How does the progressivity of taxes and government transfers impact people's willingness to pay tax? Experimental evidence across developing countries*

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Abstract. This paper examines how the progressivity of taxes and government transfers impacts people's willingness to pay tax through a randomized survey experiment with over 30,000 respondents across eight developing countries. Respondents increased (decreased) their willingness to pay taxes when they received accurate information that taxes in their country are progressive (not progressive). These effects were predominantly driven by respondents in cases where the information they received was counter to their prior beliefs and/or consistent with their preferences. These results suggest changes in policies that increase (decrease) the progressivity of tax systems may also lead to increases (decreases) in tax compliance.

JEL-Classification: D31, D91, H22, H23, H24, H26

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1 Introduction

Public policies that directly reduce income inequality are widely supported by the general population in most developing countries, however the extent to which governments actually redistribute resources from rich to poor households varies considerably. Figure 1a and 1b illustrate this by drawing on the best available data about public support for and the prevailing levels of progressive taxes and government transfers across developing countries.[1] Specifically, Figure 1a shows that in most of the more than 40 developing countries included in the 2017-2022 round of the World Values Survey there was a high level of support among a nationally representative sample of the population for their governments to tax the rich and subsidize the poor (which is a simple way of characterizing a progressive tax and transfer system) (WVS, 2022). In contrast, Figure 1b draws on a newly released database with more than 55 developing countries to illustrate the difference between the gross (i.e., pre-taxes and government transfers) and net (i.e., post-taxes and government transfers) GINI index is negligible in some countries and far more pronounced in others (CEQ, 2021).[2] As such some governments actively pursue policies in line with most people's preference for progressive taxes and transfers, whereas other governments do not. This raises the question as to how people respond to an alignment (or misalignment) between their preferences and government policies, in particular whether people respond by being more (less) willing to pay tax when the tax and transfer system in their country is progressive (not progressive).

[Figure 1]

I answer this question through conducting a randomized survey experiment with over 30,000 respondents that is broadly representative of the population with internet access in

[1] A progressive tax is when richer households pay a relatively higher share of their income in tax than poorer households and a progressive government transfer is when poorer households receive a relatively higher share of their income in direct transfers (and/or subsidies) than richer households.

[2] In general, tax and transfer systems are less progressive in countries that rely more heavily on indirect taxes (e.g., value added tax) compared to direct taxes (e.g., personal income tax) and/or indirect transfers (e.g., subsidies) compared to direct transfers (e.g., targeted cash transfers).

eight developing countries (Colombia, Ghana, Indonesia, Jordan, Mexico, Sri Lanka, South Africa and Tanzania). This diverse set of countries makes up around 10 percent of the developing world's population, is spread across Latin America, Africa, Asia and the Middle East, and had GNI per capita ranging from USD1,080 to USD8,480 (Atlas Method) in 2020 (World Bank, 2021). Respondents in each country were randomly allocated to receive accurate information about the progressivity of taxes ("taxes treatment"), government transfers ("transfers treatment") or both ("combined treatment") in their country, or to a control group that received no information. This information was sourced from a recently released database (hereafter the "CEQ database") that uses a standardized approach across countries to monitor progress toward Sustainable Development Goal target 10.4 about increasing the redistributive impact of fiscal policy (Lustig, Mariotti and Sánchez-Páramo, 2020). The progressivity of taxes and government transfers is measured using the Commitment to Equity (CEQ) Institute methodology[3] and is based on recent Household Income and Expenditure Surveys that provide detailed information about the income and consumption patterns of a nationally representative sample of households (CEQ, 2021). The impact of the information treatments on people's willingness to pay taxes is measured using standardized questions from cross-country survey instruments (e.g., the Afrobarometer). For example, respondents were asked on a Likert scale about: whether it is important for people to pay tax, if the government always has a right to make people pay tax, and if they would still pay tax in the absence of enforcement. I illustrate the channels through which information is impacting people's willingness to pay tax by examining heterogeneous treatment effects based on people's prior beliefs and existing preferences as well as differences between the treatments and across countries.

People's willingness to pay taxes has been traditionally conceptualized as a trade-off between the punishment they face from being caught for non-compliance compared to the cost of complying (Allingham and Sandmo, 1972), however in recent years there has been

[3]The CEQ approach was developed by the Commitment to Equity Institute (CEQ Institute) at Tulane University. The methodology, implementation guidelines, applications, and software of the CEQ approach can be found in Lustig (2018).

growing recognition of other factors that influence people's willingness to pay tax (Slemrod, 2019; Antinyan and Asatryan, 2019). Understanding these "quasi-voluntary" motivations for paying tax is particularly important in developing countries as there is typically weaker capacity to enforce tax legislation (Prichard et al., 2019; Dom et al., 2022). The extent to which the tax and transfer system in a country reduces inequality has been proposed as one of the factors that may influence people's willingness to pay tax (Prichard et al., 2019; Dom et al., 2022). This is because most people prefer to live in societies with lower levels of inequality than what they perceive to exist (WVS, 2022; Alesina and Giuliano, 2011) and many are supportive of the government promoting greater equality through using taxes and transfers to redistribute resources from rich to poor households (PEW 2019; Alesina and Angeletos, 2005; Hoy and Mager, 2021a). This implies that people may be more (less) willing to pay tax when they believe the tax and transfer system is progressive (not progressive). I show this formally in the paper through combining a modified version of Allingham and Sandmo's (1972) seminal theory of what drives people's willingness to pay tax with Alesina and Giuliano's (2011) workhorse model that shows how beliefs and preferences about inequality influence people's utility. This modified conceptual framework forms the basis for the detailed pre-registered hypotheses of this study (Hoy, 2022).

The overall findings of the randomized survey experiment illustrate that people's willingness to pay tax is influenced by whether there is progressivity in the tax and transfer system. Respondents who received the taxes treatment in the four countries for which taxes were progressive (Colombia, Ghana, Mexico and Tanzania) were more willing to pay tax. In contrast, respondents who received the taxes treatment in the four countries for which taxes were not progressive (Indonesia, Jordan, Sri Lanka and South Africa) were less willing to pay tax. The overall effects were of a similar magnitude in each of the countries and the results are robust to a series of checks (such as comparing the results across treatments and removing respondents who took too little time or too long to complete the survey). The order of magnitude of the impact of the taxes treatment was in line with seminal cross-country randomized survey experiments (Alesina et al., 2018; Alesina et al., 2022). However, a clear

limitation of this kind of study is that actual tax compliance behavior is not measured, although there is good reason to believe that survey measures of "tax morale" are likely to be a plausible proxy for compliance (Luttmer and Singhal, 2014). If the effects of the tax treatment did translate into changes in actual tax compliance behavior this would be non-trivial (e.g., they would be of a similar order of magnitude to recent work examining the effects of different interventions on tax compliance such as Balan et al., 2022).

The overall treatment effects were predominantly driven by respondents in cases where the information they received was counter to their prior beliefs and/or in line with their preferences. These results are consistent with the conceptual framework that shows how prior beliefs and existing preferences about progressivity in the tax and transfer system are likely to impact people's willingness to pay tax. Respondents who stated prior to the treatment that they prefer progressivity in the tax system and received accurate information that this was actually the case (i.e., those in Colombia, Ghana, Mexico and Tanzania) were much more willing to pay taxes. Respondents who thought the tax system was progressive but received accurate information that it was not progressive (i.e., those in Indonesia, Jordan, Sri Lanka and South Africa) were much less willing to pay taxes. There were similar, albeit weaker results from the combined treatment, (i.e., respondents who received information that the system was progressive (not progressive) were more (less) willing to pay tax). There were no statistically significant effects on people's willingness to pay tax from the transfers treatment and no notable trends in terms of heterogeneous treatment effects across other dimensions that were included the pre-analysis plan (e.g., by respondents' perceived place in the national income distribution).

The findings from this study shed light on how policy reforms that alter progressivity in tax and transfer systems may influence people's willingness to pay tax. Specifically, the results suggest that efforts to improve a country's fiscal position by increasing (decreasing) equity in the tax and transfer system may also *have an additional benefit* (*potentially backfire*) by increasing (decreasing) people's willingness to pay tax. This can be illustrated through the following stylized examples. Consider a tax policy reform that required richer households

to pay more tax and which by doing so would make the tax and transfer system more progressive (e.g., an increase in the top marginal income tax rate). A consequence of this reform is that many taxpayers may be more likely to comply, especially if they prefer greater progressivity. Therefore, the improvement in total tax revenue collected could be greater than just the additional revenue that was intended to be gathered from richer households. Another illustrative example is a tax policy reform that reduces the progressivity of the tax system, such as by increasing the tax burden dis-proportionally on poorer households (e.g., increasing the rate of value added tax on essential items). This reform could undermine many people's willingness to pay tax and consequently not improve the fiscal position of the country as much as what was intended. In the extreme case it could be possible that any expected increase in revenue from the tax reform would be entirely offset by falls in compliance. These stylized examples show how the findings from this study are relevant for policy makers in developing countries, especially as governments face growing debt levels in the wake of the COVID-19 pandemic (World Bank, 2022a). In addition, the results show that even in the absence of a reform agenda, communicating to taxpayers about the progressive aspects of the tax system in their country would appear to be a way to boost compliance. Further, there appears to be ample scope for information campaigns to be done by policy makers to help the general population understand how taxes help fund the government transfers that benefit many households.

This study makes several contributions to two broad strands of the existing literature. The first strand the study contributes to is in relation to how people's perceptions shape their preferences regarding tax and transfer policies (Gimpelson and Treisman, 2018; Hauser and Norton, 2017). Seminal work on this topic has been conducted in recent years using large-scale, randomized survey experiments in the United States and Western Europe examining a range of topics, such as inequality (Kuziemko et al., 2015), social mobility (Alesina et al., 2018) and immigration (Alesina et al., 2022). A common thread in these studies is that, in general, most people have a poor understanding of the economic circumstances in their country (e.g., about the level of inequality, see Norton and Ariely, 2011) and they

have tested what happens to people's general policy preferences when they are provided with accurate information. This study extends this literature in three ways. Firstly, I test how accurate information about existing policies (specifically the progressivity of taxes and government transfers), as opposed to existing circumstances (e.g., the level of inequality), shifts people's preferences. In other words, I directly alter people's beliefs about the role the government currently plays in distributing resources in their country, and see how this shifts their preferences, as opposed to examining how people's views change about what the role of the government should be once they are aware of the actual circumstances in their country. Secondly, the randomized survey experiment focuses on measuring a specific intention (people's willingness to pay tax), which is a key way people engage with the government, as opposed to general preferences. This allows for direct policy implications to emerge from this work. Thirdly, I conduct one of the first and by far the largest randomized survey experiments in this literature in developing countries (the previously largest study was in five middle-income countries by Hoy and Mager, 2021a). I incorporate best practices into the design of the randomized survey experiments from cross-country studies in high-income countries, follow a detailed, publicly available pre-analysis plan, and utilize a novel sampling methodology that allows for a more representative sample of the internet population to be collected than is typically captured in online surveys in developing countries.

The second strand of the literature is in relation to a growing body of research about "quasi-voluntary" motivations for tax compliance. Examples of this work in high-income countries include how social norms (Hallsworth, 2014; De Neve et al., 2021), the provision of public goods (Giaccobasso et al., 2022) and a positive outlook on the government (Cullen et al., 2021) influence tax compliance. The extent to which "quasi-voluntary" motivations for tax compliance exist in developing countries is still unclear (Prichard et al., 2019; Dom et al., 2022). Outside of Latin America, there has been only a small number of randomized field experiments examining alternative motivations for people's willingness to pay tax in developing countries, such as in Ethiopia (Shimeles et al., 2017), Rwanda (Mascagni and Nell, 2022), Tanzania (Collin et al., 2021) and Papua New Guinea (Hoy, McKenzie and

Sinning, 2021). I contribute to this field by going well beyond existing work in three ways. Firstly, this study is the first to examine causally how progressivity (or lack thereof) in the tax and transfer system impacts people's willingness to pay tax across countries. This became feasible because of the release of the CEQ database, which measures the progressivity of taxes and transfers in a standardized way across developing countries (Lustig, Mariotti and Sánchez-Páramo, 2020). To the best of my knowledge, the closest example of related work is by Stantcheva (2021), who conducts randomized survey experiments in the United States that show redistributive considerations matter more to respondents than the efficiency of income and estate taxes. Secondly, the pre-registered, randomized survey experiment in this study was designed to specifically identify how a "quasi-voluntary" motivation influences people's willingness to pay tax, which has been a challenge in prior work that largely relied on administrative data. The channels driving the treatment effects are isolated by capturing people's prior beliefs and preferences, as well as comparing across countries and treatments, so that direct links can be made to seminal theory. Thirdly, I collect data that is representative of the internet population within each country and is comparable across a diverse set of developing countries. Consequently, the results provide rigorous insights for a much wider population and arguably have far greater external validity than previous work in these settings.

This paper is structured as follows. Section 2 provides background to the study, including a conceptual framework and the hypotheses that flow from the theory as well as details about the setting of the randomized survey experiment. Section 3 describes the methodology in detail, including the sample selection, survey design and empirical analysis. Section 4 presents the descriptive and experimental findings. Section 5 discusses the implications of these findings from a theoretical and policy perspective.

2 Conceptual framework and Hypotheses

2.1 Conceptual framework

Traditionally, people's willingness to pay taxes has been conceptualized as a trade-off between the punishment they face from being caught for non-compliance compared to the cost of complying (Allingham and Sandmo, 1972).[4] This is shown formally in the utility functions below whereby y_i is an individual's household income before tax, d is the probability of being detected as non-compliant, p_i is a fixed amount that represents the punishment a taxpayer will face if found to be non-compliant and t_i is a fixed amount that represents a taxpayer's tax obligation. However, in recent years this model of tax compliance has been extended to include other factors that drive compliance beyond enforcement and punishment, such as people's desire to keep in line with social norms (Hallsworth, 2014; Slemrod, 2019; Antinyan and Asatryan, 2019). As such, the traditional model of tax compliance has been broadened to incorporate what is often referred to as "quasi-voluntary" motivations for tax compliance. Prichard et al. (2019) suggest that other than enforcement, issues to do with facilitation of tax payments and trust in the tax system impact tax compliance. They further hypothesize that trust in the tax system is built on four related concepts of equity, reciprocity, accountability and fairness. Formally, these "quasi-voluntary" motivations for tax compliance can be expressed as the utility gain an individual receives from paying tax a_i. As such, for a single point in time an individual's utility from complying with taxes (U_{ci}) and from not complying (U_{ni}) can be expressed as:

$$U_{ci} = y_i - t_i + a_i \tag{1}$$

and

$$U_{ni} = y_i - dp_i, \tag{2}$$

[4] In some respects, this work involved applying Becker's (1968) seminal work on crime and punishment to tax compliance.

According to this model, taxpayers comply if $U_{ci}>U_{ni}$, which requires that:

$$t_i \quad < \quad dp_i + a_i \tag{3}$$

I extend this basic model by decomposing quasi-voluntary motivations for paying tax (shown as a_i in the model above) to specifically identify how "equity" can play a role in driving people's willingness to pay tax (Prichard et al., 2019). By doing so I separate this reason from other quasi-voluntary motivations (shown as b_i in the revised model below). Equity, more precisely articulated as vertical equity by Prichard et al. (2019), is considered to be a driver of tax compliance because many people would prefer lower levels of inequality in their country and consequently are supportive of the role taxes and transfers can play in redistributing resources from rich to poor (WVS, 2022). This is formally integrated into the model by drawing on the "workhorse" utility function by Alesina and Giuliano (2011) that shows how differences between actual and preferred levels of inequality $(Q - Q_i^*)$ impact people's utility (the weight an individual places on deviations from their ideal level of inequality is captured in the term γ_i). The revised model of people's utility from paying tax can be expressed as follows:

$$U_{ci} \quad = \quad y_i - t_i + b_i - \gamma_i(Q - Q_i^*)^2 \tag{4}$$

I dis-aggregate this utility function further by continuing to draw on Alesina and Giuliano's (2011) seminal work as they argue that people's utility is largely (if not exclusively) influenced by differences between actual and preferred levels of inequality that are due to factors outside an individual's control $(Q^l - Q_i^{l*})$, as opposed to overall levels of inequality $(Q - Q_i^*)$. I identify that one of the key determinants of inequality outside an individual's control is the degree of progressivity in the tax and transfer system in their country. I reflect this in the model with the term $(Q^t - Q_i^{t*})$, whereby Q^t is the level of progressivity in the tax

and transfer system, Q_i^{t*} is people's preferred levels of progressivity in the tax and transfer system, and γ_i^t reflects the weighting people place on this (all other differences in inequality are captured in the terms denoted with o). As such, holding everything else constant, people who prefer the existing level of progressivity in the tax and transfer system will be more willing to comply with taxes than those who do not. Consequently, the revised model of people's utility from paying tax can be expressed as follows:

$$U_{ci} = y_i - t_i + b_i - \gamma_i^t(Q^t - Q_i^{t*})^2 - \gamma_i^o(Q^o - Q_i^{o*})^2 \quad (5)$$

The final substantive modification I make is to incorporate the fact that it is people's beliefs about how taxes and transfers are distributed, as opposed to what is actually the case, that will influence their willingness to pay tax. Previous research has shown that people tend to have a poor understanding of both the level of inequality in their country and their position in the national income distribution (see, for example, Hoy and Mager, 2021a) and there is evidence from the United States to suggest these misperceptions also extend to tax policies (Stantcheva, 2021). Consequently, I rewrite the utility function to factor in that people's willingness to pay tax will be influenced by the extent to which they believe the tax and transfer system is progressive ($Q_{b_i}^t$):

$$U_{ci} = y_i - t_i + b_i - \gamma_i^t(Q_{bi}^t - Q_i^{t*})^2 - \gamma_i^o(Q_{bi}^o - Q_i^{o*})^2 \quad (6)$$

This utility function provides guidance as to how people's willingness to pay tax ($U_c - i$) will be influenced by accurate information (I) about the progressivity of taxes and/or transfers in their country (Q^t). In other words, it is possible to make predictions about how people's utility from paying taxes varies when they have accurate information (i.e., $U_{ci}|I$). The two main dimensions in which heterogeneity would be expected are in terms of people's prior beliefs and existing preferences about the progressivity of tax and transfer policies

(captured formally as $(Q^t - Q^t_{bi})$ and $(Q^t - Q^{t*}_i)$ respectively). These dimensions form the basis of the primary hypotheses that are discussed in the following subsection.

2.2 Hypotheses

Three groups of primary hypotheses emerge from the conceptual framework. Group A of Hypotheses are based on a key implication from the theory and existing empirical literature suggesting that progressivity (a lack of progressivity) in the tax and transfer system will, on average, make people more (less) willing to pay tax. Group B of Hypotheses summarizes how people's willingness to pay tax is likely to vary by their prior beliefs about the progressivity of the tax and transfer system. Group C of Hypotheses outlines how people's willingness to pay tax is expected to vary by their preferences for progressivity in the tax and transfer system. All of these hypotheses were pre-registered on the American Economic Association RCT Registry prior to field work commencing (Hoy, 2022).

Group A – People's willingness to pay tax varies by the degree of progressivity in the tax and transfer system

Hypothesis A1: : Informing people that the distribution of taxes and/or transfers is progressive, will increase their willingness to pay tax.

Hypothesis A2: Informing people that the distribution of taxes and/or transfers is not progressive, will decrease their willingness to pay tax.

Group B – People's willingness to pay tax varies by their prior beliefs about the progressivity of the tax and transfer system

Hypothesis B1: Informing people that the distribution of taxes and/or transfers is progressive when they thought it was not progressive, will increase their willingness to pay tax.

Hypothesis B2: Informing people that the distribution of taxes and/or transfers is not progressive when they thought it was progressive, will decrease their willingness to pay tax.

Group C – People's willingness to pay tax varies by their preferences for the progressivity of the tax and transfer system

Hypothesis C1: Informing people that the distribution of taxes and/or transfers is progressive when they prefer it to be progressive, will increase their willingness to pay tax.

Hypothesis C2: Informing people that the distribution of taxes and/or transfers is not progressive when they prefer it to be progressive, will decrease their willingness to pay tax.

These hypotheses do not focus on differences between how the treatments may impact willingness to pay tax, but ex-ante it is conceivable differences would exist. As noted in the pre-analysis plan, survey respondents may be more likely to respond to the taxes treatment than to the government transfers treatment for a number of reasons. Firstly, on average, the share of household income collected in taxes is much higher than what is provided in transfers, which means people may be more concerned about how taxes are distributed compared to transfers. Secondly, there is reason to believe that "loss aversion" could exist where people's utility is more likely to be influenced by "losing" from paying tax than by "gaining" from receiving a transfer. Thirdly, people's awareness of when they pay tax may be higher than their awareness about when they receive a transfer. For example, people are likely to be more conscious of paying income tax compared to receiving a subsidy for their fuel consumption, and consequently this could make them more responsive to information about who pays taxes as opposed to who receives transfers.

