2 Many of them (>= 50% & < 75%) 3 Some of them (>= 25% & < 50%) 4 A few of them (>0% & < 25%) 5 None of them (0%) 99 Don't know 90 Refused/Respondent left the survey
q_10 *(required)*	Consider the middle 10% of workers in Pakistan. What share of them would you say are self-employed compared to employees?	1 Most to all of them (>= 75%) 2 Many of them (>= 50% & < 75%) 3 Some of them (>= 25% & < 50%) 4 A few of them (>0% & < 25%) 5 None of them (0%) 99 Don't know 90 Refused/Respondent left the survey
q_11 *(required)*	Consider the poorest 10% of workers in Pakistan. What share of them would you say are self-employed compared to employees?	1 Most to all of them (>= 75%) 2 Many of them (>= 50% & < 75%) 3 Some of them (>= 25% & < 50%) 4 A few of them (>0% & < 25%) 5 None of them (0%) 99 Don't know 90 Refused/Respondent left the survey
q_14 *(required)*	How much do you think a self-employed doctor earns in a typical month (in PKR)? *Enter -99 if Don't Know and -90 if Refused to answer/left the survey* *Response constrained to: (.>=1000 and .<=10000000) or .=-99 or .=-90*	
q_15 *(required)*	How much do you think a doctor working as an employee earns in a typical month (in PKR)? *Enter -99 if Don't Know and -90 if Refused to answer/left the survey* *Response constrained to: (.>=1000 and .<=10000000) or .=-99 or .=-91*	
q_18 *(required)*	Suppose you could earn the same income as either an employee or while self-employed. Which would you choose ?	1 Self-employed 2 Employee 99 Don't know 90 Refused/Respondent left the survey
q_19 *(required)*	What do you think most people in Pakistan would choose if they could do the identical kind of work and receive the same amount of income as either an employee or self-employed?	1 Self-employed 2 Employee 99 Don't know

		90	Refused/Respondent left the survey
checkpoint_1 *(required)*	Is the respondent still present and completing the survey? *Question relevant when: selected(${consent} , '1')*	0	No
		1	Yes

resp_available_0 > survey > cp1
Group relevant when: selected(${checkpoint_1} , '1')

resp_available_0 > survey > cp1 > q_20
Group relevant when: selected(${q_18} , '2')

q_20_0	(If own preference is employee) Rate the following reasons for preferring to be an employee:		
q_20_a *(required)*	More job security	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_20_b *(required)*	Fringe benefits (health, pension, insurance)	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_20_c *(required)*	More stable income	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_20_d *(required)*	Higher monthly income	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_20_e *(required)*	Higher lifetime income (or income potential)	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_20_f *(required)*	Prestige or social status	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree

resp_available_0 > survey > cp1 > q_21
Group relevant when: selected(${q_18} , '1')

q_21_0	(If own preference is self-employed) Rate the following reasons for preferring to be self-employed:		
q_21_a *(required)*	More flexibility in work schedule	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_21_b *(required)*	More agency or independence in the work	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree

			4	Disagree
			5	Strongly disagree
q_21_c *(required)*	Higher monthly income		1	Strongly agree
			2	Agree
			3	Neither agree nor disagree
			4	Disagree
			5	Strongly disagree
q_21_d *(required)*	Higher lifetime income (or income potential)		1	Strongly agree
			2	Agree
			3	Neither agree nor disagree
			4	Disagree
			5	Strongly disagree
q_21_e *(required)*	Prestige or social status		1	Strongly agree
			2	Agree
			3	Neither agree nor disagree
			4	Disagree
			5	Strongly disagree
q_24_1 *(required)*	Personal income tax is levied on the income of individuals. The amount paid in personal income tax is based on the amount of income they earn. Sales tax is levied on consumption of goods and services. The amount paid in sales tax is based on the amount consumed. Do you understand the difference between personal income tax vs sales tax? -		0	No
			1	Yes
q_24_1_assist *(required)*	For the enumerator: Did the respondent require extra assistance in the previous question? (For example, did you have to repeat the question or explain the question?)		0	No
			1	Yes
q_26 *(required)*	Think of two people with the same income, one is self-employed and one is a salaried employee. How do you think the PIT taxes paid by these individuals differ?		1	The self-employed individual pays less than the employee
			2	The self-employed individual pays more than the employee
			3	They pay the same amount
			99	Don't know
			90	Refused/Respondent left the survey
q_new_1 *(required)*	Consider a self employed individual who earns PKR 130,000 in true income and therefore owes PKR 5,000 in personal income taxes. How much of this do you think the self employed individual will actually pay? *Enter percentage Enter -99 if Don't Know and -90 if Refused to answer/left the survey* *Response constrained to: .>=0and .<101*			
q_new_2 *(required)*	Consider an employee who earns PKR 130,000 in true income and therefore owes PKR 5,000 in personal income taxes. How much of this do you think the employee will actually pay? *Enter percentage Enter -99 if Don't Know and -90 if Refused to answer/left the survey* *Response constrained to: .>=0and .<101*			
q_27 *(required)*	Imran runs his own business working as a lawyer. He earns 100,000 Rupees per month doing this. Shaheen also earns 100,000 Rupees a month, working as a lawyer at large private corporation. Which one do you think pays more personal income tax?		1	Imran pays more personal income tax than Shaheen
			2	Imran pays less personal income tax than Shaheen
			3	Imran pays the same amount of personal income tax as Shaheen
			99	Don't know
			90	Refused/Respondent left the survey