2.3 Setting of the study

2.3.1 Selection of countries

The eight countries (Colombia, Ghana, Indonesia, Jordan, Mexico, Sri Lanka, South Africa and Tanzania) focused on in this study were selected for the following reasons. Firstly, there is very limited, standardized, cross-country data available about the progressivity of

taxes and government transfers in developing countries. By far the largest effort that has been made to collect and disseminate this information has been through the Commitment to Equity Institute at Tulane University, which is headed by Nora Lustig (CEQ, 2021). Estimates have been produced of the difference between the gross and net GINI index in over 55 developing countries through this work program in partnership with the World Bank (see Figure 1). These estimates are based on standardized household income and expenditure surveys and in 2020 a cross-country database that provided dis-aggregated information in a standardized way for many countries was publicly released through a joint initiative between universities, civil society and international organizations (Lustig, Mariotti and Sánchez-Páramo, 2020). However due to a range of factors, including governments' reluctance to make certain information publicly available, information about the progressivity of direct and indirect taxes as well as direct and indirect government transfers (including subsidies) is restricted to a far smaller subset of these countries. This subset of countries was the starting point for selecting which countries to include in this study.

Secondly, the time and costs involved in collecting data online in low- and middle-income countries are considerably lower when there is a high internet population in absolute terms. As such, countries with high populations and/or high internet penetration rates were focused on as part of this study. For example, some countries in this study like Tanzania have relatively high total populations (60 million), but low internet penetration rates (20 percent), whereas other countries like Jordan have a relatively low total population (10 million) but relatively high internet penetration rates (67 percent) (World Bank, 2021).

Thirdly, due to funding reasons it was necessary to collect a diverse set of countries in each of the major regions with low- and middle-income countries (i.e., Latin America, West Africa, East Africa, the Middle East, South Asia and East Asia) as well as across various income levels. This restricted the choice set considerably in some regions; for example, Indonesia was the only country in East Asia with publicly available data about the distribution of direct and indirect taxes, as well as direct and indirect government transfers (including subsidies) (CEQ, 2021).

Finally, efforts were made to ensure that the information about the distribution of taxes and government transfers in the database was still likely to provide a reasonable estimate of what would exist in 2022. There were some countries, such as the Islamic Republic of Iran, where there have been significant changes to the tax and transfer system since the survey included in the database took place and as a result it would not be a realistic approximation of how taxes and government transfers were likely to be distributed in 2022.

2.3.2 Progressivity of the tax and transfer systems in the countries in this study

The extent of progressivity in the tax and transfer system in the eight countries (Colombia, Ghana, Indonesia, Jordan, Mexico, Sri Lanka, South Africa and Tanzania) in this study varied considerably. This is illustrated in Figure 2, which summarizes variations in the degree of progressivity in the tax and transfer systems according to the CEQ database (CEQ, 2021). For presentational purposes this figure shows the distribution of taxes and/or transfers across quintiles (whereas the CEQ database focuses on deciles) and combines both direct and indirect taxes and government transfers. In general, tax and transfer systems are less progressive in countries that rely more heavily on indirect taxes (e.g., value added tax) compared to direct taxes (e.g., personal income tax) and/or indirect transfers (e.g., subsidies) compared to direct transfers (e.g., targeted cash transfers).[5] Importantly, the CEQ database is based on actual levels of tax paid and transfers received (i.e., this already factors in existing levels of tax compliance by households).

The tax system is progressive in four of the eight countries (Colombia, Mexico, Ghana and Tanzania) and the transfer system is progressive in six of the eight countries (Colombia, Mexico, Indonesia, Jordan, Sri Lanka and South Africa). The net impact of taxes and transfers is "weakly" progressive in all countries, however in Ghana and Tanzania the net impact is negative across all quintiles (i.e., all households pay more in tax than they receive in transfers). As such, for the purposes of this study, the net impact of taxes and transfers is

[5]It is important to note that in each of these countries almost all households indirectly pay tax (e.g., through paying value added tax) and/or indirectly receive government transfers (e.g., through receiving fuel subsidies) (CEQ, 2021).

only considered to be progressive in the six countries (Colombia, Mexico, Indonesia, Jordan, Sri Lanka, South Africa) where poorer households receive more in transfers than they pay in taxes. In summary, there are three groups of countries, one where both taxes and transfers are progressive (Colombia and Mexico), another where taxes are progressive and transfers are not (Ghana and Tanzania) and a final group where taxes are not progressive and transfers are (Indonesia, Jordan, Sri Lanka and South Africa). Collectively, these eight countries span the set of developing countries with comparable data available about the difference between the gross and net GINI index, ranging from around half a percentage point in Sri Lanka to almost ten percentage points in South Africa (see Figure A1).

[Figure 2]

3 Methodology

3.1 Sample Selection and Sample Size

The randomized survey experiment collected a broadly representative sample of the population with internet access in each country during the first three months of 2022 using an internationally respected online survey firm, RIWI (see Appendix A for details about the survey methodology). This is a similar approach to what was used by Alesina et al. (2018) and Alesina et al. (2022) in their seminal cross-country randomized survey experiments in the United States and Western Europe. A key difference is that in high-income countries internet access is near universal, whereas in the developing countries in this study the internet penetration rate varies from 20 to 67 percent of the total population (World Bank, 2021). This resulted in a sample of respondents where younger people and men were over represented compared to the total population (see Table A1 in Appendix B). To address concerns about how representative the sample is of the total population, throughout the body of the paper I weight the descriptive and experimental results by the age and gender of

the total population. As a robustness check, I present the sample average treatment effects (i.e., the unweighted findings) in Appendix B (see Table A2 in Appendix B). In general, the effects are almost identical. I also examine whether particular types of internet users were more likely to participate in and complete the survey. In general, respondents using a smartphone were less likely to begin the survey and conditional on starting the survey they were slightly less likely to complete all the questions (see Table A3 in Appendix B). This is to be expected as the visual components of the survey are easier to see on a larger screen. To address concerns about this an additional robustness check was conducted using "device type weights". This involved adjusting the results to ensure that in each country the share of respondents using a smartphone at the end of the survey was the same as the share of respondents using a smartphone that were exposed to the survey (i.e. they saw the invitation to participate in the survey). I show that using these "device type weights" had no meaningful impact on the results (see Table A4 in Appendix B).

The sample size in each of the eight countries is at least 3,600 respondents who completed the survey. In total, over 30,000 respondents participated in the randomized survey experiment. The sample size of at least 900 respondents in each treatment and the control group in each country is in line with best practice in the existing literature. This is a similar sample size to other cross-country randomized survey experiments in this field by Alesina et al. (2018) and Alesina et al. (2022). Other studies in this field that have focused on a single country have tended to have smaller sample sizes (e.g., Cruces et al., 2013; Karadja et al., 2017) and have still detected significant heterogeneous treatment effects based on prior beliefs. Furthermore, a Journal of Economic Literature article summarizing best practices in online randomized survey experiments providing information interventions suggests that having in the order of 700 to 800 respondents per treatment/control group should provide adequate power to detect an effect (Haaland et al., forthcoming).

3.2 Survey Design

The survey consisted of two sections and the treatments were provided in between the two sections of the survey. The first collected people's demographic characteristics as well as prior beliefs and existing preferences (13 questions were asked prior to the treatment). In this section respondents were asked to state where they perceived their household to be in the national income distribution (as opposed to reporting household income) as typically people's perception of their relative position is more strongly correlated with their policy preferences (Hoy and Mager, 2021a). The second section included questions about people's willingness to pay tax (five questions were asked following the treatment). The survey was designed to be quite focused and brief, which enabled the median respondent to complete the entire survey in less than 11 minutes. The survey instrument in English is provided in full in Appendix C and the exact treatments in each country are provided in Appendix D. This survey instrument was translated into the following languages: Spanish (for use in Mexico and Colombia), Arabic (for use in Jordan), Bahasa (for use in Indonesia), Swahili (for use in Tanzania) and Sinhala and Tamil (for use in Sri Lanka).

To maximize the likelihood respondents would provide honest answers, at the start of the survey they were informed that the answers they provide would be restricted to a team of independent, non-partisan researchers and that they would remain entirely anonymous. Ensuring respondent anonymity was an essential part of the study as this is clearly a sensitive topic (respondents were effectively being asked to indirectly self-report their own criminal behavior). This meant that no identifying information whatsoever was collected. As a result, it was not possible to conduct a follow up survey as this would have required respondents to provide details about how to be contacted and consequently revealing their identity. This trade-off between maintaining anonymity versus being able to recontact respondents for follow up surveys is unavoidable. Given that similar, cross-country randomized survey experiments have consistently shown that follow up surveys detect persistent treatment effects, there is no reason to believe that the same would not occur in this case.

3.2.1 Questions measuring people's prior beliefs and preferences

Prior to the treatments, respondents were asked to provide information about their beliefs about their household's position in the income distribution in their country, their beliefs and preferences for the distribution of taxes and government transfers in their country, preferences for the level of inequality in their country, and whether they viewed their households as being net contributors to or beneficiaries from the tax and transfer system. These questions were either sourced from existing studies in a series of developing countries (Q4 and Q5) (e.g., see Hoy and Mager, 2021a) or were specifically developed for this study (Q6–Q11). The questions developed for this study were based on the structure of standardized questions in the literature (e.g., they use a Likert scale), informed by expert feedback and modified based on the piloting process to ensure these new questions were adequately comprehended by respondents (see Appendix A for details of the piloting process).

3.2.2 Questions measuring people's willingness to pay tax

People's willingness to pay taxes was measured using standardized questions from cross-country surveys (e.g., Afrobarometer) as well as drawing on the experience of previous survey instruments focusing on "quasi-voluntary" motivations for why people pay tax in developing countries (e.g., those referred to in Prichard et al., 2019). There is no single "ideal" question on this complex topic. To the best of my knowledge there is yet to be a study that systematically uses tax administrative data alongside survey data to measure which exact questions better correlate with actual tax compliance behavior. Rather there is a general acceptance in the literature that a multifaceted conceptualization of "tax morale" (which can be measured by survey questions) provides a plausible proxy for tax compliance (Luttmer and Singhal, 2014). As a result five questions focusing on slightly different ways of measuring people's willingness to pay tax were used in this survey experiment. This ensured that if a treatment effect was detected across most, or even all of these questions, there would be good reason to be very confident the findings of the randomized survey experiment would

likely translate to actual behavior. More complicated questions (including list experiments that "implicitly" capture willingness to pay tax) were considered but ultimately discarded as the piloting process illustrated that keeping questions simple was by far the best way to maximize data quality and minimize attrition (see Appendix A for details).

The first question to measure willingness to pay tax (Q14) directly asks respondents whether they would pay tax if they knew that they would not be caught for non-compliance. A potential shortcoming of a direct measure of "quasi-voluntary" tax compliance is that people may be very unwilling to provide honest answers and consequently people's answers to this question are likely to be particularly inelastic to an information treatment. In addition, the share of respondents claiming they will pay tax in the control group (i.e., in the absence of additional information provided through the treatments) will almost certainly be higher than what is actually the case. Therefore, this question is likely to suffer from "ceiling effects" (Po, 1998), which means it provides a lower bound estimate of the impact of the treatments on people's willingness to pay tax.

The remaining four "indirect" questions about people's willingness to pay tax capture slightly different aspects of what is sometimes referred to in the literature as "tax morale". All of these questions have been sourced from existing studies in low- and middle-income countries on this topic. The second question (Q15) measures the degree to which respondents believe people not paying is understandable. It was used in the Afrobarometer (2012; 2013; 2015) as well as by Ali, Fjeldstad and Sjursen (2014). The third question (Q16) measures whether people believe paying taxes is important and was used by Khwaja et al. (2020). The fourth question (Q17) measures people's unconditional beliefs about the extent to which the government has the right to make people pay taxes and it has been included in many rounds of the Afrobarometer (2002; 2003; 2004; 2008; 2012; 2013; 2014; 2015; 2017). The fifth question measures the degree to which people believe that paying tax should be conditional on what the government spends tax on and is a slightly modified version of what was used by Prichard, Jibao, and Orgeira (forthcoming).

3.2.3 Treatments

The treatments were designed to provide people with accurate information about the progressivity of taxes and/or government transfers in their country. Specifically, the treatments provided an indication of whether taxes and/or transfers were progressive in their country but did not provide information about the level of taxes and transfers as a percentage of household income. This is because it would not be possible to clearly isolate the channels through which the treatments were impacting people's willingness to pay tax if information was provided about both the progressivity and level of taxes and transfers. For example, if both aspects were included it is possible some respondents may react to the degree of progressivity, while others may react to the level of taxes and transfers, and it would not be possible to differentiate between these. Efforts were also made to ensure that respondents were likely to trust the content of the treatments by following a similar approach to seminal work by Alesina et al. (2018). For example, respondents were informed that the information they were provided with recently became publicly available online through a collaboration between universities, civil society and international organizations (see Lustig, Mariotti and Sánchez-Páramo, 2020). In addition, given the extensive analysis in prior work to illustrate that experimental demand effects are unlikely to be present in these types of randomized survey experiments (e.g., see Kuziemko et al., 2015 on a related topic and de Quidt, Haushofer and Roth, 2018 more broadly), it is extremely unlikely to be an issue in this study.

Survey respondents in each country were randomly allocated either to one of three treatment groups or to a control group that received no information (i.e., the multiple treatment arms were exclusive of one another). The first treatment (hereafter the "taxes treatment") provided information from the CEQ database about the distribution of taxes (both direct and indirect taxes, such as income tax and value added tax) in their country. The second treatment (hereafter the "transfers treatment") provided information from the CEQ database about the distribution of government transfers (both direct and indirect transfers, such as cash payments and energy subsidies). The third treatment (hereafter the "combined treat-

ment") provided information from the CEQ database about the net effect of the distribution of taxes and government transfers.

3.3 Empirical analysis

I conducted a randomized survey experiment to test the impact of accurate information about the distribution of taxes, government transfers or both on people's willingness to pay tax. Randomization allows for the impact of the treatments to be determined by comparing differences in mean outcomes between the control group and treatment groups. The randomization process was stratified by the age and sex of respondents. The balance tables for each country based on all answers provided prior to the treatment are in Appendix B (see Tables A5-A7), including measures of both individual and joint significance (i.e., both t-statistics for every variable and an f-statistic across all variables within a given country).

The survey experiment has only five outcomes, which means that the risk of multiple hypothesis testing being an issue is very low. However, to address potential concerns all five outcomes are aggregated into an index. This is the identical approach to what was used in related randomized survey experiments by Alesina et al. (2018) and Karadja, Mollerstrom and Seim (2017). Specifically, I create a "Willingness to Pay Tax" Index, which is an unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax. The answers to each outcome question and the "Willingness to Pay Tax" Index are presented in the tables of results.

The main results of the survey experiment are based on pooled Ordinary Least Squares (OLS) regressions with country fixed effects across all countries for which the treatment is in the same direction. This approach is in line with what was undertaken by Alesina et al. (2018) and Alesina et al. (2022). For example, respondents across the four countries for which taxes were progressive (Colombia, Ghana, Mexico and Tanzania) are pooled together and respondents across the four countries for which taxes were not progressive (Indonesia, Jordan, Sri Lanka and South Africa) are pooled together. As the groups of countries for which

the treatment was in the same direction varied across the treatments (e.g., four countries had progressive taxes, while 6 countries had progressive transfers), the main regression analysis was conducted solely between a specific treatment group and the control group. Specifically, an OLS regression in the form of a linear probability model was conducted by creating a dummy variable for each outcome of interest (see Section 3.2.2 and Appendix A for details) and a dummy variable for a specific treatment group that takes on the value one if the respondent belongs to the specific treatment group and the value zero if the respondent belongs to the control group. This can be expressed formally as follows:

$$Y_{ij} \quad = \quad \beta_0 + \beta_1 T + X_i \gamma + \theta_j + \epsilon_{ij} \tag{7}$$

where i denotes individuals, j denotes countries, β_1 captures the average difference between respondents in a specific treatment group (T) and the control group in regard to the outcome of interest (Y). Further, X_i is a vector of variables that controls for potential imbalances in background characteristics (e.g., location, education level etc.) between treatment and control groups, θ_j captures country level fixed effects, ϵ_{ij} is the model error term (clustered at the country level) and β_0 is the intercept.

As per the pre-registered hypotheses, heterogeneous effects of the treatments are explored by conducting the regression analysis outlined in Equation (7) on subsets of respondents based on their responses provided prior to the treatments. Specifically, Group B of hypotheses is tested by conducting the regression analysis outlined in Equation (7) on respondents who believed the tax system was progressive and then separately reproducing this analysis on respondents who did not believe the tax system was progressive. Group C of Hypotheses is tested by conducting the regression analysis outlined in Equation (7) on respondents who prefer the tax system to be progressive and then separately reproducing this analysis on respondents who do not prefer the tax system to be progressive.

4 Findings

4.1 Descriptive findings

4.1.1 Willingness to pay tax across countries

People's willingness to pay tax varied between the different questions asked and across countries (these findings are based on respondents in the control group). Figure 3 shows that, depending on the specific question and the country, between 19 and 89 percent of respondents stated that they were willing to pay tax. In five of the eight countries in this study (Colombia, Indonesia, Mexico, Sri Lanka and South Africa) there was broadly similar willingness to pay tax as there was only a 6 to 16 percentage point difference across countries for a given question. On average, people's willingness to pay tax was more than 10 percentage points higher in Ghana and Tanzania than in the other countries, while the opposite was the case in Jordan. The findings for each question are broadly consistent with the general patterns in the surveys that the questions were sourced from. For example, across multiple rounds of the Afrobarometer (2012, 2013, 2015) between 45 and 63 percent of survey respondents in Tanzania stated that not paying tax was wrong and punishable, while 47 percent of people in Tanzania in this survey agreed with this statement. It is important to keep in mind that these descriptive survey findings about willingness to pay tax across countries cannot be directly compared to actual taxpayer behavior as this information is not available in a standardized way (PWC, 2022; USAID, 2019; World Bank, 2022b). However as discussed above these survey measures of "tax morale" provide a plausible proxy for tax compliance (Luttmer and Singhal, 2014).

[Figure 3]

The characteristics associated with being willing to pay tax varied considerably across the questions that were asked. Multivariate regression analysis shows that the most common

pattern across questions is that those aged between 18 and 34 years old were less likely to state they would be willing to pay tax compared to those aged 35 years and older (see Table A8 in Appendix B). In addition, respondents who perceived themselves to be in the middle of the income distribution were more likely to state that they were willing to pay tax and, interestingly, people who thought they were in the richest quintile were often the least likely to state they would be willing to pay tax (although differences were typically not statistically significant). No other background characteristics were consistently associated with answers to the various questions that were used to measure willingness to pay tax across countries.

4.1.2 Beliefs and preferences regarding progressivity in the tax and transfer system across countries

On average, almost two-thirds of respondents across the eight countries in this study stated that they prefer richer households to pay a higher share of their income in tax than poorer households, but less than half stated that they believed this was currently the case. In addition, another 15 to 30 percent of respondents stated that they neither agreed nor disagreed with these statements. Figure 4 shows for each country the share of respondents who stated they currently believe the tax system is progressive and those who would prefer this to be the case. Across countries, around one-third of respondents stated a difference between what they believe to be the case and what they would prefer to exist. Respondents in Jordan were the least likely to believe that the tax system was progressive (30 percent) and those in South Africa were the most likely (62 percent). Across these eight countries people's beliefs and preferences about whether the tax system was progressive were largely unrelated to what is actually the case. These descriptive trends suggest people have limited understanding of how progressive the tax system is in their country, but regardless of people's beliefs, a sizable majority of people would prefer to have a progressive tax system.

[Figure 4]

Preferences for progressive taxes and transfers varied somewhat, but not dramatically, across respondents based on where they perceived themselves to be in the national income distribution. On average, richer respondents were less supportive of progressive taxation by five to ten percentage points, but still in all countries, in every quintile more respondents agreed than disagreed that richer households should pay a higher share of their income in tax than poorer households (see Figure A2 in Appendix B).[6] Multivariate regression analysis controlling for other background characteristics also shows that perceiving oneself as rich is somewhat negatively associated with supporting progressive taxes in each country (see Table A9 in the Appendix). Support for progressive transfers was higher and more consistent across the income distribution in each country (see Figure A3 in Appendix B). Collectively, these results imply that there is only limited hostility toward progressive taxes and transfers among people who perceive themselves to be rich. On the other hand, there is far from universal support for progressive taxes and transfers among people who perceive themselves to be poor. It is important to note that the income distribution is constructed based on where people perceive their household to be as opposed to being determined based on reported household income. Consistent with the findings in Hoy and Mager (2021a), this resulted in most respondents perceiving themselves to be in the middle quintiles and only a very small share stating that they were in the poorest or richest quintile in each country.

4.2 Main experimental results

4.2.1 Overall effects of each of the treatments

The overall impact of the tax treatment illustrates that people's willingness to pay tax is influenced by whether or not the tax system is progressive (this is consistent with Hypotheses A1 and A2). Table 1 shows that respondents who received the taxes treatment in the four countries for which taxes were progressive (Colombia, Ghana, Mexico and Tanzania) were more willing to pay tax. For example, respondents in the taxes treatment group in these

[6]The exception is the richest quintile in Mexico.

countries were 2.3 percentage points more likely to state that they thought paying taxes was important, compared to respondents in the control group. In contrast, respondents who received the taxes treatment in the four countries for which taxes were not progressive (Indonesia, Jordan, Sri Lanka and South Africa) were less willing to pay tax. For example, respondents in the taxes treatment group in these countries were 2.2 percentage points less likely to state that they thought not paying taxes should be punishable, compared to respondents in the control group. In summary, the results of the taxes treatment across each of the outcome variables were in the order of one to three percentage points and the willingness to pay tax index for the taxes treatment group was 0.036 (0.048) standard deviations higher (lower) in countries where taxes were progressive (not progressive). Weaker (and often insignificant) results were attained from the combined treatment, although the point estimates were still consistent with respondents who received information that the system was progressive (not progressive) being more (less) willing to pay tax. The transfers treatment had negligible impact on respondents willingness to pay tax and consequently the remaining presentation of the results in the body of the paper does not focus on this treatment (see Table A10 in the Appendix for presentation of the heterogeneous effects of the transfers treatment).

[Table 1]

The main findings of the taxes treatment did not vary greatly across countries, which means the pooled regression results discussed above are not driven by a small number of countries. Figure 5 shows how the overall treatment effects were somewhat similar across countries based on the willingness to pay tax index. The exceptions are Ghana and Indonesia where the treatment effects were smaller, but the point estimates are still in the same direction. These country level results further illustrate the robustness of the main finding of this study, which is that a desire for progressive taxes is linked to people's willingness to pay tax (see country level results for each treatment in Table A11 in Appendix B).

[Figure 5]

4.2.2 Heterogeneous effects of the taxes treatment based on prior beliefs and existing preferences

The impact of the taxes treatment varied based on people's prior beliefs. Table 2 shows that the overall negative effect of the taxes treatment in countries where the tax system was not progressive is almost entirely driven by respondents who held a prior belief that the tax system was progressive. The willingness to pay tax index for the taxes treatment group was 0.083 standard deviations lower among this subset of respondents. As such, the taxes treatment appears to be correcting people's prior beliefs and this impacts their willingness to pay tax in the expected direction in this instance (i.e., consistent with Hypothesis B2 in Section 2). However, there was no clear evidence in favor of Hypothesis B1 for the taxes treatment, as respondents who held a prior belief that the tax system was not progressive were not significantly more willing to pay tax when they were informed that taxes were progressive.

[Table 2]

The impact of the taxes treatments also varied by people's existing preferences. Table 2 shows that the overall effects of the taxes treatment were almost entirely driven by respondents who held an existing preference for progressivity. The willingness to pay tax index for the taxes treatment group in countries where taxes were progressive (not progressive) was 0.050 (0.066) standard deviations higher (lower) among this subset of respondents. As such, the taxes treatment appears to be impacting people's willingness to pay tax in the expected direction in these instances (i.e., consistent with Hypotheses C1 and C2 in Section 2).

4.2.3 Heterogeneous effects of the combined treatment based on prior beliefs and existing preferences

The impact of the combined treatment varied based on people's prior beliefs. Table 3 shows that the overall effects of the combined treatment were entirely driven by respondents who received information counter to their prior briefs. Among these respondents, the willingness to pay tax index for the combined treatment group in countries where taxes were progressive (not progressive) was 0.049 (0.030) standard deviations higher (lower). As such, the combined treatment appears to be correcting people's prior beliefs and this impacts their willingness to pay tax in the expected direction in these instances (i.e., consistent with Hypotheses B1 and B2 in Section 2). However, there is no evidence to suggest the treatment varied based on whether or not respondents held an existing preference for progressivity (i.e., there is no support for Hypotheses C1 and C2 in Section 2).

[Table 3]

4.3 Extensions and robustness checks

4.3.1 Heterogeneous treatments effects among segments of the population that face different levels of tax liabilities

While the main results of the taxes and combined treatments suggest that on average people's willingness to pay tax is influenced by whether the tax system is progressive in their country, from a policy makers perspective it is critical to understand how different segments of the population respond to the treatments based on their tax liabilities. Particularly if the main effects were purely driven by people who don't face substantial tax liabilities or the ability to avoid paying tax then the findings may be less relevant from a revenue perspective. In line with the "secondary hypotheses" in the pre-analysis plan, I also examine heterogeneous treatment effects based on respondents' perceived place in the income distribution,

respondents' employment type, respondents' beliefs about whether their household pays a large share of their income in tax and respondents' beliefs about whether their household pays more in tax than they receive in transfers. Heterogeneous treatment effects on each of these dimensions provide insights about how segments of the population with different tax liabilities respond to the treatments. To maximize statistical power and to streamline the discussion in the body of the paper, the taxes and combined treatment groups are merged and compared to the control group.[7] For completeness, I present the heterogeneous effects for each treatment in Tables A12-A15 in the Appendix.

I do not find compelling evidence to suggest that there are large differences from the taxes and combined treatments across segments of the population that face different levels of tax liabilities. Figure 6 presents the impact of the merged treatment on the willingness to pay tax index for each of the dimensions discussed above (respondents' perceived place in the income distribution, respondents' employment type, respondents' beliefs about whether their household pays a large share of their income in tax and respondents' beliefs about whether their household pays more in tax than they receive in transfers). Figure 6a shows that in countries where the tax system was progressive there are somewhat consistent findings across the poorest four quintiles of the perceived income distribution, but there was some evidence of an opposing effect for the richest quintile (although differences are not statistically significant). In countries where taxes were not progressive, the treatment effect on the WTP tax index for the poorest three quintiles was somewhat similar and close to zero for the richest two quintiles. However, as noted in the descriptive results, most respondents perceive themselves to be in the middle quintiles, which means these findings across the perceived income distribution should be interpreted with caution, especially given the absence of statistically significant effects.

[Figure 6]

[7] In this setup, the merged treatment can be thought of as providing some form of information about whether the tax system is progressive or not.

The other heterogeneous treatment effects displayed in Figure 6 suggest that the negative overall effect of the taxes and combined treatments on respondents' willingness to pay tax was larger among segments of the population who face a sizable tax liability and have greater scope to avoid paying tax (i.e., the self-employed). Figure 6b shows that respondents in the treatment group who were not working were the most likely to increase their willingness to pay tax in countries where the tax system was progressive, whereas self-employed respondents in the treatment group were the most likely to decrease their willingness to pay tax in countries where the tax system was not progressive. Figure 6c shows that respondents in the treatment group whose household did not pay a large share of their income in tax were the most likely to increase their willingness to pay tax in countries where the tax system was progressive, whereas respondents in the treatment group whose household did pay a large share of their income in tax were the most likely to decrease their willingness to pay tax in countries where the tax system was not progressive. Figure 6d shows that respondents in the treatment group whose household was a net beneficiary were the most likely to increase their willingness to pay tax in countries where the tax system was progressive, whereas respondents in the treatment group whose household was a net contributor were the most likely to decrease their willingness to pay tax in countries where the tax system was not progressive.

4.3.2 Differences between the treatments

The main results of this study appear to be driven by the content of the treatments, as opposed to simply receiving a treatment. The experiment was designed in a way that allowed for comparisons to be made across treatments to rule out concerns that the overall effects were purely due to receiving any information about taxes and transfers. This was possible in six of the eight countries (Ghana, Indonesia, Jordan, Sri Lanka, South Africa and Tanzania) where the direction of the taxes and transfers treatments were opposing one another (e.g., in Ghana the taxes treatment was highlighting that the system was progressive whereas

the transfers treatment was stating the opposite) (see Table A16 in Appendix B). There was a large statistically significant difference between respondents' willingness to pay tax, depending on whether the treatment they received indicated that the tax and transfer system was progressive or not progressive.

4.3.3 Representativeness of the survey

The main results of the randomized survey experiment hold with and without weights applied to adjust the data to match the general population and with and without weights applied to adjust the data to match the characteristics of the internet population that were invited to participate in the survey. Firstly, as described in the methodology (Section 3), the results presented throughout the body of the paper have weights for age and sex to adjust the data to match the general population. In Appendix B, the results are also presented without these weights and the findings are very similar (see Table A2). Secondly, the characteristics of the population that were invited to participate in the survey were compared to those that completed the survey to examine whether differences existed. The main dimension that was identified is whether people were participating in the survey via a smartphone. Those that were tended to be less likely to participate in the survey in the first place and less likely to complete the survey conditional on starting (see Table A3 in Appendix B). To examine whether this was driving the results I re-weighted the data to match the original composition of respondents (smartphone vs other device types) that were invited to participate in the survey and this did not have a noteworthy impact on the results (see Table A4 in Appendix B).

4.3.4 Robustness checks

The main results of the randomized survey experiment did not vary considerably when conducting a series of robustness checks. These checks involved removing respondents who took too long or short a period of time to complete the survey as well as conducting the analysis using alternative econometric specifications (see Tables A17-A18 in Appendix B).

In addition, I show that the results are unlikely to be due to differential attrition between the treatment and control groups by using Lee (2009) bounds analysis (see Table A19 in Appendix B).

5 Discussion

5.1 Summary of the experimental results

This study has illustrated that progressivity in the tax system influences whether people are willing to pay tax. Respondents who were informed that the tax system was progressive (not progressive) were more (less) likely to pay tax. There were weaker overall effects from the combined treatment (although the point estimates were in the same direction) and no impact from the transfers treatment. The main experimental results were predominantly driven by respondents in cases where the information they received was counter to their prior beliefs and/or consistent with their preferences. There were some differences between the impact of the treatments across specific questions measuring people's willingness to pay tax, but these differences should be interpreted with caution. Differences between measures of people's willingness to pay tax have been observed in the existing literature (Prichard, forthcoming) and this was noted as likely to occur in the pre-analysis plan. As a result, five questions focusing on slightly different ways of measuring people's willingness to pay tax were used in this survey experiment. The consistency of the effect of the taxes treatment across most of the questions illustrates the robustness of the findings of the randomized survey experiment.

The differences between the size of the effects of the taxes and other treatments were somewhat anticipated as noted in Section 2 and in the pre-analysis plan.[8] The most straight-

[8]Three reasons were noted in the pre-analysis plan. Firstly, on average, the share of household income collected in taxes is much higher than what is provided in transfers, which means people may be more concerned about how taxes are distributed compared to transfers. Secondly, there is reason to believe that "loss aversion" could exist where people's utility is more likely to be influenced by "losing" from paying tax than by "gaining" from receiving a transfer. Thirdly, people's awareness of when they pay tax may be higher than their awareness about when they receive a transfer.

forward explanation for these differences is that the questions were about the tax system and consequently people were more responsive to information about taxes than transfers. In other words, respondents' elasticity of willingness to pay tax is higher for information about taxes. Another, potentially compatible, explanation for these results is that people may not necessarily link the taxes they pay with the transfers people receive. It may not be clear to respondents that the structure and generosity of the transfer system has anything to do with paying tax. For example, they may be in favor of the transfer system being progressive and want this to continue, but they do not respond to this situation by being more willing to pay tax for a range of reasons, such as not believing the tax they will pay will help pay for transfers.

5.2 Theoretical implications from this study

This study has generated rigorous evidence that the progressivity of the tax system shapes people's willingness to pay tax across countries. As discussed throughout this paper, prior to this study there was limited empirical evidence about how progressivity of taxes and government transfers shapes people's willingness to pay tax, particularly in developing countries. The results provide clear evidence supporting a conceptual framework that combines seminal theoretical models of tax compliance (Allingham and Sandmo, 1972) and preferences for redistribution (Alesina and Giuliano, 2011) to illustrate the channels through which equity in the tax and transfer system is likely to influence people's willingness to pay tax. The most immediate theoretical implication from these findings is that research on tax compliance needs to engage further with how the progressivity of taxes impacts people's utility. To put this formally using the utility function in Section 2, the weighting (γ_i^t) people place on the difference between their perceived and preferred levels of progressivity in the tax and transfer system ($Q_{bi}^t - Q_i^{t*}$) is non-trivial. As such, the role of equity in the tax system should be considered alongside more commonly cited "quasi-voluntary" motivations for why people pay (or do not pay) tax, such as to keep up with social norms (Hallsworth, 2014),

to contribute to the provision of public goods (Giaccobasso et al., 2022), and because they have a positive outlook on the government (Cullen et al., 2021). While there has been some related work along these lines in the United States (Stantcheva, 2021), this study builds on these foundations to illustrate how progressivity in the tax and transfer system in general impacts people's willingness to pay tax, as well as by showing how generalizable these trends are across a diverse set of developing countries.

The order of magnitude of the impact of the taxes treatment on willingness to pay tax was in line with seminal cross-country randomized survey experiments (Alesina et al., 2018; Alesina et al., 2022) and if this translated into actual tax compliance behavior the effects would be non-trivial (e.g., they would be of a similar size to recent work such as Balan et al., 2022). Given the novelty of this study it is challenging to precisely compare the order of magnitude of the treatment effects to related work, however there is a further limitation regarding the nature of the treatment. Ultimately, the information provided to respondents in the randomized survey experiment is largely binary (taxes and/or transfers are either progressive or not) and as a result this means it is not possible to estimate how the order of magnitude of progressivity in the tax and transfer system matters (technically the figures in the treatments provide this information, but it is unlikely to have been fully comprehended by some respondents). The similarity in the impact of the taxes treatment within the two groups of countries (with taxes being either progressive or not) would suggest that the order of magnitude of progressivity was not necessarily a particularly important consideration for respondents. Rather, it appears that what influenced respondents was purely whether or not the tax system was progressive (i.e., it was a binary consideration). With these noteworthy caveats in mind, I still produce a "back of the envelope" estimate of the impact of the taxes treatment on actual tax compliance. The absolute value of the average treatment effect across each outcome variable is 1.930 percentage points, while the average control mean across each outcome variable is 51.74 percent (these values are directly sourced from taking averages of the results presented in the first two panels of Table 1). If the self-reported measures of willingness to pay tax perfectly measured actual behavior

than the overall, average treatment effect would be around a 3.73 percent increase/decrease in tax compliance (which is a similar order of magnitude to recent work examining the effects of different interventions on tax compliance such as Balan et al., 2022). However as stressed above this "back-of-the-envelope" calculation should be interpreted with a great deal of caution.

5.3 Implications for policy makers

A key implication for policy makers from this study is that changes to the degree of equity in the tax system will impact people's willingness to pay tax. As discussed in the introduction, reforms to taxes that intend to improve a country's fiscal position are likely to change the degree of progressivity in the tax system and it is necessary for policy makers to better understand people's responses to such reforms. Tax reforms that improve progressivity could have an additional benefit by increasing people's willingness to pay tax. The opposite could also be the case, whereby tax reforms that reduce progressivity could in turn decrease people's willingness to pay tax. In the most extreme case, it is possible that tax reforms that reduce progressivity, which were intended to improve the fiscal position of a country, could undermine tax compliance to a point whereby the net impact on revenue is negative. Ultimately, the exact order of magnitude of these "second round" effects that have an *additional benefit* (*backfire effect*) from increasing (decreasing) progressivity in the tax system will likely vary over time and across countries. However, the results of this study do suggest that policy makers should take these "second round" effects of tax reform quite seriously.

Policy makers can also learn from this research about the benefits from communicating effectively with the general population about the purposes of tax reforms, especially when they are implemented in tandem with changes to the government transfer system. Clearly the results show that most people have a preference for progressive taxes and this can be utilized by policy makers to justify changes to the tax system. Alongside other reasons for tax reform (e.g., improving a country's fiscal position), communicating the role of taxes

in promoting greater equality (when this is actually the case) appears to be an important tool in policy makers' arsenal, particularly in democratic regimes. Even in the absence of a reform agenda, communicating to taxpayers about the progressive aspects of the tax system in their country would appear to be a way to boost compliance. Further, there appears to be ample scope for information campaigns to be done by policy makers to help the general population understand how taxes help fund the government transfers that benefit so many households.

A potential reason why this approach may have been under exploited by policy makers is they are most interested in richer individuals paying tax as ultimately this will collect the most revenue and they are concerned that these taxpayers may be the least receptive to messages about progressivity. Our study presents mixed results on this point. While there was some variation between respondents across the perceived income distribution, these differences were not statistically significant. Further, there was evidence to suggest that the negative overall effect of the taxes and combined treatments on respondents willingness to pay tax was larger among segments of the population who face a sizable tax liability and have greater scope to avoid paying tax (although once again differences were not statistically significant). Collectively, these results do not suggest that concerns regarding upsetting richer taxpayers warrant discarding communication campaigns about progressive reforms to taxation. In fact, the descriptive finding that there is widespread support for progressive taxes and transfers, even among richer individuals, would suggest progressive reforms to tax and transfer systems in most developing countries may be far more popular than what many policy makers appreciate.

5.4 Directions for future research

A key area for future research that the findings from this study would suggest is worth pursuing is testing how equity in tax and transfer systems influences taxpayer behavior using administrative data (ideally across countries). Randomized survey experiments, including

seminal studies by Kuziemko et al. (2015), Alesina et al. (2018), Alesina et al. (2022) and Stantcheva (2021) rely on the use on self-reported outcomes. While this is incredibly useful, a natural next step is to try to link these outcomes to administrative data. This may be more straightforward in a high-income country setting where data about taxpayer behavior is publicly available (e.g., in Scandinavian countries). Another area worthy of greater attention is exploring the extent to which other aspects of "quasi-voluntary" motivations for paying tax exist. For example, a randomized survey experiment examining issues to do with fairness in the tax system would make a large contribution to the literature and may matter more to taxpayers than equity in the tax system.

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Tables and Figures

Table 1: Overall effects of the treatments

	Direct b/se/p	Punishable b/se/p	Important b/se/p	Right to Tax b/se/p	Don't Refuse b/se/p	INDEX b/se/p
Taxes (Progressive)	0.008	0.022	0.023**	0.016	0.013	0.036**
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
p-value	0.594	0.272	0.032	0.140	0.255	0.030
Control group mean	0.569	0.421	0.773	0.596	0.441	0
Observations	7605	7605	7605	7605	7605	7605
Taxes (Not Progressive)	-0.022	-0.022*	-0.012	-0.027	-0.028	-0.048**
	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
p-value	0.213	0.061	0.517	0.131	0.328	0.011
Control group mean	0.513	0.354	0.692	0.488	0.327	0
Observations	7435	7435	7435	7435	7435	7435
Transfers (Progressive)	-0.006	0.009	0.016	-0.002	0.004	0.009
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
p-value	0.569	0.461	0.259	0.914	0.611	0.653
Control group mean	0.536	0.373	0.685	0.475	0.328	0
Observations	11318	11318	11318	11318	11318	11318
Transfers (Not Progressive)	-0.014	0.007	0.002	-0.002	-0.008	0.000
	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)
p-value	0.358	0.652	0.853	0.966	0.423	0.976
Control group mean	0.556	0.434	0.889	0.767	0.571	0
Observations	3810	3810	3810	3810	3810	3810
Combined (Progressive)	0.000	0.008	0.021**	0.020	0.012*	0.025*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
p-value	0.997	0.479	0.049	0.101	0.052	0.098
Control group mean	0.536	0.373	0.686	0.475	0.328	0
Observations	11066	11066	11066	11066	11066	11066
Combined (Not Progressive)	-0.011	-0.024	0.012	0.009	-0.021	-0.010
	(0.02)	(0.01)	(0.01)	(0.03)	(0.02)	(0.02)
p-value	0.714	0.217	0.354	0.806	0.405	0.732
Control group mean	0.556	0.433	0.890	0.766	0.569	0
Observations	3769	3769	3769	3769	3769	3769

Note: This table shows the overall impact of each of the treatments relative to the control group, where countries are pooled based on whether the tax and/or transfer system is progressive. This table is based on Equation 7 in Section 3 of the paper. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table 2: Heterogeneous effects of the taxes treatment based on prior beliefs and existing preferences

	Direct b/se	Punishable b/se	Important b/se	Right to Tax b/se	Do not Refuse b/se	INDEX b/se
Panel A - Respondents in countries where taxes were progressive						
Believe progressive × Treated	0.017	0.037**	0.008	0.016	0.039	0.053
	(0.01)	(0.01)	(0.01)	(0.03)	(0.02)	(0.03)
Believe not progressive × Treated	0.002	0.011	0.033	0.013	-0.007	0.022
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
p-value difference	0.376	0.253	0.423	0.950	0.294	0.553
Observations	7605	7605	7605	7605	7605	7605
Prefer progressive × Treated	0.019	0.030	0.026*	0.014	0.025	0.050***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Prefer not progressive × Treated	-0.013	0.005	0.010	0.013	-0.007	0.004
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
p-value difference	0.051	0.217	0.590	0.946	0.036	0.153
Observations	7605	7605	7605	7605	7605	7605
Panel B - Respondents in countries where taxes were not progressive						
Believe progressive × Treated	-0.020	-0.047**	-0.039	-0.063**	-0.027	-0.083**
	(0.03)	(0.01)	(0.02)	(0.01)	(0.04)	(0.02)
Believe not progressive × Treated	-0.024	0.001	0.012	0.005	-0.030	-0.016
	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)
p-value difference	0.915	0.010	0.096	0.010	0.908	0.110
Observations	7435	7435	7435	7435	7435	7435
Prefer progressive × Treated	-0.023	-0.039***	-0.030	-0.046*	-0.018	-0.066***
	(0.02)	(0.00)	(0.02)	(0.02)	(0.03)	(0.01)
Prefer not progressive × Treated	-0.021	0.005	0.012	-0.003	-0.043	-0.021
	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)
p-value difference	0.954	0.028	0.167	0.247	0.410	0.348
Observations	7435	7435	7435	7435	7435	7435

Note: This table shows the heterogeneous effects of the taxes treatment based on respondents prior beliefs about and existing preferences regarding whether taxes were progressive, where countries are pooled based on whether or not the tax is actually progressive. This table is based on Equation 7 in Section 3 of the paper, except the regression analysis is conducted separately for respondents based on their prior beliefs and existing preferences. Beliefs about progressivity are based on Q8, which asks respondents whether they believe that richer households pay a higher share of their income in tax than poorer households. Preferences about progressivity are based on Q9, which asks respondents whether they think that richer households should pay a higher share of their income in tax than poorer households.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. See the notes to Table 1 for further variable definitions.