q_31 *(required)*	Of every 1000 rupee that the government collects in taxes, how many would you say are wasted? *Enter -99 if Don't Know and -90 if Refused to answer/left the survey* *Response constrained to: .>=0 and .<=1000*		
q_new_3 *(required)*	How much do you think that the government can do to stop self employed individuals from evading personal income tax?	1	Nothing at all
		2	Not much
		3	Some
		4	A lot
		99	Don't know
		90	Refused/Respondent left the survey
q_new_4 *(required)*	How much do you think that the government can do to stop employees from evading personal income tax?	1	Nothing at all
		2	Not much
		3	Some
		4	A lot
		99	Don't know
		90	Refused/Respondent left the survey
q_34_e *(required)*	Which has more to do with why an employee is rich?	1	Talent
		2	Effort
		3	Luck
		4	Family
		5	Networks
		88	Other
		99	Don't know
		90	Refused/Respondent left the survey
q_34_e_o *(required)*	Other Specify *Question relevant when: 0*		
q_34_se *(required)*	Which has more to do with why a self employed individual is rich?	1	Talent
		2	Effort
		3	Luck
		4	Family
		5	Networks
		88	Other
		99	Don't know
		90	Refused/Respondent left the survey
q_34_se_o *(required)*	Other Specify *Question relevant when: 0*		
q_36_new *(required)*	How much of an impact do you think a progressive personal income tax system (in which people with higher incomes pay a higher share of income in taxes than people with lower incomes) has on reducing inequality?	1	Nothing at all
		2	Not much
		3	Some
		4	A lot
		99	Don't know
		90	Refused/Respondent left the survey
resp_available_0 > survey > cp1 > q_37			
q_37_0	If the personal income tax rate were to increase for the richest people in the economy, would it encourage them towards the following behaviors?		
q_37_a *(required)*	Evade taxes	1	Strongly agree
		2	Agree

		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_37_b *(required)*	Work less	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_37_c *(required)*	Work more	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_37_d *(required)*	Be less entrepreneurial and create fewer businesses	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_39 *(required)*	Do you agree or disagree with the following statement: People should refuse to pay taxes until their fellow citizens with the same income pay the same amount in taxes	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
checkpoint_2 *(required)*	Is the respondent still present and completing the survey? *Question relevant when: selected(${checkpoint_1} , '1')*	0	No
		1	Yes

resp_available_0 > survey > cp2

Group relevant when: selected(${checkpoint_2} , '1')

treatment_1	EMPLOYEES pay around 4 TIMES more INCOME TAX on average than SELF EMPLOYED individuals who earn the SAME HIGH INCOME. This is because SELF EMPLOYED individuals often under report their income to EVADE TAX more than EMPLOYEES. The large difference in evasion rates between self employed individuals and employees is partly due to enforcement: income taxes are withheld for employees by their employers, while self employed individuals have to pay the tax office directly *Question relevant when: ${treat} =1*		
q_40 *(required)*	Do you agree or disagree with the following statement: In Pakistan, differences in taxes paid by self-employed individuals and salaried employees are a serious problem that needs to be addressed	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_41 *(required)*	Consider a self-employed individual earning the same income as a salaried employee. Differences in taxes paid between these people are:	1	Fair
		2	Unfair
		3	Neither fair nor unfair
		99	Don't know
		90	Refused/Respondent left the survey
q_42 *(required)*	Recall Imran and Shaheen. Imran runs his own business working as a lawyer. He earns 100,000 Rupees per month doing this. Shaheen also earns 100,000 Rupees a month, working as a lawyer at large private corporation. You said that [q_27lab].	1	Fair
		2	Unfair
		3	Neither fair nor unfair
		99	Don't know

	Do you think this is fair?	90	Refused/Respondent left the survey
q_43 *(required)*	Do you agree or disagree with the following statement: It is NOT justified for self employed individuals and employees to pay different amounts of tax if they have the SAME INCOME	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_46 *(required)*	Do you agree or disagree with the following statement: It is important for people to pay taxes		
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_48 *(required)*	Which best describes your thoughts on the following action: People not paying the taxes they owe to the government	1	This is wrong and punishable
		2	This is wrong but understandable
		3	This is not wrong at all
		99	Don't know
		90	Refused/Respondent left the survey
q_50 *(required)*	To achieve a fair tax system, which is more important:	1	People with the SAME income paying the same amount in taxes
		2	RICHER people paying a HIGHER share of income in taxes
		3	They are equally important
q_new_50_a *(required)*	If you had to decide, which of the following is more important to achieve a fair tax system? *Question relevant when: selected(${q_50} , '3')*	1	People with the SAME income paying the same amount in taxes
		2	RICHER people paying a HIGHER share of income in taxes
q_new_5 *(required)*	Do you agree or disagree with the statement: Reforms which increase the amount of tax self employed individuals with high incomes have to pay is a good way to reduce income inequality	1	Strongly agree
		2	Agree
		3	Neither agree nor disagree
		4	Disagree
		5	Strongly disagree
q_24_2 *(required)*	Personal income tax is levied on the income of individuals. The amount paid in personal income tax is based on the amount of income they earn. Sales tax is levied on consumption of goods and services. The amount paid in sales tax is based on the amount consumed. Do you understand the difference between personal income tax vs sales tax? -	0	No
		1	Yes
q_24_2_assist *(required)*	For the enumerator: Did the respondent require extra assistance in the previous question? (For example, did you have to repeat the question or explain the question?)	0	No
		1	Yes
treatment_2	EMPLOYEES pay around the SAME amount of SALES TAX on average as SELF EMPLOYED individuals who earn the SAME HIGH INCOME. This is because EMPLOYEES and SELF EMPLOYED individuals who earn the SAME HIGH INCOME often spend their income on similar goods and services. *Question relevant when: ${treat} =1*		
q_44_a *(required)*	The government mainly collects tax from a combination of PIT and sales tax. Do you think the government should	1	Personal Income Tax (PIT)

	primarily collect tax from?		2	Sales tax
			99	Don't know
			90	Refused/Respondent left the survey
resp_available_0 > survey > cp2 > q45				
q_45_a *(required)*	Suppose the government is raising PKR100,000, from a combination of PIT and sales tax. Which combination would you choose? *MORE FROM SALES TAX--------> MORE FROM PIT*			
q_51 *(required)*	Do you agree or disagree with the following statement: Instead of raising income taxes on the rich, the sales tax should be increased so that employees and self employed individuals contribute more evenly		1	Strongly agree
			2	Agree
			3	Neither agree nor disagree
			4	Disagree
			5	Strongly disagree
q_new_44_b_1 *(required)*	Different combinations of PIT and sales tax change how much richer taxpayers pay relative to everyone else AND how much more tax employees pay relative to self-employed individuals who earn the same income.		1	Employees and self-employed individuals with the SAME