Table 3: Heterogeneous effects of the combined treatment based on prior beliefs and existing preferences

	Direct b/se	Punishable b/se	Important b/se	Right to Tax b/se	Do not Refuse b/se	INDEX b/se
Panel A - Respondents in countries where combined effect of taxes and transfers was progressive						
Believe progressive × Treated	-0.003	-0.003	-0.005	-0.012	0.015	-0.004
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Believe not progressive × Treated	0.002	0.016	0.042***	0.048**	0.009	0.049**
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
p-value difference	0.848	0.316	0.003	0.011	0.804	0.038
Observations	11066	11066	11066	11066	11066	11066
Prefer progressive × Treated	0.010	0.002	0.007	0.017	0.027*	0.027**
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)	(0.01)
Prefer not progressive × Treated	-0.016	0.017	0.043*	0.026	-0.014	0.023
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)
p-value difference	0.348	0.557	0.137	0.749	0.285	0.929
Observations	11066	11066	11066	11066	11066	11066
Panel B - Respondents in countries where combined effect of taxes and transfers was not progressive						
Believe progressive × Treated	-0.035	-0.048	0.010	0.026	-0.040	-0.030
	(0.01)	(0.02)	(0.00)	(0.02)	(0.03)	(0.02)
Believe not progressive × Treated	0.015	0.002	0.010	-0.013	0.000	0.009
	(0.04)	(0.01)	(0.02)	(0.04)	(0.00)	(0.03)
p-value difference	0.385	0.363	0.990	0.308	0.383	0.161
Observations	3769	3769	3769	3769	3769	3769
Prefer progressive × Treated	-0.007	-0.028	0.011	0.011	-0.032	-0.015
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)	(0.01)
Prefer not progressive × Treated	-0.017	-0.015	0.009	-0.003	0.008	-0.003
	(0.04)	(0.02)	(0.01)	(0.06)	(0.02)	(0.05)
p-value difference	0.779	0.820	0.932	0.771	0.037	0.816
Observations	3769	3769	3769	3769	3769	3769

Note: This table shows the heterogeneous effects of the combined treatment based on respondents prior beliefs about and existing preferences regarding whether taxes were progressive, where countries are pooled based on whether or not the combined effect of taxes and transfers is actually progressive. This table is based on Equation 7 in Section 3 of the paper, except the regression analysis is conducted separately for respondents based on their prior beliefs and existing preferences. Beliefs about progressivity are based on Q8, which asks respondents whether they believe that richer households pay a higher share of their income in tax than poorer households. Preferences about progressivity are based on Q9, which asks respondents whether they think that richer households should pay a higher share of their income in tax than poorer households.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. See the notes to Table 1 for further variable definitions.

FIGURE 1A: Support for a progressive tax and transfer system across developing countries

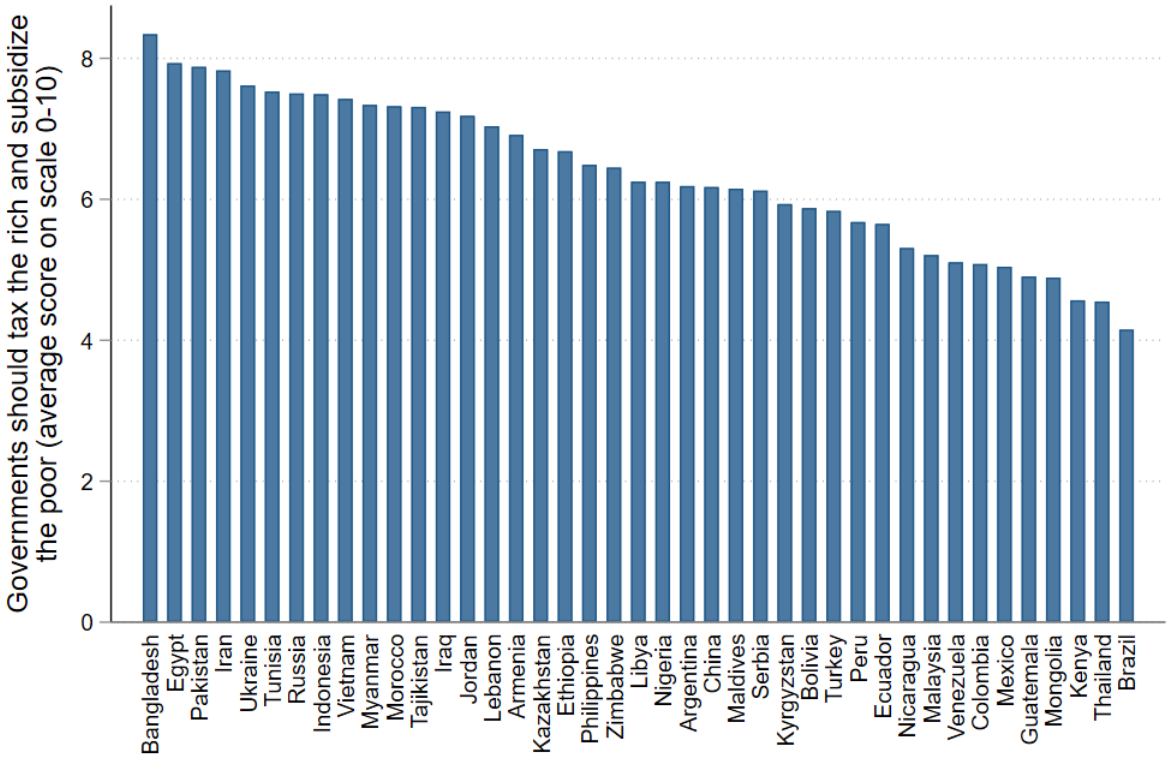
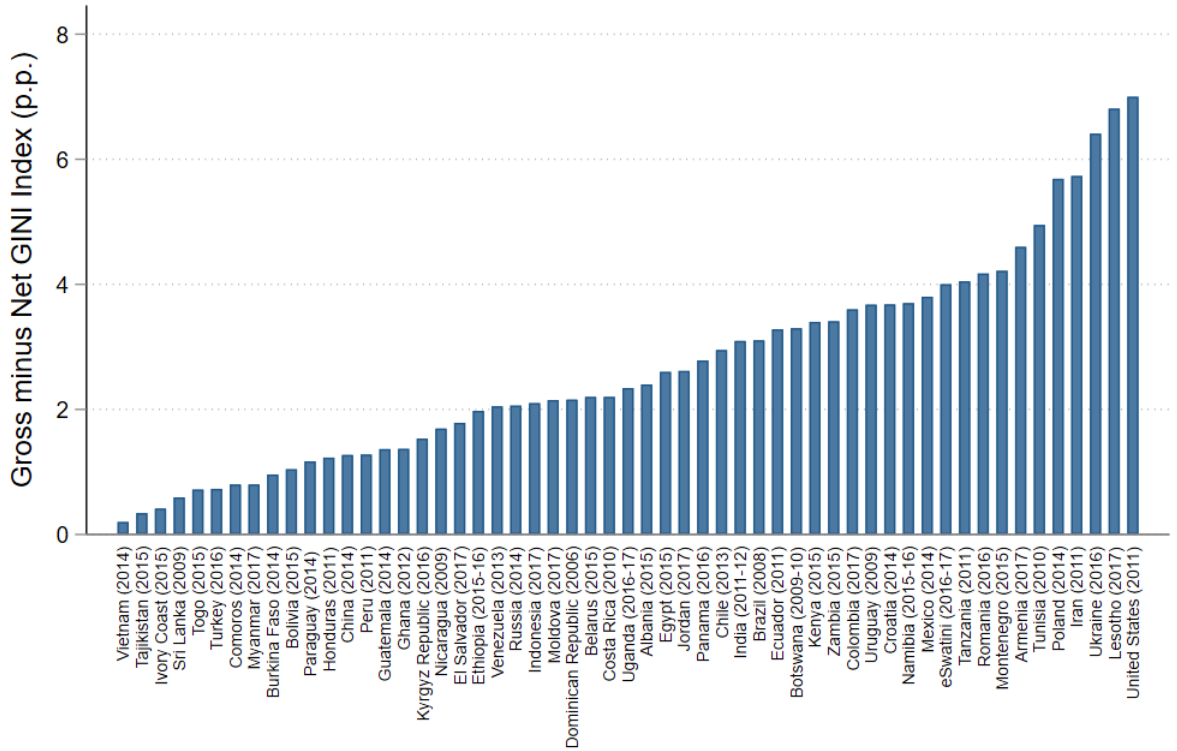


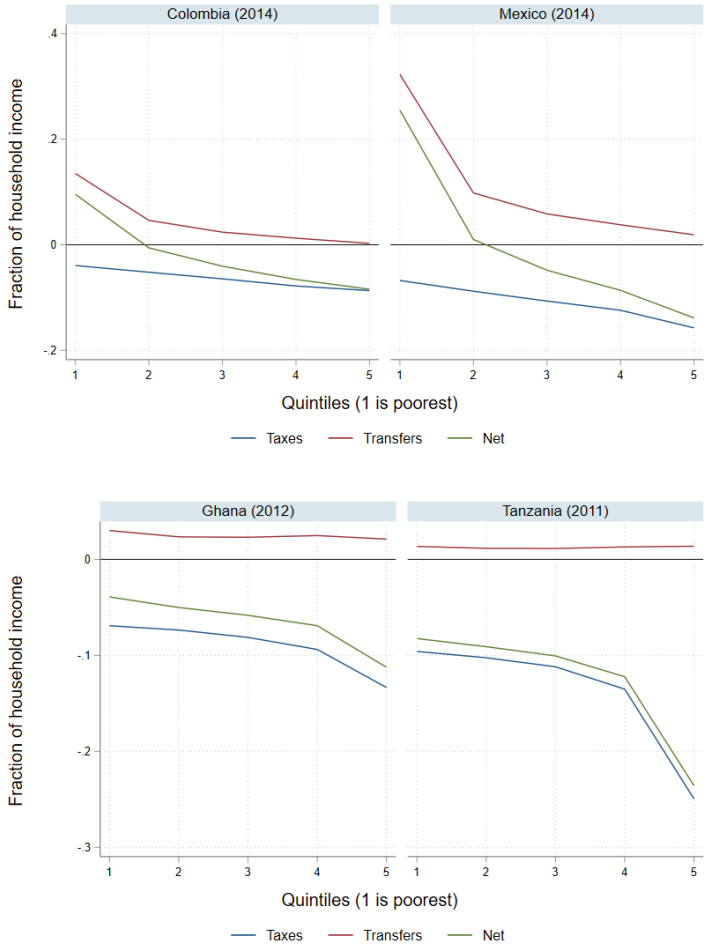
FIGURE 1B: Difference between the Gross and Net GINI index in developing countries

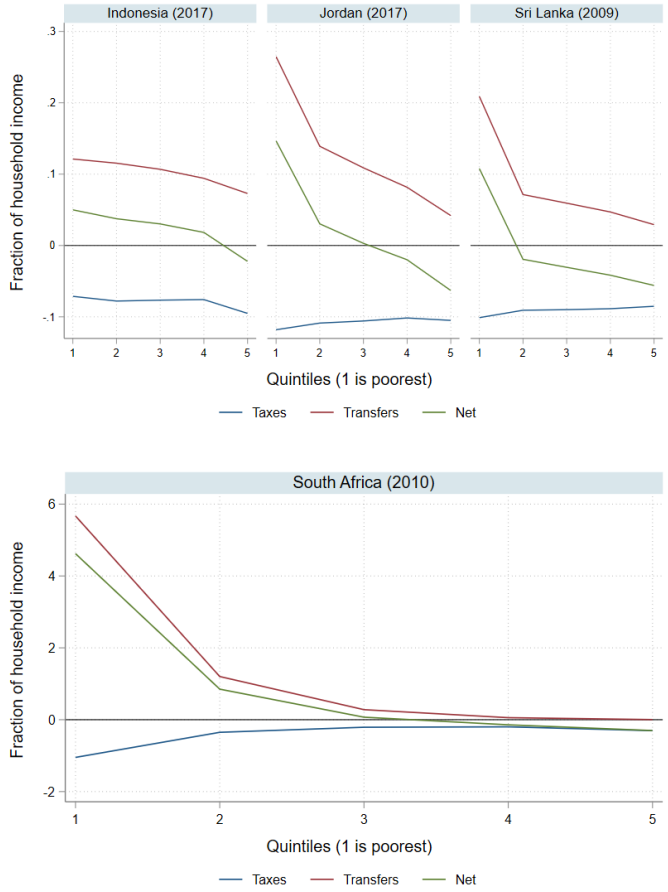


Note: Figure 1a shows for over 40 developing countries the average score, on a scale from 0-10, provided by a nationally representative sample of respondents when asked how supportive they were of governments taxing the rich and subsidizing the poor (WVS, 2022). Figure 1b shows that across the over 55 developing countries for which comparable data exists the difference between the gross (i.e., pre-taxes and government transfers) and net (i.e., post-taxes and government transfers) GINI index is negligible in some developing countries and far more substantial in others (CEQ, 2021). For presentational purposes, South Africa is excluded as the difference between the Gross and Net GINI index is substantially larger than for any other country (around 10 percentage points).

Source: WVS, 2022; CEQ, 2021

FIGURE 2: Taxes and government transfers (both direct and indirect) as a fraction of household income

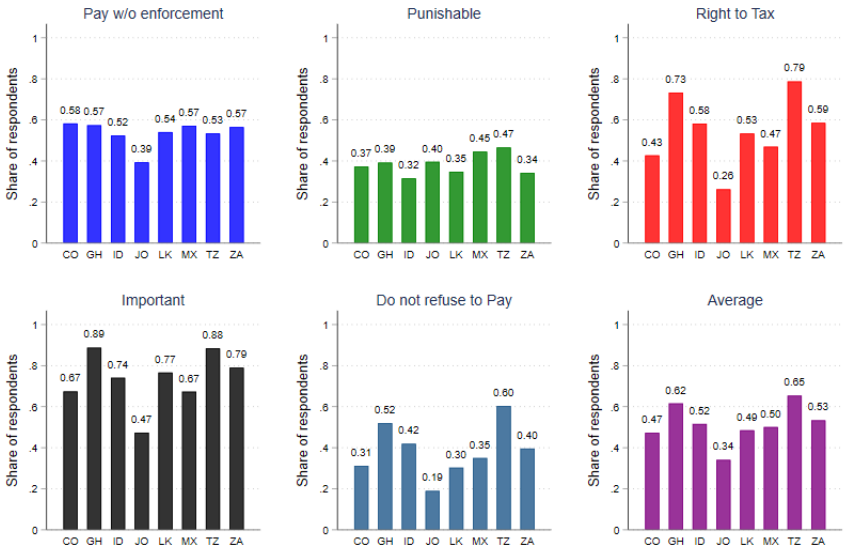




Note: This figure shows the average fraction of household income for each quintile in each country that is directly or indirectly paid in taxes or received in government transfers as well as the net impact of taxes and transfers on household income. Taxes are displayed as negative because they reduce household income. In South Africa, taxes and transfers as a fraction of household income is greater than 1 for the poorest quintile. This is possible because household consumption is higher than household income for the these households.

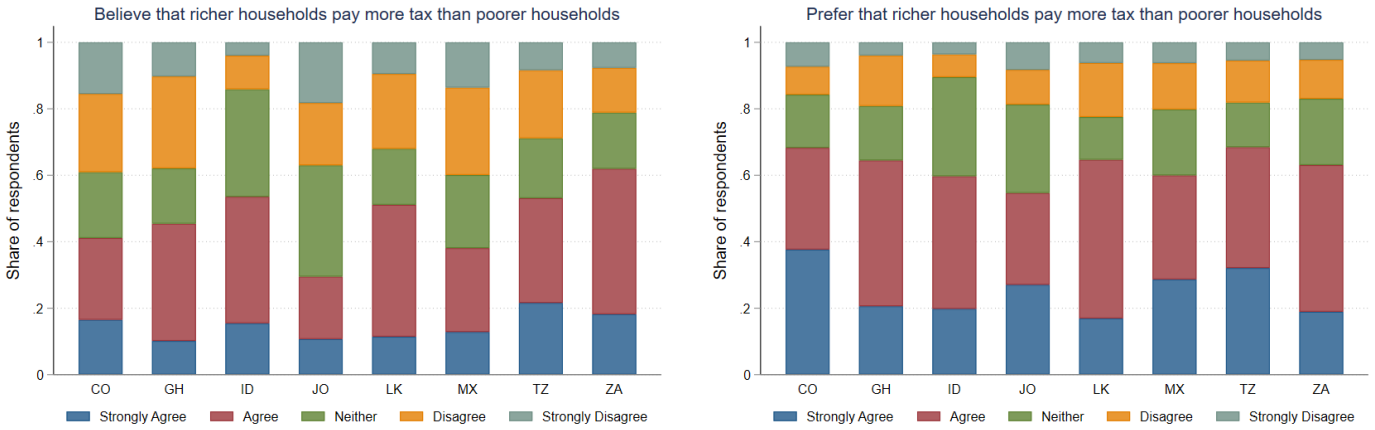
Source: CEQ, 2021

FIGURE 3: Willingness to pay tax across countries according to different indicators



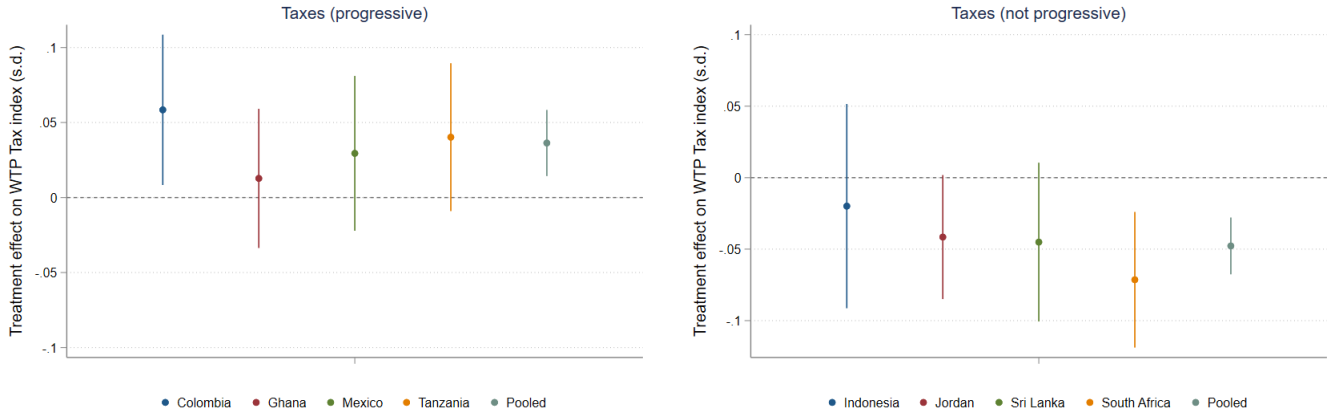
Note: This figure shows the share of respondents (in the control group) stating they are willing to pay tax in each country according to different questions. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. *Pay w/o enforcement:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse to Pay:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise).