	In your opinion, is it more important that the combination of PIT and sales tax be set so that:			income pay a similar amount in taxes
			2	RICHER employees pay a HIGHER share of their income in taxes
			99	Don't know
			90	Refused/Respondent left the survey
q_new_44_b_2 *(required)*	Which of the following combinations would you prefer?		1	Employees pay slightly more tax than Self-employed individuals with the SAME income, AND Richer taxpayers pay slightly more tax than everyone else.
			2	Employees pay much more tax than Self-employed individuals with the SAME income, AND Richer taxpayers pay much more tax than everyone else.
			99	Don't know
			90	Refused/Respondent left the survey
q_new_6 *(required)*	What effect do you think increasing the sales tax rate would have on economic activity?		1	Hurt economic activity
			2	Have no effect on economic activity
			3	Help economic activity
			99	Don't know
			90	Refused/Respondent left the survey
q_new_7 *(required)*	What effect do you think increasing the effective amount of taxes paid by self employed individuals (with high incomes) would have on economic activity?		1	Hurt economic activity
			2	Have no effect on economic activity
			3	Help economic activity
			99	Don't know
			90	Refused/Respondent left the survey
q_elec *(required)*	Which party did you vote for in recent election?		1	PPPP
			2	PML-N
			3	PTI
			4	PML-Q
			5	MQM
			6	Pakistan Democratic Party
			7	MMA
			8	Jamiaat Ulama-e-Islam (S)
			9	Independent Candidate
			10	No one
			88	Other (Specify)
			99	Don't know
			90	Refused/Respondent left the survey
q_elec_o *(required)*	Other Specify *Question relevant when: selected(${q_elec} , '88')*			

E.3 Online Survey: Survey Variables

Demographics and Priors

- **Employment status**: Variable is based on Q1 which asks respondents about their current employment status. Based on this question we coded dummy variables for Employment status: Self-employed (own account, small business owner, family worker, casual daily laborer); (Salaried) Employee; Not working.
- **Income group**: Variable is based on Q2 which asks respondents about their perceived income group. Answers: Poorest group / 2nd poorest group / Middle group / 2nd richest group / Richest group.
- **Education**: Variable is based on Q3 which asks about their highest level of education. Based on this question we coded dummy variables for Education status as **No Uni** if the respondent completed Primary or less, Secondary or Post-secondary vocational training; and **Uni** if the respondent completed Bachelor's degree, Master's degree or higher.
- **Prior believes - Horizontal Equity** Variable is based on Q4 which asks if people with the same income but different employment status pay different amounts of taxes. *(Answers: Self-employed individual pays LESS than the Employee / Self-employed individual pays MORE than the Employee / They pay the same amount)*

Primary Outcomes:

- **Gap concern**: Variable is based on Q7, which asks respondents whether they consider differences in taxes paid by self-employed and employees as a serious problem. Variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise.
- **Gap unfair**: Variable is based on Q8, which asks respondents whether the difference in tax paid by self-employed and employees with the same level of income is fair. Variable takes the value of 1 if they select "Unfair" and 0 otherwise.
- **Gap unjustified**: Variable is based on Q9. Variable is based on Q8, which asks respondents if it's justified for self-employed individuals and employees with the same income to pay different amounts of taxes. Variable takes value 1 if respondents select "Strongly disagree" or "Disagree" and 0 otherwise.
- **Horizontal objective**: Variable is based on Q10, which asks respondents what tax policy objective is more important to achieve a fair tax system (variable takes the value of 1 if respondents select "People with the SAME income paying the SAME taxes" and 0 otherwise).
- **Consumption support**: Variable is based on Q11, which asks respondents whether they support an increase in consumption tax instead of an increase in income tax on the rich (variable takes the value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise).
- **Tax morale**: Variable is based on Q12, which asks respondents if it is important for people to pay taxes (variable takes the value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise).

Indexes:

- **Attitude index**: An unweighted average of the Z-scores of 3 outcome variables (Gap concern, Gap Unfair, Gap Unjustified). The index is oriented so that a higher index means a negative attitude towards the horizontal equity gap in PIT.
- **Tax policy preference index**: An unweighted average of the Z-scores of 2 outcome variables (Horizontal objective and Consumption Support). The index is oriented so that a higher index means a stronger preference for horizontal tax policy objectives.

Treatment and Control Groups:

- **T1**: Information treatment: "Share of taxes paid by self-employed versus employees"
- **T2**: Pedagogical treatment: "Information on who pays the income tax and who pays the consumption tax"
- **T3**: Information + Pedagogical treatment
- **Control**: Click message

Stratification:

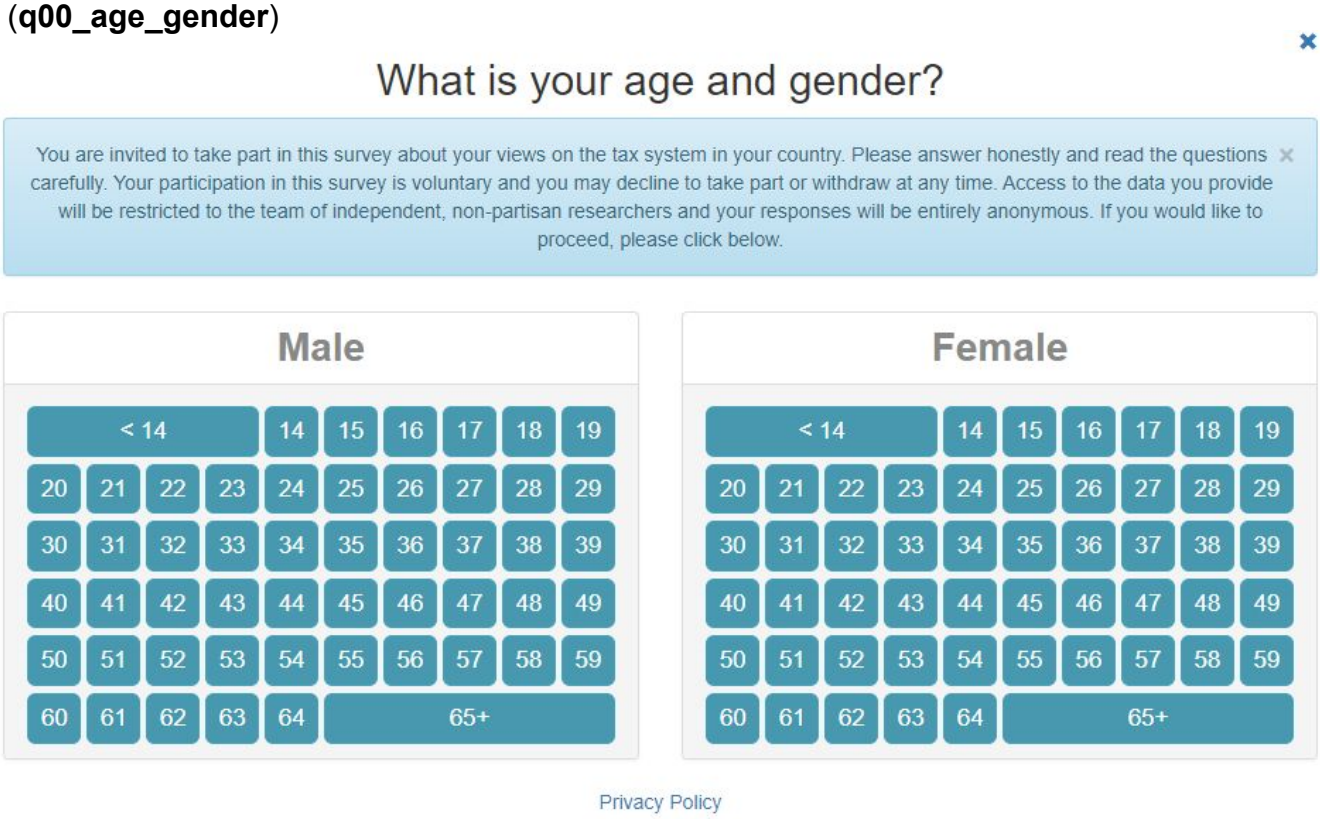
- **Gender and age group categories**: Female - Young (18-34 years), Female Middle aged (35-54 years), Female Old (55+ years), Male Young (18-34 years), Male Middle aged (35-54 years) , Male Old (55+ years)
- **Countries**: Colombia, India, Indonesia, Nigeria, Philippines

Control variables:

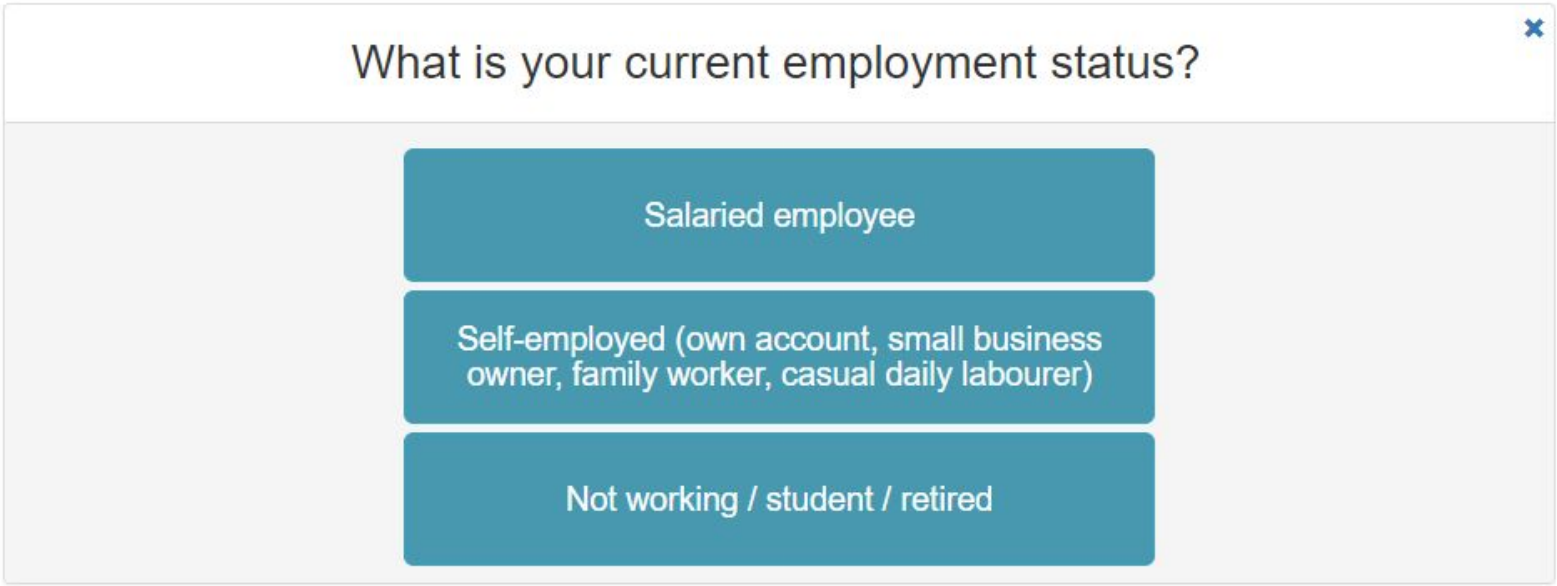
- **Smartphone** (dummy): 1 if the respondent used smartphone device to complete the survey and 0 otherwise.
- **Answer order**: Order in which were answers shown to the respondent.
- **Strata**: Gender and age group [Female - Young (18-34 years), Female Middle aged (35-54 years), Female Old (55+ years), Male Young (18-34 years), Male Middle aged (35-54 years), Male Old (55+ years)] within each country (Colombia, India, Indonesia, Nigeria, Philippines)

E.4 Online Survey: Full Questionnaire

Q0 (**q00_age_gender**)

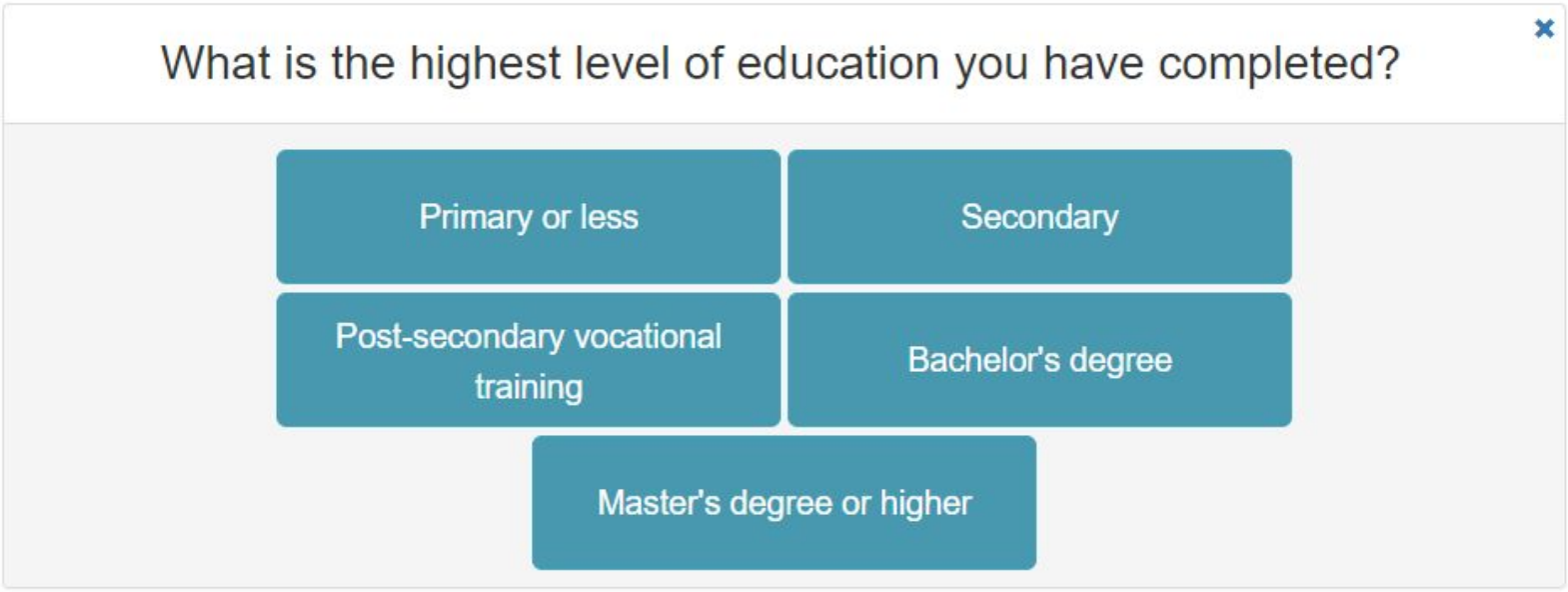


Q1 (**q01_employment**)

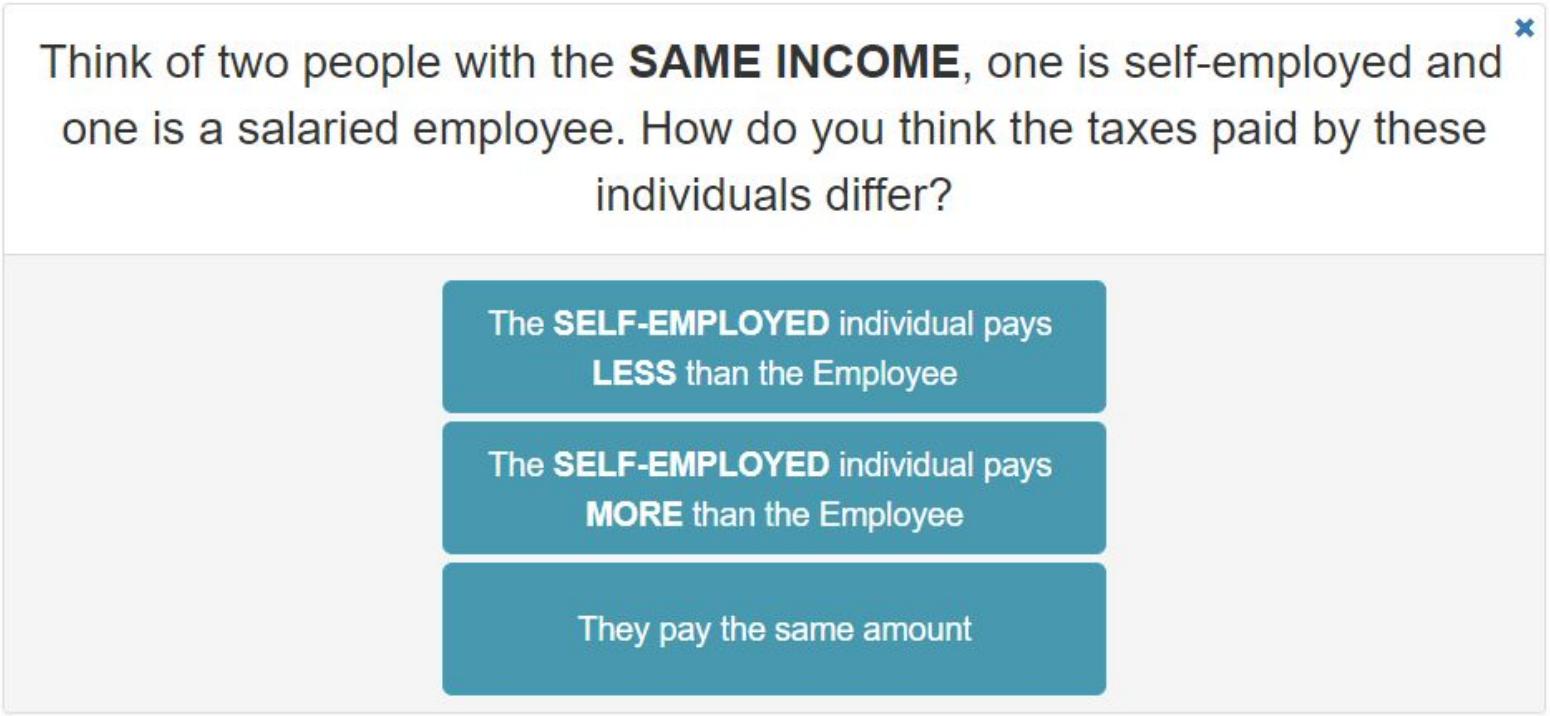


Q2 (**q02_house_income_group**)