FIGURE 4: Beliefs and preferences regarding the progressivity of taxes across countries



Note: This figure shows the share of respondents stating they had a prior belief and/or an existing preference that the tax system is progressive in their country. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. Beliefs about progressivity are based on Q8, which asks respondents whether they believe that richer households pay a higher share of their income in tax than poorer households. Preferences about progressivity are based on Q9, which asks respondents whether they think that richer households should pay a higher share of their income in tax than poorer households.

FIGURE 5: Overall impact of the tax treatment in each country



Note: This figure shows the overall impact of the tax treatment in each country. These results are based on Equation 7 in Section 3 of the paper, however country fixed effects are not included. 90 percent confidence intervals are displayed in this figure. *WTP Tax INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

FIGURE 6A: Impact of the taxes and combined treatment on Willingness to Pay Tax by quintile

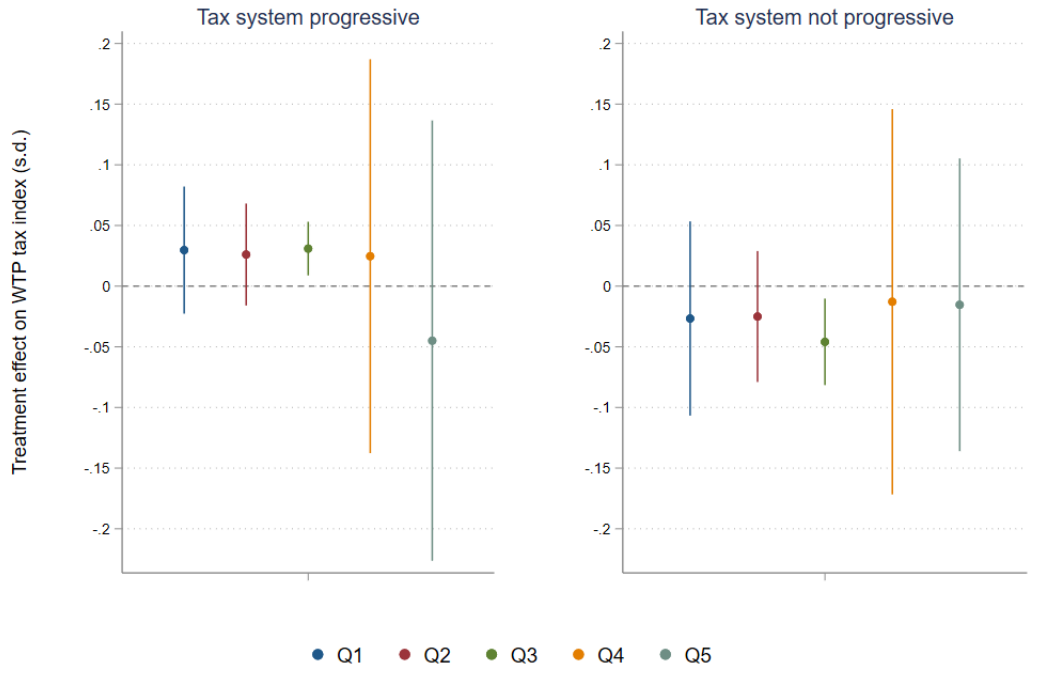


FIGURE 6B: Impact of the taxes and combined treatment on Willingness to Pay Tax by employment status

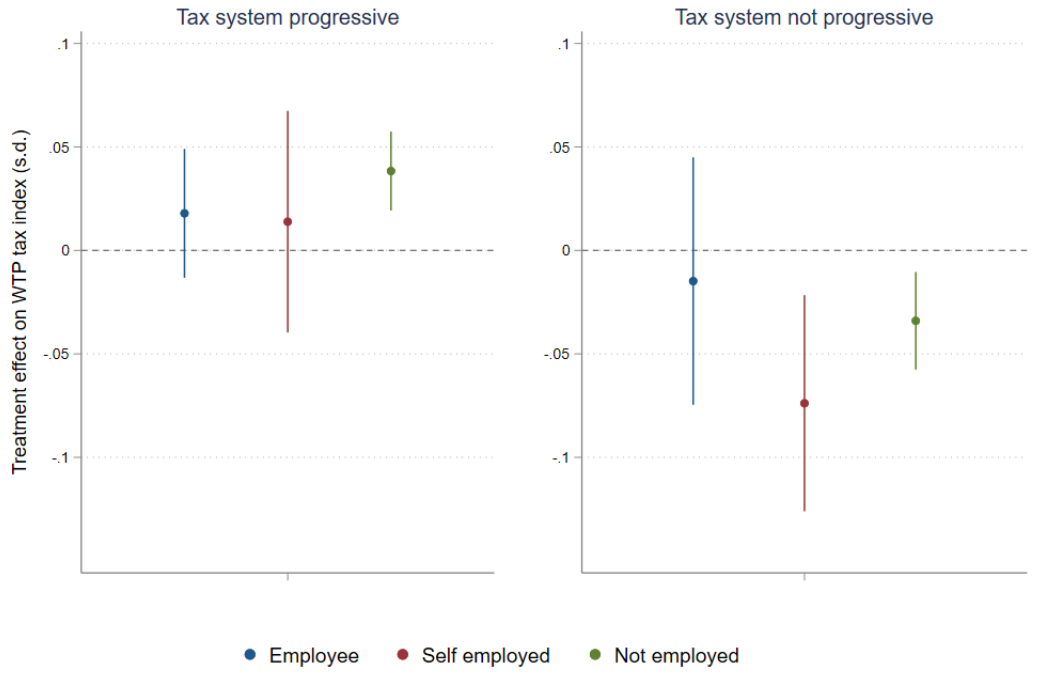


FIGURE 6C: Impact of the taxes and combined treatment on Willingness to Pay Tax by being a large taxpayer

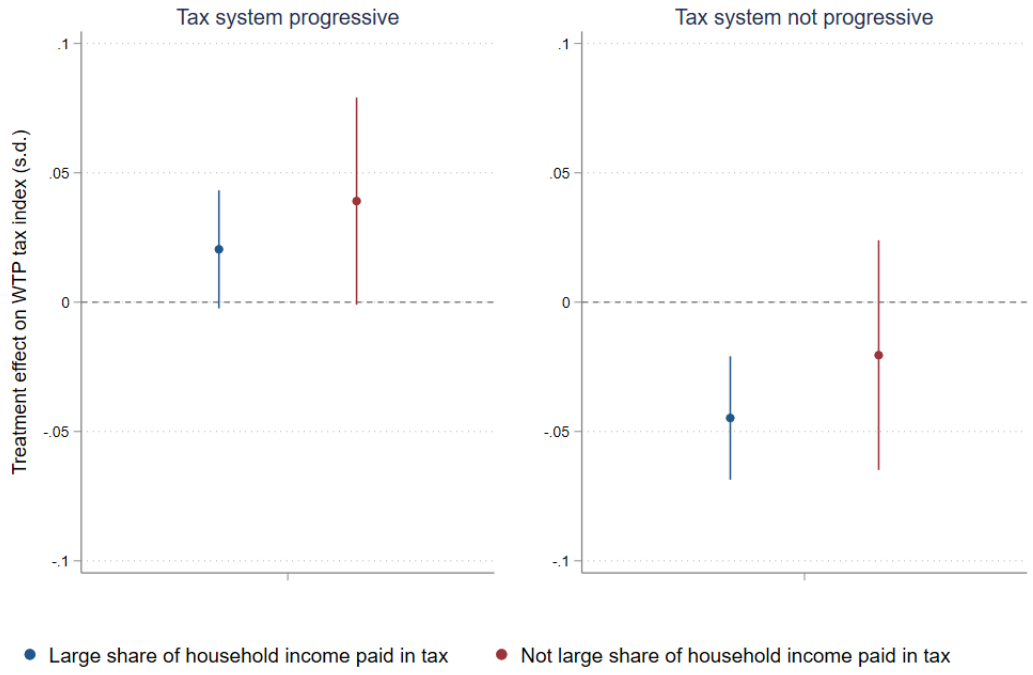
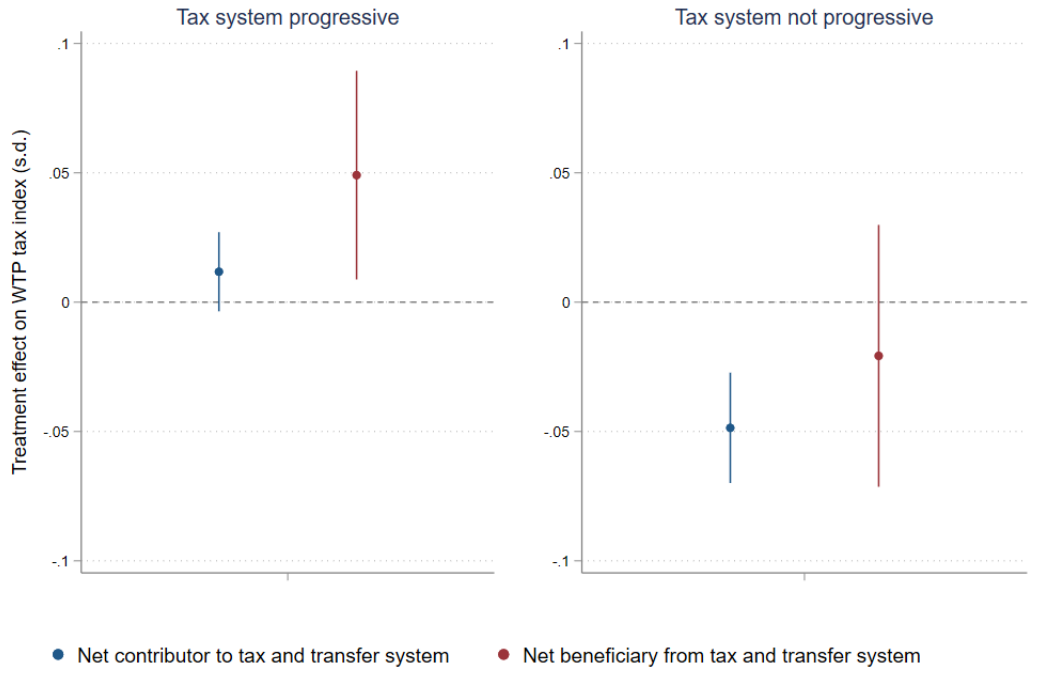


FIGURE 6D: Impact of the taxes and combined treatment on Willingness to Pay Tax by being a net contributor



Note: Figure 6a shows the impact of the merged treatment (consisting of both the taxes and combined treatment groups) on the willingness to pay tax index by quintile. Figure 6b shows the impact of the merged treatment (consisting of both the taxes and combined treatment groups) on the willingness to pay tax index by employment status. Figure 6c shows the impact of the merged treatment (consisting of both the taxes and combined treatment groups) on the willingness to pay tax index by whether or not respondents are a large taxpayer. Figure 6d shows the impact of the merged treatment (consisting of both the taxes and combined treatment groups) on the willingness to pay tax index by whether or not respondents are a net contributor to the tax and transfer system. *Q1:* Poorest quintile, based on answer to Q5. *Q2:* Second poorest quintile, based on answer to Q5. *Q3:* Middle quintile, based on answer to Q5. *Q4:* Second richest quintile, based on answer to Q5. *Q5:* Richest quintile, based on answer to Q5. 90 percent confidence intervals are displayed in this figure. Respondents' employment status is based on Q3. Beliefs about the share of household income that is paid in tax are based on Q6. Respondents' views about whether their household was a net contributor to the tax and transfer system is based on Q7. *WTP tax INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax. 90 percent confidence intervals are displayed in this figure.

List of Appendices

Appendix A - Details about the survey methodology

Approach to data collection

Ideally, face-to-face surveys collecting a representative sample of the general population using a sampling frame, such as a recent census, would have been conducted in each of the countries in this study. Not only are the costs involved in doing this prohibitive, but there are also issues with conducting face-to-face surveys during a pandemic. While phone surveys present a popular alternative, this is not an appropriate format for a survey along these lines. The treatments are designed to be visual in nature and it is not possible to communicate these messages fully via a phone call. This left an online survey as the most promising option for data collection, even though there are challenges with representativeness that need to be recognized and can be overcome to some extent.

A major challenge with conducting an online randomized survey experiment in low- and middle-income countries is collecting a representative sample of the total population. Unlike high-income countries where internet access is near universal, the share of the total population with internet access in the countries in this study varies from 20 to 67 percent. Furthermore, there is limited existing online survey "infrastructure", such as what exists in many high-income countries where market research firms run online opinion polls daily from a large pool of pre-registered respondents who regularly complete surveys. This is far less common in low- and middle-income countries and there are reasons to be concerned about just how narrow a subset of the population would participate in an engagement like this. Similar concerns exist

regarding the use of online labor platforms, such as MTurk, in a low- and middle-income country context.

Alternative approaches to online data collection in low- and middle-income countries can crudely be categorized as providing "opt-in" or "opt-out" options. An example of the former would be to use social media advertisements to invite people to participate in an online survey. While this "opt-in" approach may be attractive as it is easy to implement, I identified at least two shortcomings that I felt meant this approach was not ideal for this study. Firstly, there is a clear concern regarding selection bias as people who would "opt in" to a survey based on a social media advertisement potentially have some unobservable characteristics that make them distinct from the rest of the population. It is challenging to estimate the extent to which these unobservable characteristics exist without gaining access to administrative data from social media providers. Secondly, as I was asking about a sensitive topic (tax compliance) it is possible that participants would not provide honest answers as they could easily be identified through the platform that they were opting into the survey on (e.g., Facebook). As such, on balance I felt that an "opt-in" approach along these lines would not be ideal for this study.

Despite these concerns regarding "opt-in" online data collection via social media, I still attempted to pilot the randomized survey experiment via Facebook and Instagram in the countries with the two smallest "internet" populations in this study (Tanzania and Jordan). These countries were chosen as reaching a large enough sample size to have statistical power to detect effects from the treatments would be the most challenging in these settings. The survey was non-incentivized (to minimize

concerns about experimenter demand effects and to ensure respondents did not need to provide identifiable information) and to comply with research ethics protocols the social media advertisements stated that respondents would be asked questions about taxes. Partly because of these constraints it was not possible to solicit even half of the total respondents required for the survey via this sampling method in Tanzania and Jordan, despite the social media advertisements reaching millions of unique social media users over a period of two months. These challenges that were faced when trying to pilot an "opt-in" approach to the survey provided further rationale behind using an alternative approach for this study.

Data was collected for the online randomized survey experiment in this paper using an "opt-out" approach offered by the survey firm, RIWI. They capture a sample of respondents that is broadly representative of the internet population in each country by using Random Domain Intercept Technology. This involves sampling internet users who incidentally access expired or inactive domains (i.e., which often result in a "404 error"). As domain names regularly change and they often do not automatically redirect internet users it is commonplace for the internet using population to incidentally access inactive domains. Research suggests the likelihood of accessing an inactive domain is approximately proportional to having access to the internet (IRIS, 2021). 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". RIWI tracks information about the device used and operating system used by people who are redirected towards to the survey platform, even if they do not answer a single question. In addition, the

first question people are asked is about their age and sex. As a result, I observe how "opt-out" rates from a representative sample of the internet population vary based on the characteristics of respondents (for example, I am able to measure whether people using smartphones disproportionally opt-out of the survey). A shortcoming of this "opt-out" approach is that high rates of attrition occur early in the survey. However, given that I track how attrition varies by the characteristics of respondents and the survey experiment is at the back end of the survey, this does not undermine the integrity of the study.

Pilot data

The proposed survey instrument went through an extensive review process within the World Bank prior to being piloted in December 2021. The internal review process identified ways in which the survey instrument could reflect best practice in the literature (e.g., avoiding ceiling effects on the outcome variables by phrasing questions to ensure greater variation of responses across a Likert scale). Reviewers also emphasized that during the piloting process it will be crucial to examine whether respondents adequately comprehend the treatments and the questions. As such the primary focus of the piloting that took place was to ensure the responses that were gathered indicated the respondents understood the survey instrument. In addition, piloting provided an opportunity to verify the assumptions made about the size of the treatment effects in the statistical power calculations and to identify ways in which the experiment could be designed in a manner to minimize attrition. These three issues are discussed one by one below following a description of the piloting

process.

Implementation of the piloting process

The survey instrument and experiment were piloted with 1,061 respondents (who completed the survey) that made up a representative sample of the internet population in India in December 2021. India was selected as an appropriate location to pilot the survey as this is where the survey firm typically conducts pilots (due to the diverse, but very large, population where English is commonly used on the internet); it has a similar level of development to many of the countries in the full study and as I was not including India in the full study, I did not need to be concerned about contaminating the pool of respondents.

There were two phases to the pilot. The first phase involved using visual stimuli for some of the questions (somewhat similar to what Hoy and Mager (2021b) used in high-income countries) capturing people's prior beliefs and preferences about the distribution of taxes and transfers as well as levels of inequality in their country. In this version of the survey instrument that had been approved through the internal review process at the World Bank, respondents were required to select the distribution of taxes and transfers that exists in their country based on actual examples. Specifically, the options provided for respondents to select from were based on the actual progressivity of taxes in Tanzania in 2011, Colombia in 2014 and Jordan in 2017. In addition, respondents were randomly allocated to receive questions from a pool of seven potential questions about their willingness to pay tax. This process helped to inform which five questions should be included in the full study. In total,

511 respondents completed this phase of the pilot.

The main change in the second phase of the pilot was replacing the questions from the first phase that involved visual stimuli with basic questions that aimed to capture people's prior beliefs and preferences about the distribution of taxes and transfers as well as levels of inequality in their country on a Likert scale. This approach brought the format of these questions into line with the rest of the survey. A shortcoming of this approach was that it was no longer possible to identify whether people's beliefs and preferences matched examples of the actual level of progressivity of taxes in some low- and middle-income countries. In the second phase of the pilot, respondents continued to be randomly allocated to receive a subset of questions about their willingness to pay tax. In total, 550 respondents completed this phase of the pilot.

Lessons learned through the piloting process

There were three key lessons that emerged from the two phases of the pilot that informed the final survey instrument. Firstly, there was a clear need to keep the survey instrument as simple as possible. Answers to the questions that included visual stimuli in the first phase of the pilot suggested respondents did not adequately comprehend the options they were presented with. Responses were very evenly distributed across the options in each of the four questions about people's beliefs and preferences in regard to the distribution of taxes and transfers in their country. To test whether this was primarily due to measurement error, in the second phase of the pilot respondents were randomly allocated to either the question format from

phase one or basic questions about their views on how taxes and transfers are distributed using a Likert scale. The results were substantially different between these approaches with the basic question format returning results far more consistent with previous literature. Specifically, the results showed most people tend to prefer richer households to pay more taxes than poorer households and poorer households to receive more government transfers than richer households (i.e., most people tend to prefer progressivity in the tax and transfer system). As such I decided that the final survey instrument should rely on these basic questions to capture people's prior beliefs and preferences, even though this means that the options provided are not based on actual progressivity of taxes and transfers in countries. I believe that capturing higher quality, reliable responses is of greater importance.

Secondly, the results of the piloting process provided me with confidence that the sample size in the final study would be adequate. The point estimates of the treatment effects were promising as they indicated variation between respondents in the treatment and control groups of an order of magnitude that I would be powered to detect at standard levels (i.e., an alpha of 0.05 and beta of 0.2) when the full sample of respondents is reached (i.e., 3,600 as opposed to 1,061). The direction of the treatment effects was also often in line with the primary hypotheses of this study.

Thirdly, the piloting process highlighted ways to minimize attrition during the survey experiment and the most straightforward way was by removing list experiments from the study. Specifically, there was low attrition for the outcome variable questions included in the final survey instrument, whereas around one quarter of respondents dropped out during the two list experiments that were included in the

pilot. Removing the list experiments from the randomized survey experiment was not a major issue for our study as there is debate in the literature about the value of this approach in general and I would have potentially faced considerable issues with inadequate statistical power. In the second phase of the pilot I also randomized alternative data quality check questions between respondents immediately prior to the survey experiment and found that our original question from the first phase of the pilot outperformed an alternative question that was used by Alesina et al. (2018). As such, I felt confident that including a question that asks respondents to drop out prior to the treatment if they are unwilling to complete the survey experiment would serve as an effective way to minimize attrition post treatment. I was also reassured by the lack of differential attrition observed throughout the piloting process.