Q3 (**q03_education**)



Q4 (**q04_se_e_tax_perception**)



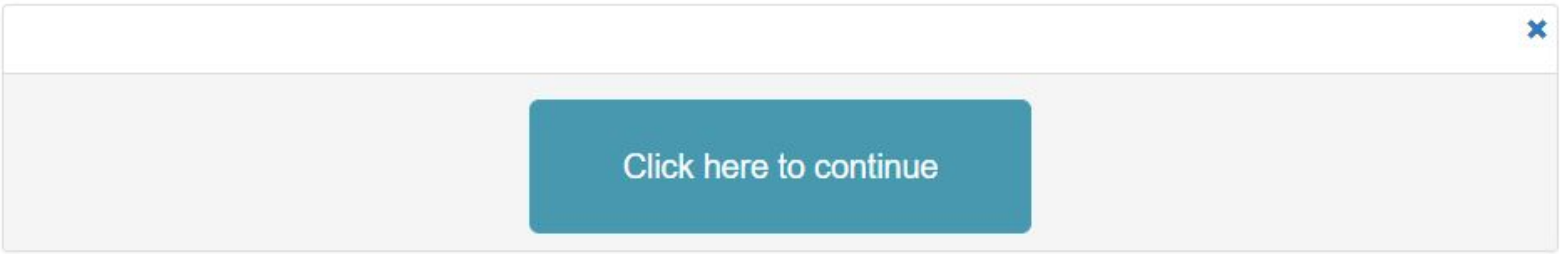
Q5 (**q05_continue_with_survey**)

Before proceeding, please confirm that you are willing to answer the final 6 questions of the survey. If you cannot answer the next 6 questions, please indicate so below.

Yes, I can answer another 6 questions

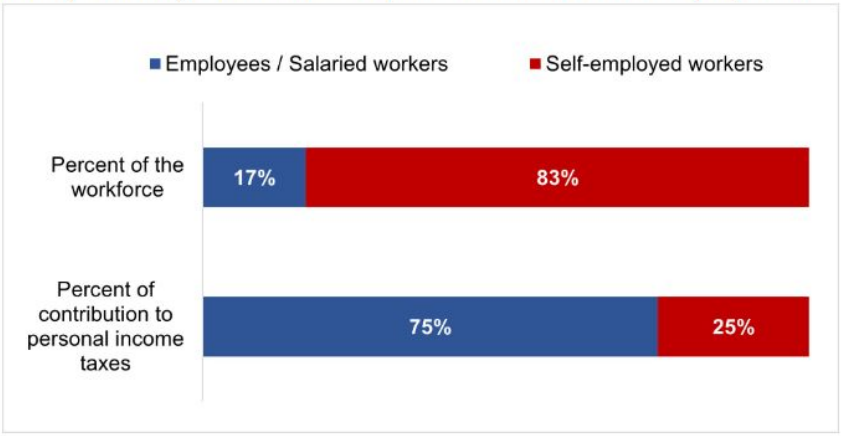
No, I don't have time to answer another 6 questions

Q6a (**q06a_experiment_a**)



Q6b (**q06b_experiment_b**)

Self-employed individuals make up more than 80 percent of the workforce in India, but only contribute 25 percent of **Income tax** payments*



Click to continue

*Data from 2018-2019 Indian Budget, produced by Ministry of Finance

Q6c (**q06c_experiment_c**)

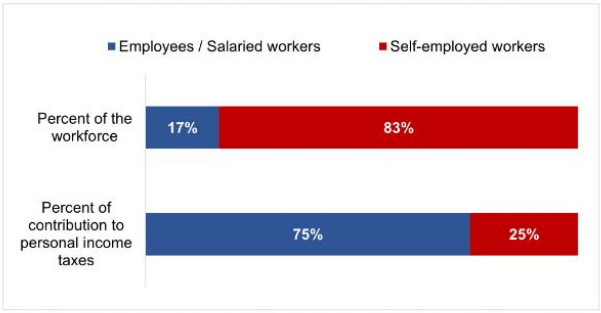
Self-employed individuals often pay less in **Income taxes** than **Employees** who earn the **SAME INCOME**, because **Self-employed** individuals have more options available to avoid paying **Income taxes**.

In contrast, **Consumption taxes** are better able to ensure that **Self-employed** individuals and **Employees** who earn the **SAME INCOME** pay the same amount in taxes.

Click to continue

Q6d (**q06d_experiment_d**)

Self-employed individuals make up more than 80 percent of the workforce in India, but only contribute 25 percent of **Income tax** payments*



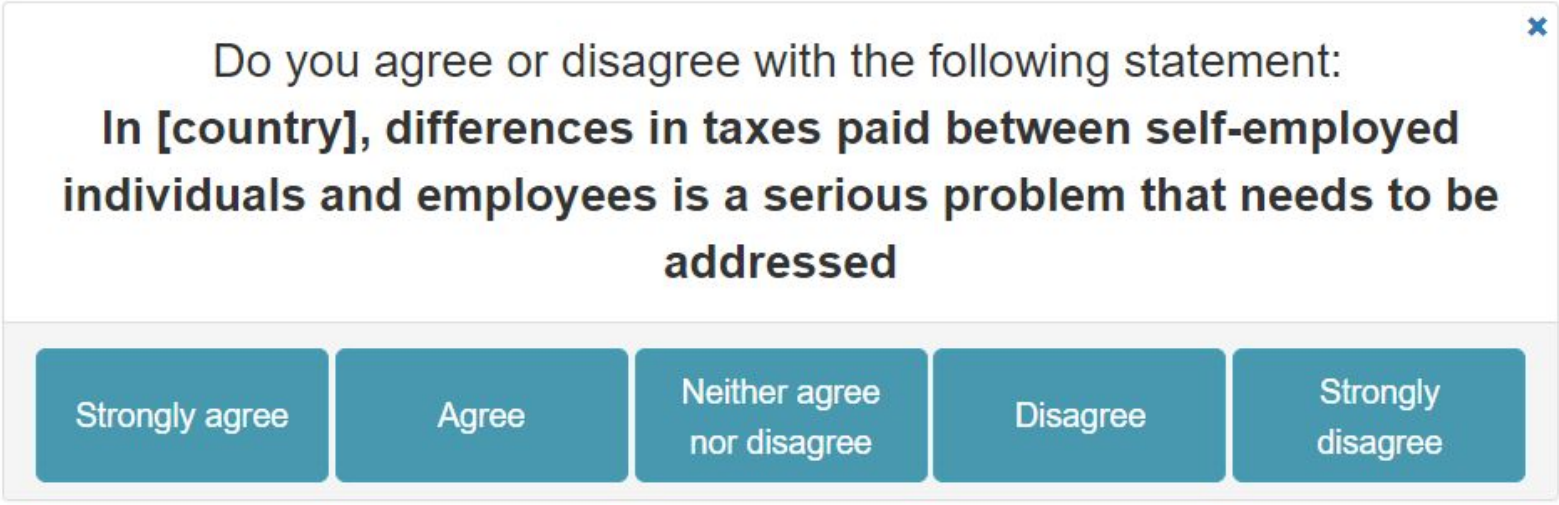
Self-employed individuals often pay less in **Income taxes** than **Employees** who earn the **SAME INCOME**, because **Self-employed** individuals have more options available to avoid paying **Income taxes**.

In contrast, **Consumption taxes** are better able to ensure that **Self-employed** individuals and **Employees** who earn the **SAME INCOME** pay the same amount in taxes.

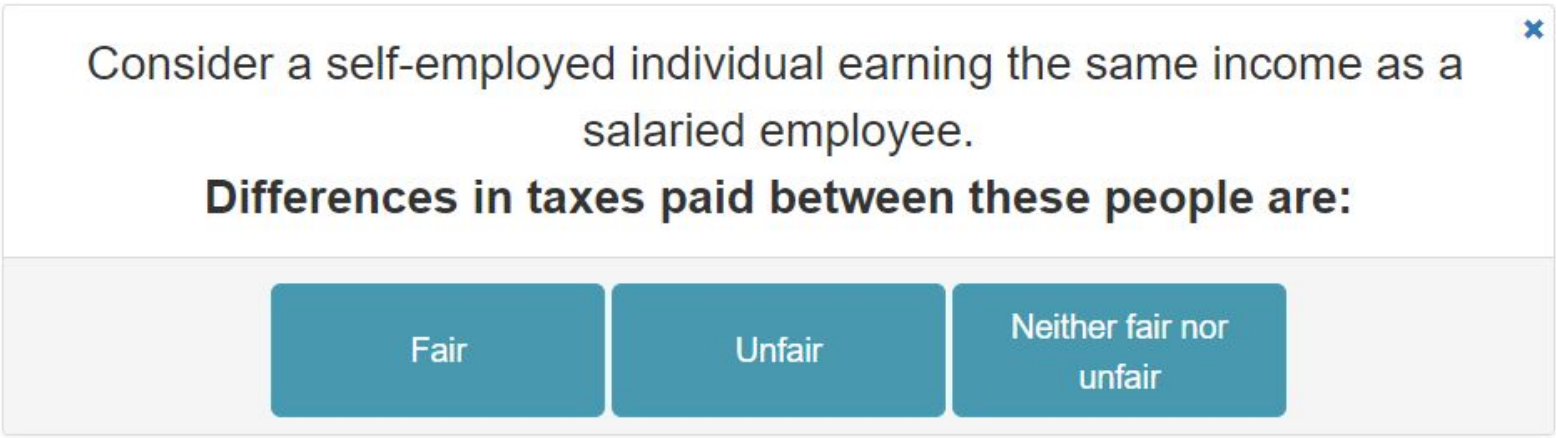
Click to continue

Data from 2018-2019 Indian Budget, produced by Ministry of Finance

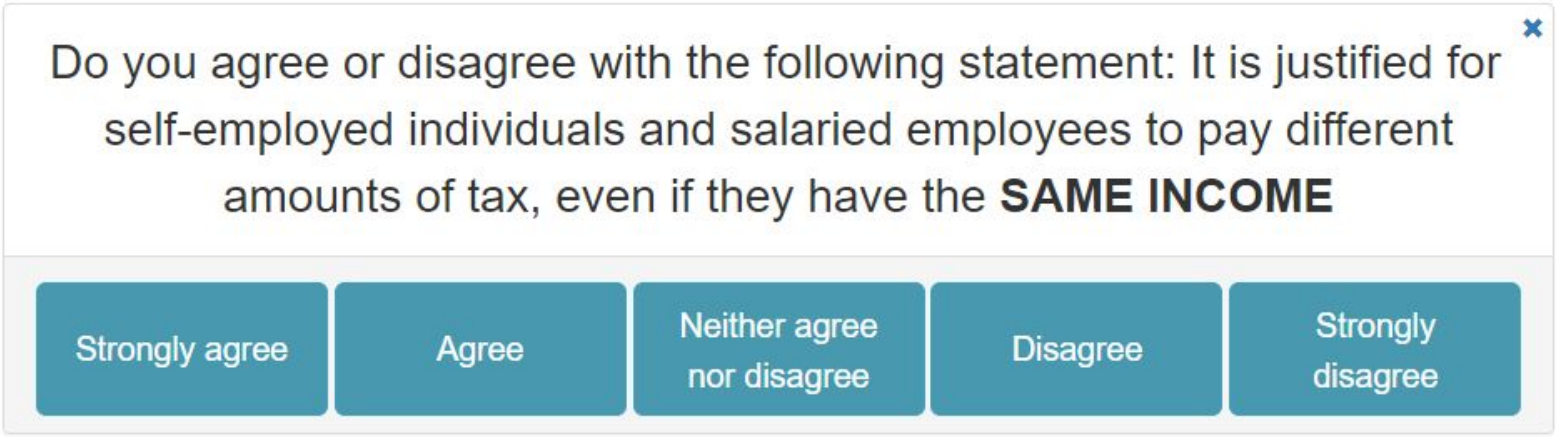
Q7 (**q07_address_se_e_tax_gap**)