Coding of variables

Q0 – Age - age1834= 1 if respondent aged 18–34 years (respondents under 18 automatically discarded), 0 if respondent aged 35 years or older

Q0 – Sex - male = 1 if respondent male, 0 otherwise

Q1 – Education - edusecorless = 1 if respondent selected primary or secondary education, 0 otherwise

Q2 – Location - largecity = 1 if respondent selected large city or suburb, 0 otherwise

Q3 – Employment type - working= 1 if respondent selected employee or self-employed/small business owner, 0 otherwise

Q4 – Prefer lower inequality - lowerineq = 1 if respondent selects strongly agree or agree, 0 otherwise

Q5 – Perceived position in national income distribution - pB40 = 1 if respondent selected poorest or second poorest quintile, 0 otherwise

Q6 – Household paid large share of income in tax - largetax = 1 if respondent selects strongly agree or agree, 0 otherwise

Q7 – Household paid more in tax than received in transfers - netcont = 1 if respondent selects strongly agree or agree, 0 otherwise

Q8 – Perceived taxes as currently progressive - curprogtax = 1 if respondent selects strongly agree or agree, 0 otherwise

Q9 – Prefer taxes to be progressive - progtax = 1 if respondent selects strongly agree or agree, 0 otherwise

Q10 – Perceived transfers as currently progressive - curprogtrans = 1 if respondent selects strongly agree or agree, 0 otherwise

Q11 – Prefer transfers to be progressive - progtrans = 1 if respondent selects strongly agree or agree, 0 otherwise

Q12 – Data quality check - willcomplete = 1 if respondent selected yes, 0 otherwise

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Q14 – Will not pay without enforcement - willpaytax = 0 if respondent selects strongly agree or agree, 1 otherwise

Q15 – Not paying tax is wrong and punishable - wrongpunish = 1 if respondent selected wrong and punishable, 0 otherwise

Q16 – Paying taxes is important - importanttopay = 1 if respondent selects strongly agree or agree, 0 otherwise

Q17 – Government has right to pay tax - righttotax = 1 if respondent selects strongly agree or agree, 0 otherwise

Q18 – Do not Refuse - donotrefusepaytax = 1 if respondent selects strongly disagree or disagree, 0 otherwise

Appendix B - Additional Tables

Table A1: Age and sex of survey respondents and the general adult population

	Male (%) survey	18-34 years (%) survey	Male (%) population	18-34 years (%) population
Colombia	59.7	56.2	49.1	43.8
Ghana	78.7	78.1	50.7	55.6
Indonesia	67.2	73.3	50.4	43.4
Jordan	57.2	70.2	50.6	53.3
Mexico	62.5	53.5	48.9	45.1
South Africa	58.7	60.9	49.3	49.1
Sri Lanka	76.9	62.3	48.0	36.6
Tanzania	70.8	79.4	50.0	60.0

This table shows the age and sex of survey respondents compared to the general adult population in each country.

Source: World Bank, 2021

Table A2: Overall effects of the treatments (without weights)

	Direct b/se/p	Punishable b/se/p	Important b/se/p	Right to Tax b/se/p	Do not Refuse b/se/p	INDEX b/se/p
Taxes (Progressive)	0.005	0.014	0.015*	0.018*	0.010	0.028**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
p-value	0.420	0.332	0.083	0.092	0.260	0.020
Observations	7605	7605	7605	7605	7605	7605
Taxes (Not Progressive)	-0.025	-0.013	-0.007	-0.019	-0.024	-0.038*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
p-value	0.159	0.387	0.454	0.180	0.126	0.088
Observations	7435	7435	7435	7435	7435	7435
Transfers (Progressive)	-0.005	0.015	0.012	-0.008	0.008	0.009
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.02)
p-value	0.683	0.144	0.314	0.493	0.121	0.610
Observations	11318	11318	11318	11318	11318	11318
Transfers (Not Progressive)	-0.014	0.002	0.002	-0.005	-0.007	-0.008
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)	(0.00)
p-value	0.358	0.899	0.567	0.848	0.449	0.137
Observations	3810	3810	3810	3810	3810	3810
Combined (Progressive)	-0.001	0.011	0.014	0.010	0.011*	0.019
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
p-value	0.924	0.401	0.169	0.294	0.068	0.196
Observations	11066	11066	11066	11066	11066	11066
Combined (Not progressive)	-0.019	-0.025	0.011	-0.001	-0.020	-0.018
	(0.01)	(0.01)	(0.00)	(0.02)	(0.02)	(0.02)
p-value	0.297	0.168	0.132	0.977	0.454	0.444
Observations	3769	3769	3769	3769	3769	3769

Note: This table shows the overall impact of each of the treatments (without weights) relative to the control group, where countries are pooled based on whether the tax and/or transfer system is progressive. This table is directly comparable to Table 1 in Section 4 of the paper. This table is based on Equation 7 in Section 3 of the paper. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table A3: Share of participants using a smartphone at various stages of the survey

	Exposed to survey (%)	Began experiment (%)	Completed survey (%)
Colombia	62.2	54.0	53.8
Ghana	50.4	66.7	66.6
Indonesia	72.4	78.0	77.2
Jordan	79.9	73.0	72.5
Mexico	62.5	52.6	52.5
South Africa	64.7	63.2	63.0
Sri Lanka	75.9	70.7	70.2
Tanzania	83.6	81.2	80.7

This table shows the share of participants using a smartphone that were exposed to the survey, begin the survey experiment and completed the survey.

Table A4: Overall effects of the treatments (with device type weights)

	Direct b/se/p	Punishable b/se/p	Important b/se/p	Right to Tax b/se/p	Refuse to Pay b/se/p	INDEX b/se/p
Taxes (Progressive)	0.003	0.014	0.014	0.017	0.010	0.027**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
p-value	0.637	0.370	0.102	0.108	0.286	0.020
Observations	7605	7605	7605	7605	7605	7605
Taxes (Not Progressive)	-0.026	-0.015	-0.007	-0.019	-0.025	-0.039*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
p-value	0.147	0.352	0.383	0.179	0.123	0.079
Observations	7435	7435	7435	7435	7435	7435
Transfers (Progressive)	-0.007	0.015	0.011	-0.009	0.007	0.007
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.02)
p-value	0.583	0.162	0.362	0.487	0.134	0.683
Observations	11318	11318	11318	11318	11318	11318
Transfers (Not Progressive)	-0.019	-0.002	0.002	-0.008	-0.007	-0.013
	(0.01)	(0.01)	(0.00)	(0.03)	(0.01)	(0.01)
p-value	0.190	0.876	0.674	0.797	0.442	0.267
Observations	3810	3810	3810	3810	3810	3810
Combined (Progressive)	-0.004	0.008	0.012	0.010	0.011*	0.016
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
p-value	0.625	0.507	0.210	0.312	0.080	0.254
Observations	11066	11066	11066	11066	11066	11066
Combined (Not progressive)	-0.021	-0.027	0.012	-0.002	-0.021	-0.021
	(0.01)	(0.01)	(0.00)	(0.02)	(0.02)	(0.02)
p-value	0.327	0.137	0.182	0.932	0.465	0.453
Observations	3769	3769	3769	3769	3769	3769

Note: This table shows the overall impact of each of the treatments (with device type weights) relative to the control group, where countries are pooled based on whether the tax and/or transfer system is progressive. This table is directly comparable to Table 1 in Section 4 of the paper. This table is based on Equation 7 in Section 3 of the paper. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table A5: Balance table for the taxes treatment group relative to the control group

	CO	GH	ID	JO	LK	MX	TZ	ZA
	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p
Male	0.000	-0.073***	0.032	0.009	-0.054*	-0.013	0.017	0.034
	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)
p-value	0.983	0.007	0.198	0.714	0.058	0.596	0.510	0.151
18-34 years	-0.014	0.001	-0.015	-0.008	0.013	0.037	0.011	-0.019
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)
p-value	0.548	0.976	0.572	0.742	0.594	0.118	0.713	0.437
Sec edu or less	-0.007	-0.026	0.021	0.003	-0.025	-0.020	-0.079***	0.010
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
p-value	0.767	0.267	0.444	0.884	0.300	0.460	0.001	0.676
Large city	0.046*	0.043*	0.001	0.011	-0.031	0.018	0.010	-0.015
	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)
p-value	0.072	0.071	0.961	0.669	0.230	0.489	0.660	0.554
Working	0.008	-0.031	-0.009	-0.023	-0.014	-0.005	0.036	-0.041
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
p-value	0.741	0.200	0.715	0.350	0.569	0.845	0.123	0.102
Believe B40	-0.005	0.009	0.052*	0.004	0.030	-0.007	0.005	-0.027
	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)
p-value	0.846	0.729	0.062	0.876	0.231	0.806	0.846	0.262
Observations	1923	1878	1864	1887	1799	1874	1930	1885
F-statistic	0.774	2.282	1.315	0.193	1.419	0.673	2.608	0.924

Note: This table presents the results of an OLS regression whereby the dependent variable is a dummy variable based on whether a respondent received the taxes treatment and the independent variables are characteristics of respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. *Male:* Based on Q0, which asks respondents whether they are male or female (variable takes value of 1 if they select "Male" and 0 otherwise). *18-34 years:* Based on Q0, which also asks respondents their age (variable takes value of 1 if they select between 18-34 years and 0 if they select 35 or older, noting respondents under the age of 18 years were automatically excluded). *Sec edu or less:* Based on Q1, which asks whether respondents their level of education (variable takes value of 1 if they select "Primary or less" or "Secondary" and 0 otherwise). *Large city:* Based on Q2, which asks respondents about where they live (variable takes value of 1 if they select "Large city" and 0 otherwise). *Working:* Based on Q3, which asks whether respondents their current employment status (variable takes value of 1 if they select "Employee" or "Self employed" and 0 otherwise). *Believe B40:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they select "Poorest group" or "Second poorest group" and 0 otherwise).

Table A6: Balance table for the transfers treatment group relative to the control group

	CO	GH	ID	JO	LK	MX	TZ	ZA
	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p
Male	0.015	-0.032	-0.015	0.020	-0.050*	0.005	0.077***	-0.016
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)
p-value	0.522	0.258	0.535	0.405	0.075	0.831	0.002	0.504
18-34 years	-0.021	-0.001	0.013	-0.017	0.032	0.006	0.002	-0.010
	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
p-value	0.382	0.972	0.629	0.509	0.198	0.805	0.930	0.687
Sec edu or less	-0.029	0.004	-0.012	0.047**	-0.038	-0.049*	-0.066***	0.036
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
p-value	0.220	0.881	0.654	0.047	0.117	0.070	0.004	0.133
Large city	-0.006	0.015	0.025	0.018	-0.041	0.005	0.036	-0.033
	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)
p-value	0.816	0.540	0.286	0.454	0.105	0.834	0.120	0.213
Working	0.009	-0.001	0.047*	0.017	-0.006	-0.021	-0.002	0.019
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)
p-value	0.707	0.970	0.051	0.497	0.820	0.399	0.934	0.442
Believe B40	-0.028	-0.009	0.034	-0.007	0.018	0.019	0.013	0.019
	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)
p-value	0.244	0.735	0.229	0.769	0.465	0.500	0.632	0.427
Observations	1905	1837	1901	1917	1849	1873	1973	1873
F-statistic	1.029	0.331	1.119	1.129	1.756	0.689	3.566	0.951

Note: This table presents the results of an OLS regression whereby the dependent variable is a dummy variable based on whether a respondent received the transfers treatment and the independent variables are characteristics of respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. *Male:* Based on Q0, which asks respondents whether they are male or female (variable takes value of 1 if they select "Male" and 0 otherwise). *18-34 years:* Based on Q0, which also asks respondents their age (variable takes value of 1 if they select between 18-34 years and 0 if they select 35 or older, noting respondents under the age of 18 years were automatically excluded). *Sec edu or less:* Based on Q1, which asks whether respondents their level of education (variable takes value of 1 if they select "Primary or less" or "Secondary" and 0 otherwise). *Large city:* Based on Q2, which asks respondents about where they live (variable takes value of 1 if they select "Large city" and 0 otherwise). *Working:* Based on Q3, which asks whether respondents their current employment status (variable takes value of 1 if they select "Employee" or "Self employed" and 0 otherwise). *Believe B40:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they select "Poorest group" or "Second poorest group" and 0 otherwise).

Table A7: Balance table for the combined treatment group relative to the control group

	CO	GH	ID	JO	LK	MX	TZ	ZA
	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p
Male	-0.014	-0.035	0.035	0.021	-0.070**	-0.004	0.034	0.010
	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)
p-value	0.563	0.203	0.157	0.396	0.012	0.880	0.184	0.680
18-34 years	-0.026	-0.014	-0.004	-0.016	-0.000	0.004	-0.019	-0.022
	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
p-value	0.275	0.633	0.881	0.540	0.995	0.872	0.510	0.376
Sec edu or less	0.016	-0.037	-0.020	-0.009	0.010	-0.011	-0.056**	0.024
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
p-value	0.510	0.125	0.473	0.719	0.668	0.696	0.018	0.321
Large city	0.002	0.039	-0.019	-0.005	-0.055**	0.017	-0.037	-0.009
	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)
p-value	0.923	0.101	0.416	0.825	0.029	0.514	0.114	0.728
Working	0.033	-0.051**	-0.016	-0.034	0.019	0.019	0.004	-0.023
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)
p-value	0.184	0.034	0.502	0.180	0.451	0.449	0.862	0.357
Believe B40	-0.035	-0.002	0.049*	-0.013	0.017	0.014	0.010	-0.031
	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)
p-value	0.156	0.947	0.078	0.589	0.493	0.619	0.708	0.210
Observations	1849	1900	1878	1865	1850	1794	1869	1830
F-statistic	1.108	1.927	1.207	0.442	1.939	0.237	1.656	0.604

Note: This table presents the results of an OLS regression whereby the dependent variable is a dummy variable based on whether a respondent received the combined treatment and the independent variables are characteristics of respondents. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. *Male:* Based on Q0, which asks respondents whether they are male or female (variable takes value of 1 if they select "Male" and 0 otherwise). *18-34 years:* Based on Q0, which also asks respondents their age (variable takes value of 1 if they select between 18-34 years and 0 if they select 35 or older, noting respondents under the age of 18 years were automatically excluded) . *Sec edu or less:* Based on Q1, which asks whether respondents their level of education (variable takes value of 1 if they select "Primary or less" or "Secondary" and 0 otherwise). *Large city:* Based on Q2, which asks respondents about where they live (variable takes value of 1 if they select "Large city" and 0 otherwise). *Working:* Based on Q3, which asks whether respondents their current employment status (variable takes value of 1 if they select "Employee" or "Self employed" and 0 otherwise). *Believe B40:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they select "Poorest group" or "Second poorest group" and 0 otherwise).

Table A8: Characteristics associated with willingness to pay tax

	Direct	Punishable	Important	Right to Tax	Do not Refuse	INDEX
	b/se	b/se	b/se	b/se	b/se	b/se
Smartphone	0.018	0.029	0.059**	0.034**	0.006	0.063**
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Male	-0.017	0.033	0.077***	0.045**	0.021	0.069*
	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)
18-34 years	-0.080***	-0.071***	-0.037	-0.063**	-0.088***	-0.140***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)	(0.04)
Sec edu or less	-0.051**	-0.041	-0.021	-0.030*	-0.039*	-0.076***
	(0.02)	(0.03)	(0.01)	(0.01)	(0.02)	(0.02)
Large city	0.027**	-0.010	0.021	0.035	-0.008	0.029
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)
Working	-0.019	0.024	-0.008	0.017	0.009	0.010
	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.03)
Poorest quintile	0.048	0.057	-0.079	0.042	-0.006	0.029
	(0.06)	(0.06)	(0.05)	(0.04)	(0.05)	(0.08)
Second poorest quintile	0.151**	0.036	-0.118*	0.080	-0.017	0.060
	(0.06)	(0.05)	(0.06)	(0.06)	(0.05)	(0.09)
Middle quintile	0.135*	0.075*	-0.086	0.116**	-0.001	0.106
	(0.06)	(0.04)	(0.05)	(0.05)	(0.04)	(0.08)
Second richest quintile	0.050	0.099	-0.093	0.053	0.043	0.064
	(0.07)	(0.05)	(0.06)	(0.05)	(0.06)	(0.09)
Observations	7933	7933	7933	7933	7933	7933

Note: This table presents the results of OLS regressions whereby the dependent variable is based on various measures of respondents (in the control group) willingness to pay tax and the independent variables are characteristics of respondents. Country fixed effects are used. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax. *Smartphone:* Based on data provided by survey firm (variable takes value of 1 if they accessed the survey via smartphone and 0 otherwise). *Male:* Based on Q0, which asks respondents whether they are male or female (variable takes value of 1 if they select "Male" and 0 otherwise). *18-34 years:* Based on Q0, which also asks respondents their age (variable takes value of 1 if they select between 18-34 years and 0 if they select 35 or older, noting respondents under the age of 18 years were automatically excluded) *Sec edu or less:* Based on Q1, which asks whether respondents their level of education (variable takes value of 1 if they select "Primary or less" or "Secondary" and 0 otherwise). *Large city:* Based on Q2, which asks respondents about where they live (variable takes value of 1 if they select "Large city" and 0 otherwise). *Working:* Based on Q3, which asks whether respondents their current employment status (variable takes value of 1 if they select "Employee" or "Self employed" and 0 otherwise). *Poorest quintile:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they selected the "Poorest group" or and 0 if they selected the "Richest group"). *Second poorest quintile:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they selected the "Second poorest group" or and 0 if they selected the "Richest group"). *Middle quintile:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they selected the "Middle group" or and 0 if they selected the "Richest group"). *Second richest quintile:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they selected the "Second richest group" or and 0 if they selected the "Richest group").

Table A9: Characteristics associated with preferring progressive taxes

	CO	GH	ID	JO	LK	MX	TZ	ZA
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Male	0.047***	0.038**	-0.019	0.049***	0.035	-0.012	0.030	0.024
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
18-34 years	-0.017	-0.049**	-0.110***	-0.089***	-0.040*	-0.112***	-0.039*	0.017
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Sec edu or less	-0.011	0.041**	-0.023	-0.022	-0.013	0.016	0.009	0.026
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Large city	0.023	0.009	-0.016	0.009	0.025	0.048**	0.034*	-0.037*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Working	-0.012	0.031*	0.041*	0.040**	0.031	0.075***	0.016	0.012
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Second poorest quintile	-0.041	-0.112***	0.039	-0.049*	0.041	0.091**	-0.044	-0.056**
	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)
Middle quintile	-0.039	-0.131***	-0.034	-0.100***	0.028	0.027	-0.043	-0.078***
	(0.03)	(0.03)	(0.04)	(0.02)	(0.04)	(0.04)	(0.04)	(0.03)
Second richest quintile	-0.119**	-0.164***	-0.053	-0.140***	-0.064	-0.110*	0.004	-0.014
	(0.06)	(0.04)	(0.07)	(0.05)	(0.07)	(0.06)	(0.05)	(0.05)
Richest quintile	-0.246***	-0.122***	-0.064	-0.124***	0.009	-0.200***	-0.130	-0.028
	(0.08)	(0.05)	(0.10)	(0.05)	(0.10)	(0.08)	(0.08)	(0.07)
Observations	3687	3607	3665	3645	3624	3629	3622	3658

Note: This table presents the characteristics that are associated with respondents preferring progressive taxes. Specifically, the table presents the results of an OLS regression in each country whereby the dependent variable is a dummy variable based on whether or not respondents prefer progressive taxes and the independent variables are characteristics of respondents. Preferences about progressivity are based on Q9, which asks respondents whether they think that richer households should pay a higher share of their income in tax than poorer households. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. *Male:* Based on Q0, which asks respondents whether they are male or female (variable takes value of 1 if they select "Male" and 0 otherwise). *18-34 years:* Based on Q0, which also asks respondents their age (variable takes value of 1 if they select between 18-34 years and 0 if they select 35 or older, noting respondents under the age of 18 years were automatically excluded) *Sec edu or less:* Based on Q1, which asks whether respondents their level of education (variable takes value of 1 if they select "Primary or less" or "Secondary" and 0 otherwise). *Large city:* Based on Q2, which asks respondents about where they live (variable takes value of 1 if they select "Large city" and 0 otherwise). *Working:* Based on Q3, which asks whether respondents their current employment status (variable takes value of 1 if they select "Employee" or "Self employed" and 0 otherwise). *Poorest quintile:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they selected the "Poorest group" or and 0 if they selected the "Richest group"). *Second poorest quintile:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they selected the "Second poorest group" or and 0 if they selected the "Richest group"). *Middle quintile:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they selected the "Middle group" or and 0 if they selected the "Richest group"). *Second richest quintile:* Based on Q5, which asks respondents about their households place in the national income distribution (variable takes value of 1 if they selected the "Second richest group" or and 0 if they selected the "Richest group").