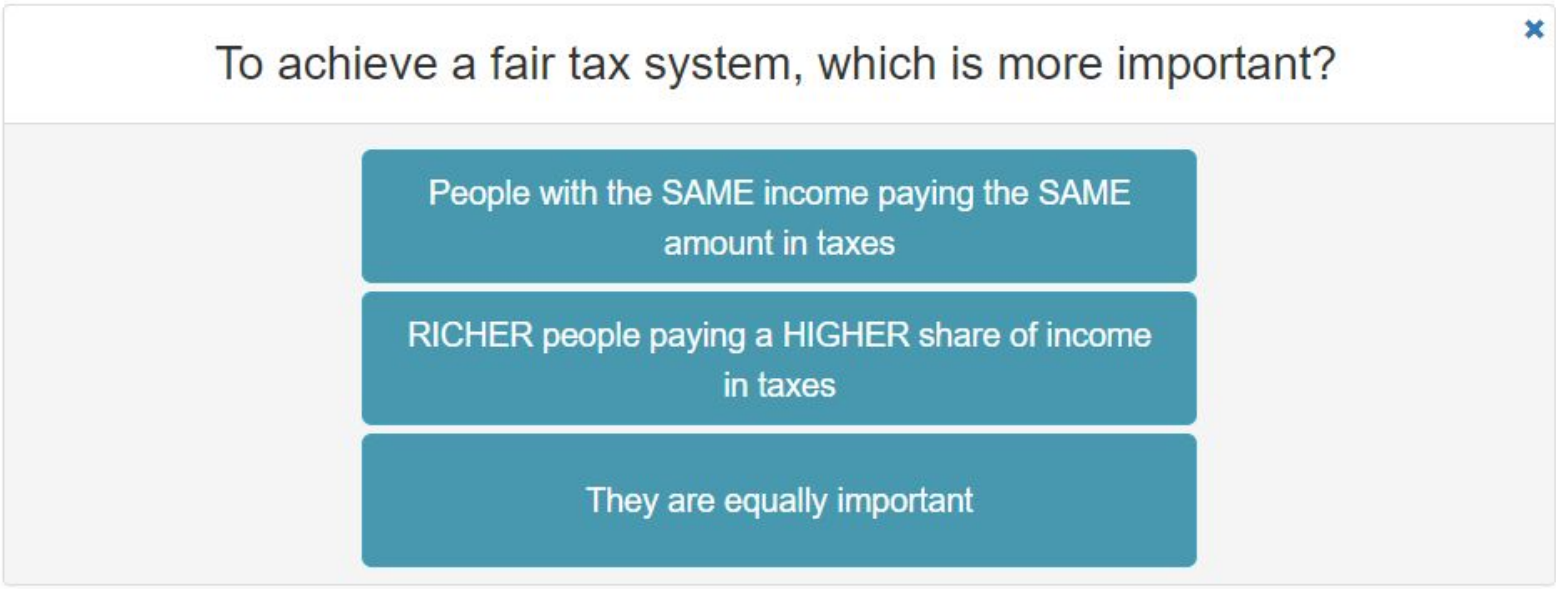
Q8 (**q08_diff_se_e_tax_fair**)



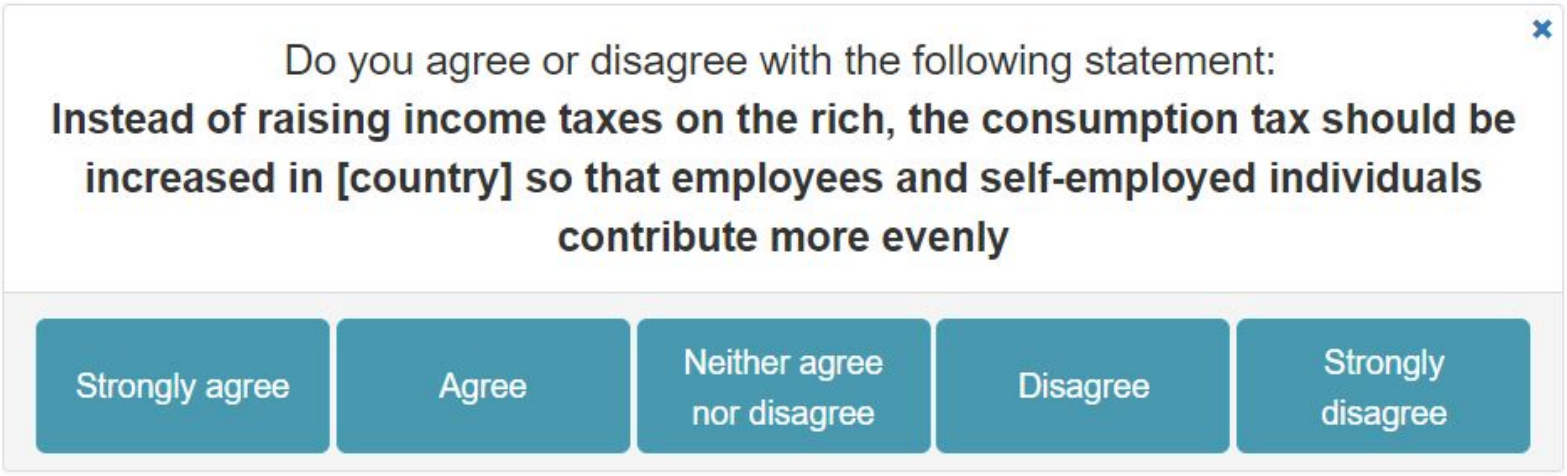
Q9 (**q09_se_e_tax_justified**)



Q10 (**q10_which_objective**)



Q11 (**q11_which_policy**)



Q12 (**q12_important_to_pay_tax**)

Q13 (**q13_feedback**)