Table A10: Overall impact of the transfers treatment

	Direct b/se	Punishable b/se	Important b/se	Right to Tax b/se	Do not Refuse b/se	INDEX b/se
Panel A - Respondents in countries where transfers were progressive						
Believe progressive × Treated	0.032	0.015	0.005	-0.018	0.019	0.022
	(0.03)	(0.01)	(0.02)	(0.03)	(0.02)	(0.03)
Believe not progressive × Treated	-0.032*	0.005	0.024*	0.011	-0.006	0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
p-value difference	0.136	0.404	0.378	0.173	0.244	0.429
Observations	11318	11318	11318	11318	11318	11318
Prefer progressive × Treated	-0.000	0.023	-0.001	-0.005	0.006	0.010
	(0.01)	(0.02)	(0.02)	(0.03)	(0.01)	(0.02)
Prefer not progressive × Treated	-0.015	-0.011	0.039**	0.001	0.001	0.006
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
p-value difference	0.250	0.281	0.098	0.893	0.738	0.859
Observations	11318	11318	11318	11318	11318	11318
Panel B - Respondents in countries where transfers were not progressive						
Believe progressive × Treated	-0.010	0.037	-0.022*	-0.012	0.006	-0.007
	(0.01)	(0.02)	(0.00)	(0.00)	(0.02)	(0.01)
Believe not progressive × Treated	0.008	-0.007	0.014	0.002	-0.013	0.007
	(0.00)	(0.01)	(0.01)	(0.04)	(0.02)	(0.02)
p-value difference	0.532	0.123	0.286	0.791	0.715	0.699
Observations	3810	3810	3810	3810	3810	3810
Prefer progressive × Treated	-0.006	-0.001	-0.007	-0.016	-0.006	-0.017
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Prefer not progressive × Treated	0.006	0.017	0.015	0.020	-0.013**	0.025
	(0.02)	(0.02)	(0.03)	(0.06)	(0.00)	(0.04)
p-value difference	0.714	0.227	0.651	0.617	0.671	0.493
Observations	3810	3810	3810	3810	3810	3810

Note: This table shows the heterogeneous effects of the transfers treatment based on respondents prior beliefs about and existing preferences regarding whether taxes were progressive, where countries are pooled based on whether or not transfers are actually progressive. This table is based on Equation 7 in Section 3 of the paper, except the regression analysis is conducted separately for respondents based on their prior beliefs and existing preferences. Beliefs about progressivity are based on Q8, which asks respondents whether they believe that richer households pay a higher share of their income in tax than poorer households. Preferences about progressivity are based on Q9, which asks respondents whether they think that richer households should pay a higher share of their income in tax than poorer households.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. See the notes to Table 1 for further variable definitions.

Table A11: Overall impact of each treatment on the WTP tax index by country

	CO	GH	ID	JO	LK	MX	TZ	ZA
	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p
Taxes treatment	0.058*	0.013	-0.020	-0.042	-0.045	0.029	0.040	-0.071**
	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
p-value	0.055	0.651	0.646	0.115	0.181	0.347	0.179	0.013
Observations	1923	1878	1864	1887	1799	1874	1930	1885
Transfers treatment	0.069**	-0.011	0.010	-0.033	-0.045	0.040	0.013	-0.008
	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
p-value	0.022	0.718	0.799	0.222	0.194	0.215	0.676	0.783
Observations	1905	1837	1901	1917	1849	1873	1973	1873
Combined treatment	0.052*	-0.032	0.064	0.004	0.012	0.039	0.011	-0.017
	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)
p-value	0.080	0.233	0.117	0.880	0.730	0.236	0.726	0.574
Observations	1849	1900	1878	1865	1850	1794	1869	1830

Note: This table shows the overall impact of the treatments in each of the countries. This table is based on Equation 7 in Section 3 of the paper, except the regression analysis is conducted separately for each country (i.e. there are no country fixed effects). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. *WTP tax INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table A12 - Impact of the treatments on WTP tax index across the income distribution

	Q1	Q2	Q3	Q4	Q5
	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p
Taxes (Progressive)	0.066*	0.047	0.033**	0.102	-0.115
	(0.03)	(0.03)	(0.01)	(0.10)	(0.13)
p-value	0.081	0.158	0.022	0.368	0.453
Observations	668	1454	4924	354	205
Taxes (Not Progressive)	-0.026	-0.042	-0.065**	0.034	0.005
	(0.06)	(0.03)	(0.01)	(0.12)	(0.06)
p-value	0.698	0.280	0.021	0.792	0.945
Observations	984	1672	4349	247	183
Transfers (Progressive)	-0.047	0.030	0.005	0.041	0.054
	(0.04)	(0.03)	(0.02)	(0.11)	(0.09)
p-value	0.318	0.321	0.768	0.717	0.577
Observations	1360	2482	6850	378	248
Transfers (Not Progressive)	0.039	0.021	0.013	-0.169	-0.035
	(0.05)	(0.09)	(0.01)	(0.17)	(0.06)
p-value	0.559	0.852	0.460	0.502	0.642
Observations	294	661	2507	216	132
Combined (Progressive)	0.018	0.022	0.033	-0.038	-0.032
	(0.04)	(0.03)	(0.02)	(0.14)	(0.12)
p-value	0.638	0.522	0.113	0.797	0.799
Observations	1318	2413	6716	373	246
Combined (Not progressive)	-0.023	0.029	-0.008	-0.077	-0.030
	(0.02)	(0.06)	(0.04)	(0.15)	(0.22)
p-value	0.510	0.717	0.894	0.690	0.913
Observations	299	650	2489	207	124

Note:. This table shows the overall impact of the tax treatment on the willingness to pay tax index for each quintile, where countries are pooled based on whether the tax and/or transfer system is actually progressive. This table is based on Equation 7 in Section 3 of the paper, except the regression analysis is conducted separately for each quintile. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *WTP tax index:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax. *Q1:* Poorest quintile, based on answer to Q5. *Q2:* Second poorest quintile, based on answer to Q5. *Q3:* Middle quintile, based on answer to Q5. *Q4:* Second richest quintile, based on answer to Q5. *Q5:* Richest quintile, based on answer to Q5.

Table A13 – Heterogeneous effects of the treatments based on whether households paid a large share of their income in tax

	Direct	Punishable	Important	Right to Tax	Do not Refuse	INDEX
	b/se	b/se	b/se	b/se	b/se	b/se
Panel A - Respondents stated their household paid a large share of their income in tax						
Taxes (Progressive)	0.006	0.038**	0.024	0.015	0.017	0.042*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Taxes (Not Progressive)	-0.025	-0.022*	-0.020	-0.045**	-0.017	-0.054**
	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Transfers (Progressive)	0.006	0.013	0.007	-0.011	0.024**	0.016
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
Transfers (Not Progressive)	-0.021***	-0.008	-0.012**	-0.032*	-0.031	-0.048
	(0.00)	(0.03)	(0.00)	(0.00)	(0.01)	(0.02)
Combined (Progressive)	-0.001	0.005	0.002	0.003	0.023**	0.014
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Combined (Not Progressive)	- 0.047	0.003	0.008	-0.002	-0.031	-0.026
	(0.03)	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)
Panel B - Respondents stated their household did not pay a large share of their income in tax						
Taxes (Progressive)	0.014	-0.009	0.015	0.017	0.010	0.027
	(0.02)	(0.05)	(0.02)	(0.03)	(0.02)	(0.04)
Taxes (Not Progressive)	-0.016	-0.022	-0.004	-0.002	-0.039	-0.036
	(0.04)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)
Transfers (Progressive)	-0.024	0.006	0.023	0.008	-0.021	-0.002
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
Transfers (Not Progressive)	0.041	0.037	0.033	0.067	0.041*	0.105
	(0.01)	(0.01)	(0.03)	(0.10)	(0.01)	(0.06)
Combined (Progressive)	0.003	0.015	0.044**	0.044**	0.002	0.045
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Combined (Not Progressive)	0.075*	-0.089	0.016*	0.027	0.007	0.023
	(0.01)	(0.06)	(0.00)	(0.07)	(0.03)	(0.01)

Note: This table shows the heterogeneous treatment effects based on respondents beliefs about the share of their household income that is paid in tax, where countries are pooled based on whether the tax and/or transfer system is actually progressive. This table is based on Equation 7 in Section 3 of the paper, except the regression analysis is conducted separately for respondents based on their prior beliefs about the share of their household income that is paid in tax. Beliefs about the share of household income that is paid in tax are based on Q6. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table A14 – Heterogeneous effects of the treatments based on whether respondents claimed their household was a net contributor to the tax and transfer system

	Direct	Punishable	Important	Right to Tax	Do not Refuse	INDEX
	b/se	b/se	b/se	b/se	b/se	b/se
Panel A - Respondents stated their household paid more in taxes than they received in transfers						
Taxes (Progressive)	0.001	0.031**	0.013	0.007	0.023	0.033**
	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Taxes (Not Progressive)	-0.022*	-0.031*	-0.022	-0.043*	-0.016	-0.056**
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Transfers (Progressive)	0.005	0.009	0.006	-0.008	0.012	0.011
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)
Transfers (Not Progressive)	-0.014	0.006	-0.001	-0.024*	-0.005	-0.017**
	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
Combined (Progressive)	-0.009	0.002	-0.009	-0.001	0.015	0.000
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Combined (Not Progressive)	-0.045	-0.018*	0.013	-0.001	-0.034	-0.030
	(0.03)	(0.00)	(0.02)	(0.02)	(0.02)	(0.02)
Panel B - Respondents stated their household did not pay more in taxes than they received in transfers						
Taxes (Progressive)	0.020	0.007	0.040*	0.034	-0.003	0.044
	(0.01)	(0.04)	(0.02)	(0.02)	(0.01)	(0.02)
Taxes (Not Progressive)	0.021	-0.012	-0.004	-0.009	-0.044	-0.040
	(0.03)	(0.01)	(0.03)	(0.03)	(0.04)	(0.04)
Transfers (Progressive)	-0.023	0.009	0.025	0.004	-0.009	0.002
	(0.03)	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)
Transfers (Not Progressive)	0.022	0.009	0.004	0.033	-0.002	0.033
	(0.02)	(0.03)	(0.02)	(0.07)	(0.01)	(0.02)
Combined (Progressive)	0.016	0.017	0.058**	0.045*	0.009	0.059
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Combined (Not Progressive)	0.043	-0.035	0.007	0.027	0.010	0.027
	(0.02)	(0.02)	(0.02)	(0.05)	(0.02)	(0.01)

Note: This table shows the heterogeneous treatment effects based on whether respondents claimed their household was a net contributor to the tax and transfer system, where countries are pooled based on whether the tax and/or transfer system is actually progressive. This table is based on Equation 7 in Section 3 of the paper, except the regression analysis is conducted separately based on whether respondents claimed their household was a net contributor to the tax and transfer system. Respondents' views about whether their household was a net contributor to the tax and transfer system is based on Q7. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table A15 – Heterogeneous effects of the treatments based on whether respondents were working

	Direct b/se	Punishable b/se	Important b/se	Right to Tax b/se	Do not Refuse b/se	INDEX b/se
Panel A - Respondents stated that they were either an employee or self-employed						
Taxes (Progressive)	0.008	0.015	0.015*	0.019**	0.012	0.030*
	(0.01)	(0.02)	(0.01)	(0.00)	(0.01)	(0.01)
Taxes (Not Progressive)	-0.038	-0.039	-0.016	-0.014	-0.054*	-0.069*
	(0.03)	(0.02)	(0.01)	(0.01)	(0.02)	(0.03)
Transfers (Progressive)	-0.004	0.003	0.013	0.016	0.001	0.012
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)
Transfers (Not Progressive)	0.011	0.029	0.004	-0.003	0.001	0.018
	(0.02)	(0.01)	(0.00)	(0.01)	(0.03)	(0.01)
Combined (Progressive)	-0.011	0.001	0.014	0.027*	0.003	0.014
	(0.02)	(0.02)	(0.01)	(0.01)	(0.00)	(0.02)
Combined (Not Progressive)	0.018**	-0.022*	0.041	0.021	-0.008	0.033
	(0.00)	(0.00)	(0.01)	(0.03)	(0.01)	(0.01)
Panel B - Respondents stated that they were neither an employee or self-employed						
Taxes (Progressive)	0.005	0.032	0.032*	0.011	0.011	0.041**
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Taxes (Not Progressive)	-0.005	-0.002	-0.009	-0.041	-0.001	-0.024
	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.01)
Transfers (Progressive)	-0.010	0.019	0.019	-0.025	0.006	0.005
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Transfers (Not Progressive)	-0.014	-0.019	-0.001	-0.000	-0.020	-0.021
	(0.01)	(0.01)	(0.01)	(0.05)	(0.01)	(0.04)
Combined (Progressive)	0.013	0.013	0.028**	0.012	0.021	0.037*
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Combined (Not Progressive)	-0.047	-0.025	-0.023	-0.006	-0.041	-0.062
	(0.05)	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)

Note: This table shows the heterogeneous treatment effects based on whether respondents' were working or not, where countries are pooled based on whether the tax and/or transfer system is actually progressive. This table is based on Equation 7 in Section 3 of the paper, except the regression analysis is conducted separately for respondents based on whether or not they are working. Respondents' employment status is based on Q3. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table A16: Differences in the impact of the treatments in countries where either taxes or transfers are not progressive

	Direct b/se/p	Punishable b/se/p	Important b/se/p	Right to Tax b/se/p	Refuse to Pay b/se/p	INDEX b/se/p
Taxes (Not Progressive) × Transfers (Progressive)	-0.014	-0.018	-0.018	-0.023	-0.029	-0.043**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
p-value	0.286	0.203	0.270	0.182	0.259	0.015
Observations	10689	10689	10689	10689	10689	10689
Taxes (Progressive) × Transfers (Not progressive)	0.013	0.010	0.005	0.020	0.027	0.033**
	(0.01)	(0.00)	(0.00)	(0.01)	(0.02)	(0.00)
p-value	0.264	0.126	0.409	0.269	0.361	0.043
Observations	5150	5150	5150	5150	5150	5150

Note:. This table shows the impact of tax treatment compared to the transfers and combined treatments in the six countries for which these treatments were in opposing directions (Ghana, Indonesia, Jordan, Sri Lanka, South Africa and Tanzania). This table is based on Equation 7 in Section 3 of the paper, except the treatment dummy is coded such that it takes on the value of 1 if the respondent received the taxes treatment and 0 if they respondent received either the transfers or combined treatment. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly Disagree" or "Disagree" and 1 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table A17: Overall effects of the treatments (excluding the fastest 5% and slowest 5% of respondents based on the time taken to complete survey)

	Direct	Punishable	Important	Right to Tax	Do not Refuse	INDEX
	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p	b/se/p
Taxes (Progressive)	-0.001	0.020	0.015*	0.021*	0.012	0.027**
	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
p-value	0.945	0.274	0.050	0.099	0.357	0.036
Observations	7045	7059	7062	7063	7048	7246
Taxes (Not Progressive)	-0.031	-0.028*	-0.005	-0.017	-0.034	-0.043**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
p-value	0.113	0.055	0.615	0.164	0.269	0.035
Observations	6737	6756	6762	6759	6717	6959
Transfers (Progressive)	-0.016*	0.006	0.012	0.008	0.001	0.006
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
p-value	0.097	0.695	0.227	0.621	0.896	0.711
Observations	10222	10242	10252	10240	10219	10478
Transfers (Not Progressive)	-0.006	-0.001	0.008	-0.000	-0.008	-0.008
	(0.01)	(0.02)	(0.01)	(0.03)	(0.00)	(0.01)
p-value	0.553	0.964	0.682	0.993	0.339	0.461
Observations	3646	3650	3651	3646	3631	3792
Combined (Progressive)	-0.007	-0.002	0.014*	0.021	0.009	0.017
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
p-value	0.634	0.885	0.056	0.110	0.166	0.270
Observations	9962	10001	10004	9996	9955	10245
Combined (Not progressive)	-0.017	-0.029	0.008**	0.004	-0.021	-0.027
	(0.02)	(0.02)	(0.00)	(0.02)	(0.01)	(0.01)
p-value	0.559	0.319	0.021	0.883	0.238	0.314
Observations	3595	3593	3615	3598	3583	3735

Note: This table shows the overall impact of each of the treatments (excluding the fastest 5% and slowest 5% of respondents based on the time taken to complete survey) relative to the control group, where countries are pooled based on whether the tax and/or transfer system is progressive. This table is comparable to Table 1 in Section 4 of the paper. This table is based on Equation 7 in Section 3 of the paper. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly disagree" or "Disagree" and 0 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

Table A18: Overall effects of the treatments (without controls)

	Direct b/se/p	Punishable b/se/p	Important b/se/p	Right to Tax b/se/p	Do not Refuse b/se/p	INDEX b/se/p
Taxes (Progressive)	0.010	0.023	0.026**	0.016	0.014	0.039**
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
p-value	0.535	0.300	0.037	0.172	0.179	0.048
Observations	7605	7605	7605	7605	7605	7605
Taxes (Not Progressive)	-0.022	-0.022*	-0.013	-0.027	-0.029	-0.048**
	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
p-value	0.231	0.078	0.530	0.161	0.327	0.013
Observations	7435	7435	7435	7435	7435	7435
Transfers (Progressive)	-0.006	0.010	0.016	-0.002	0.005	0.010
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
p-value	0.621	0.442	0.278	0.899	0.578	0.660
Observations	11318	11318	11318	11318	11318	11318
Transfers (Not Progressive)	0.001	0.005	0.003	-0.005	-0.009	-0.000
	(0.00)	(0.01)	(0.01)	(0.03)	(0.01)	(0.02)
p-value	0.826	0.761	0.815	0.912	0.334	0.996
Observations	3810	3810	3810	3810	3810	3810
Combined (Progressive)	0.000	0.009	0.022*	0.021*	0.013**	0.027*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
p-value	0.987	0.394	0.059	0.095	0.040	0.080
Observations	11066	11066	11066	11066	11066	11066
Combined (Not progressive)	-0.006	-0.023	0.013	0.008	-0.018	-0.005
	(0.02)	(0.01)	(0.01)	(0.03)	(0.02)	(0.02)
p-value	0.855	0.252	0.271	0.829	0.478	0.861
Observations	3769	3769	3769	3769	3769	3769

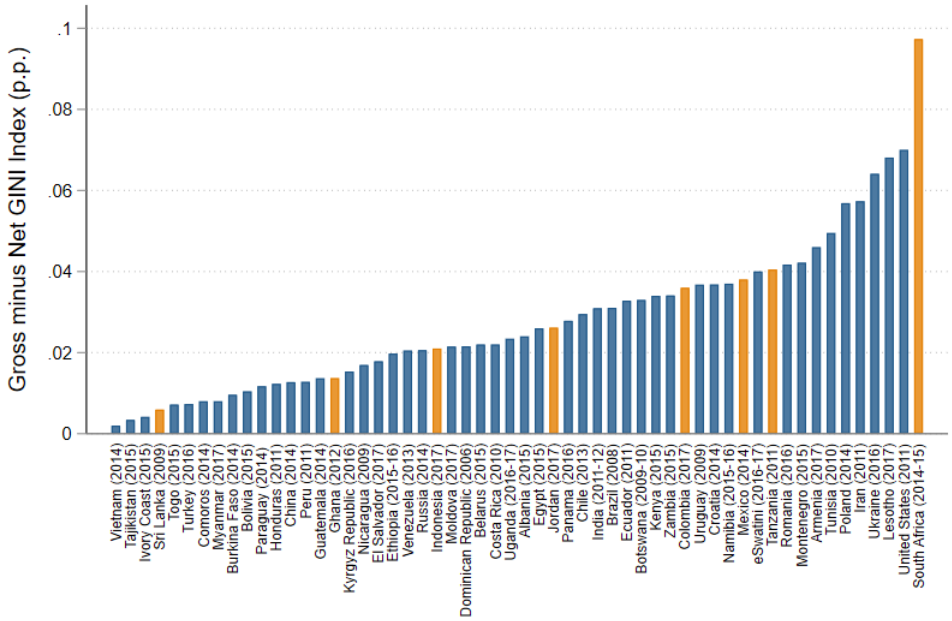
Note: This table shows the overall impact of each of the treatments (without controls) relative to the control group, where countries are pooled based on whether the tax and/or transfer system is progressive. This table is comparable to Table 1 in Section 4 of the paper. This table is based on Equation 7 in Section 3 of the paper (except there are no control variables). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise).

Table A19: Leebounds analysis for the taxes treatment

	Direct b/se/p	Punishable b/se/p	Important b/se/p	Right to Tax b/se/p	Do not Refuse b/se/p	INDEX b/se/p
Taxes (Progressive)						
Lower bound	-0.003	0.007	0.001	-0.005	-0.003	0.011
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
p-value	0.792	0.519	0.905	0.677	0.774	0.506
Upper bound	0.013	0.016	0.010	0.011	0.009	0.030**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
p-value	0.279	0.192	0.398	0.236	0.465	0.046
Taxes (Not Progressive)						
Lower bound	-0.028**	-0.018*	-0.018	-0.007	-0.026**	-0.055***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
p-value	0.022	0.098	0.145	0.587	0.017	0.000
Upper bound	-0.016	-0.005	-0.007	0.002	-0.013	-0.017
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
p-value	0.189	0.659	0.544	0.836	0.285	0.288

Note: This table presents the upper and lower Leebounds (based on Lee (2009)) for the taxes treatment, where countries are pooled based on whether the tax system is progressive. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Direct:* Based on Q14, which asks whether respondents would not pay tax if they knew they would not get caught (variable takes value of 0 if they select "Strongly Agree" or "Agree" and 1 otherwise). *Punishable:* Based on Q15, which asks respondents their views about people not paying tax (variable takes value of 1 if they select "This is wrong and punishable" and 0 otherwise). *Important:* Based on Q16, which asks respondents whether it is important for people to pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Right to Tax:* Based on Q17, which asks respondents whether the government always has a right to make people pay tax (variable takes value of 1 if they select "Strongly Agree" or "Agree" and 0 otherwise). *Do not Refuse:* Based on Q18, which asks whether people should refuse to pay taxes until they receive more government transfers (variable takes value of 1 if they select "Strongly disagree" or "Disagree" and 0 otherwise). *INDEX:* An unweighted average of the Z-scores of all five outcome variables, oriented so that a higher index means more willingness to pay tax.

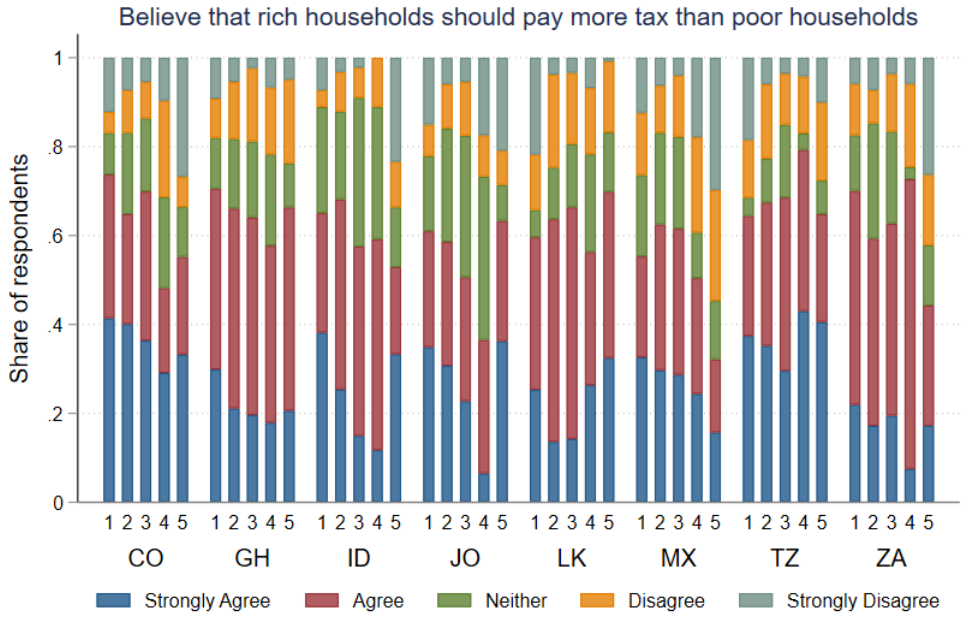
FIGURE A1: Difference between the Gross and Net GINI index in all developing countries where comparable data exists



Note: This figure shows that the difference between the gross (i.e., pre-taxes and government transfers) and net (i.e., post-taxes and government transfers) GINI index is negligible in some countries in this study and far more substantial in others. Countries marked in yellow were included in this study. The year shown in brackets next to each country is the year in which the survey took place that the GINI index is based on. The United States is included as a point of comparison.

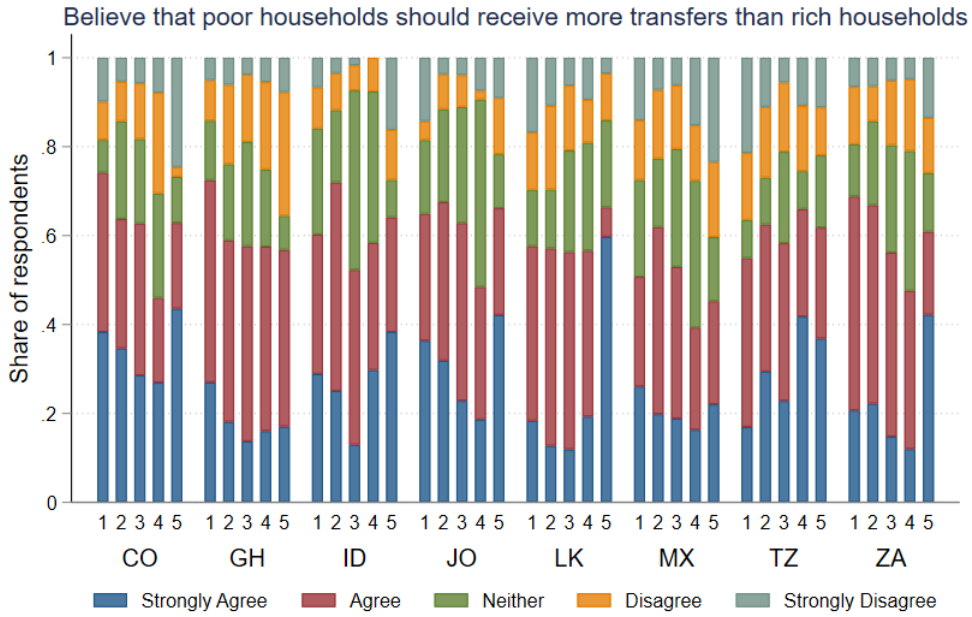
Source: CEQ, 2021

FIGURE A2: Share of respondents in each quintile in each country that agreed richer households should pay a higher share of their income in tax than poorer households



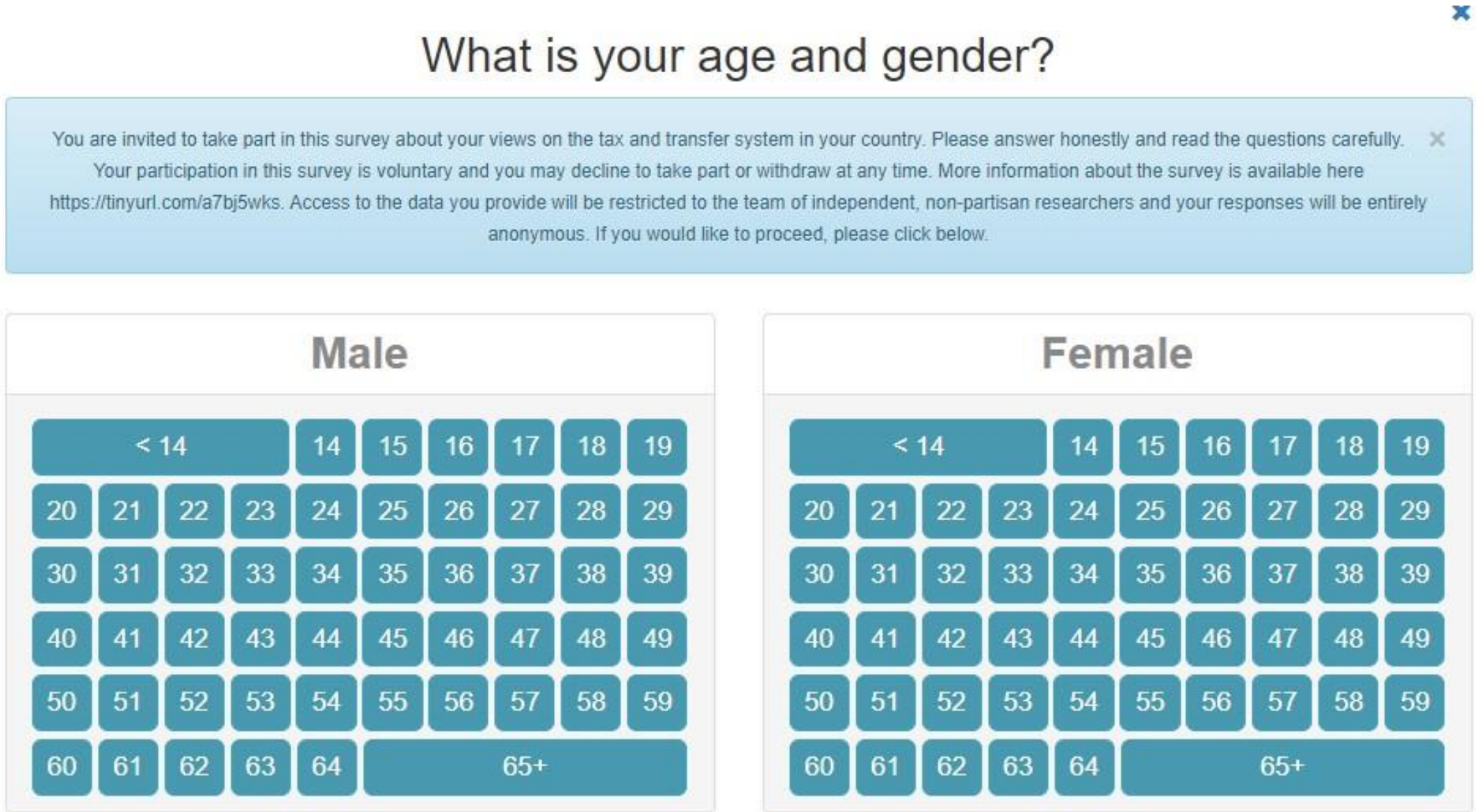
Note: This figure shows the share of respondents in each quintile in each country that agreed richer households should pay a higher share of their income in tax than poorer households. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. Preferences about progressivity of taxes are based on Q9, which asks respondents whether they think that richer households should pay a higher share of their income in tax than poorer households.

FIGURE A3: Share of respondents in each quintile in each country that agreed poorer households should receive a higher share of their income in transfers than richer households

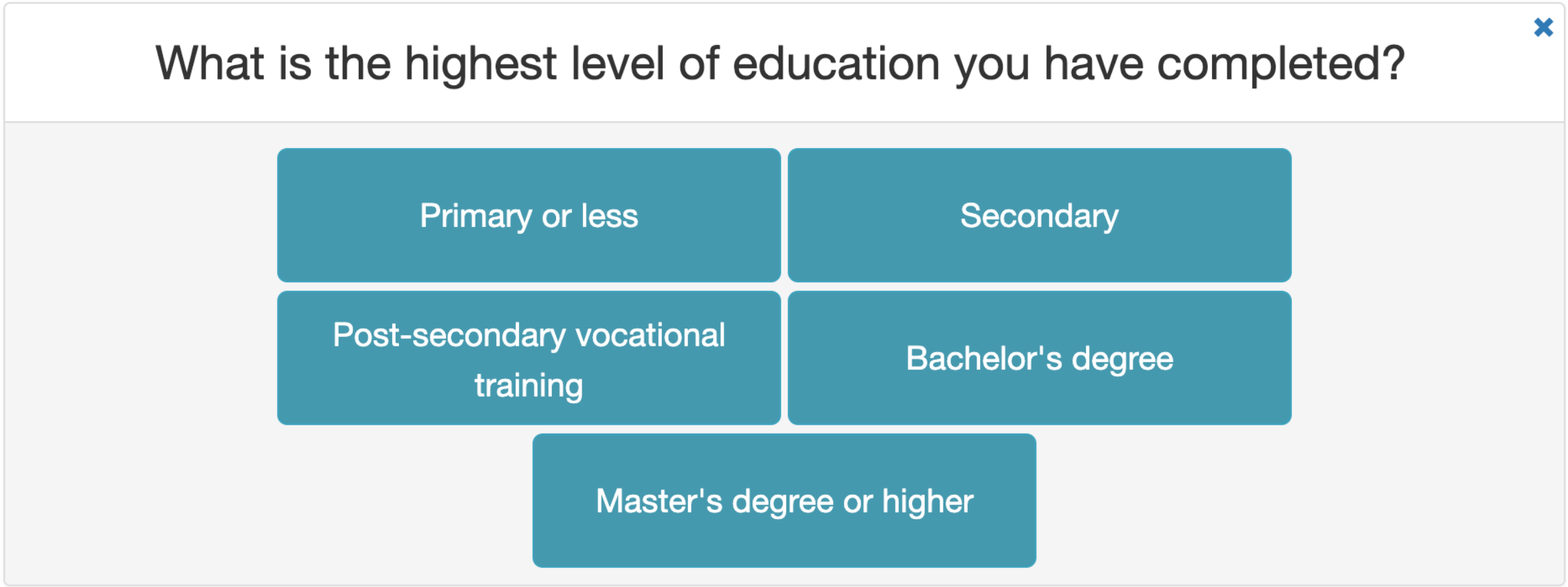


Note: This figure shows the share of respondents in each quintile in each country that agreed poorer households should receive a higher share of their income in transfers than richer households. *CO:* Colombia. *GH:* Ghana. *ID:* Indonesia. *JO:* Jordan. *LK:* Sri Lanka. *MX:* Mexico. *TZ:* Tanzania. *ZA:* South Africa. Preferences about progressivity of transfers are based on Q11, which asks respondents whether they think that poorer households should receive a higher share of their income in transfers than richer households.

Q0 (age_group / gender)



Q1 (**q01_education)**

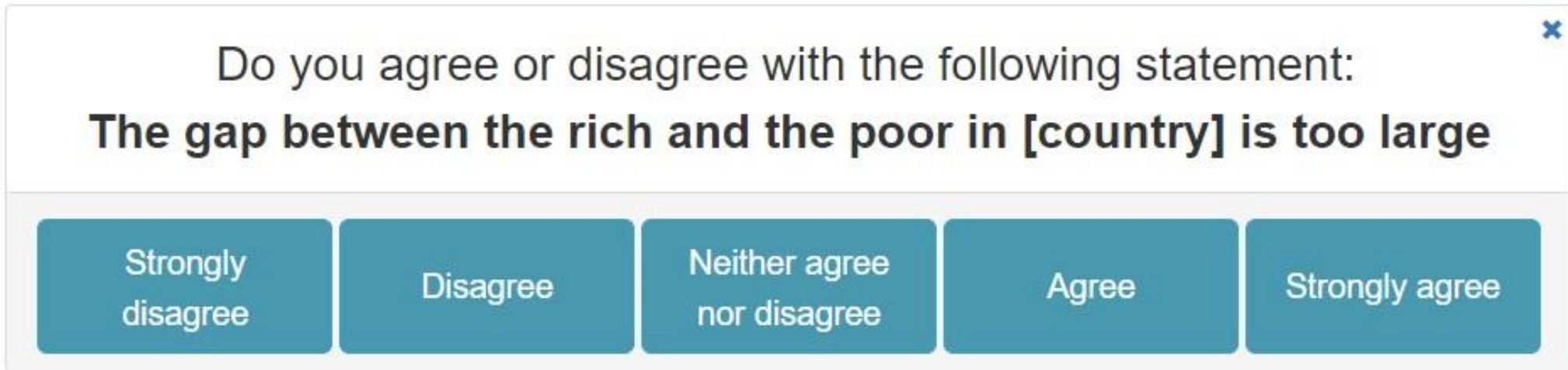


Q2 (**q02_live)**


Where do you live?
Large city
Suburb
Rural area / farm
Small town / village

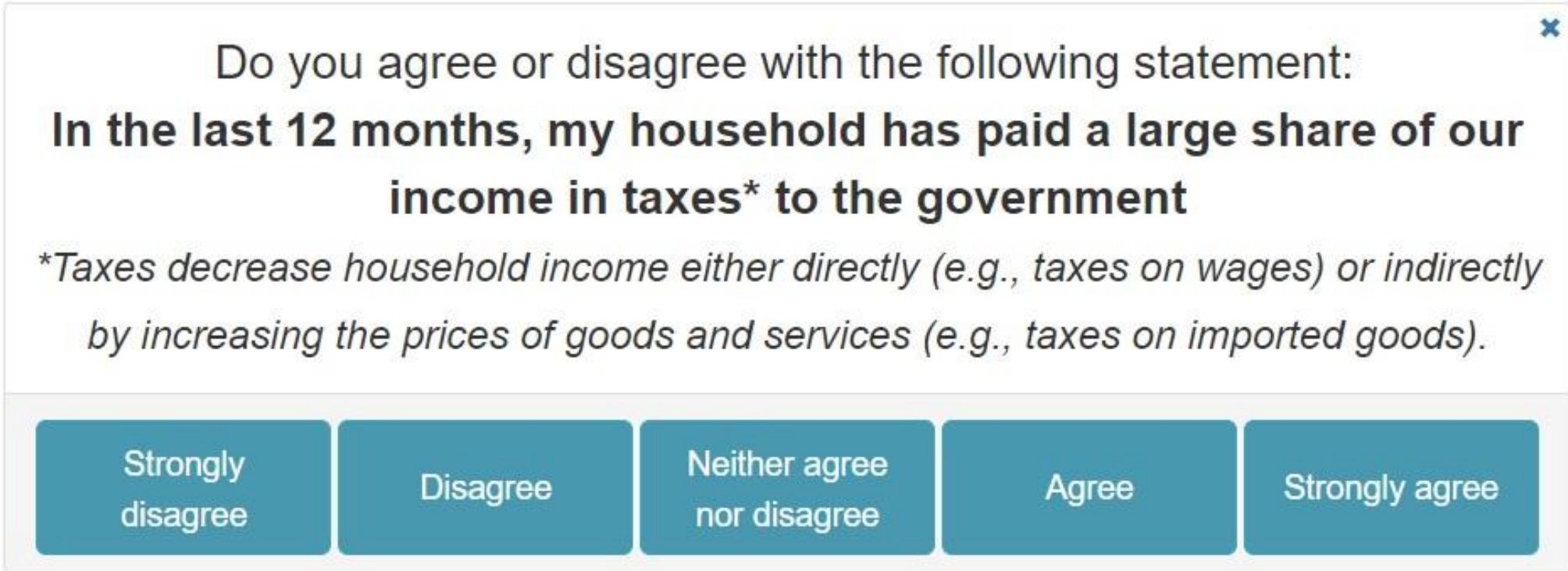
Q3 (**q03_employment)**

Q4 (**q04_rich_poor_gap)**



Q5 (**q05_house_income_group)**

Q6 (**q06_perceived_payed_tax)**



Q7 (**q07_perceived_tax_and_transfer)**

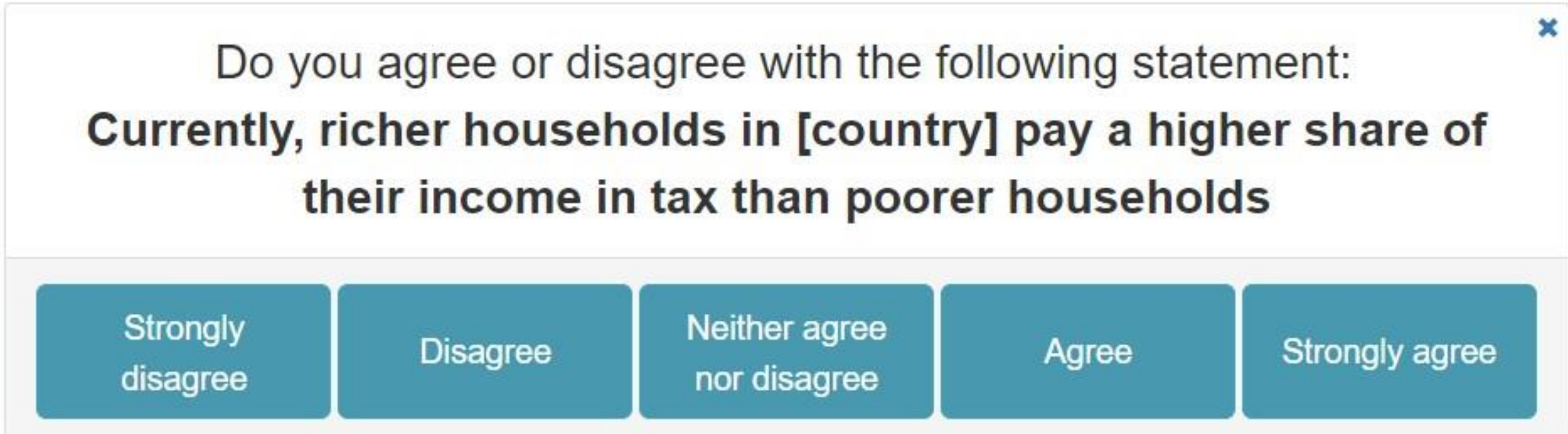
Do you agree or disagree with the following statement:

In the last 12 months, my household paid more in taxes than was received in government transfers*

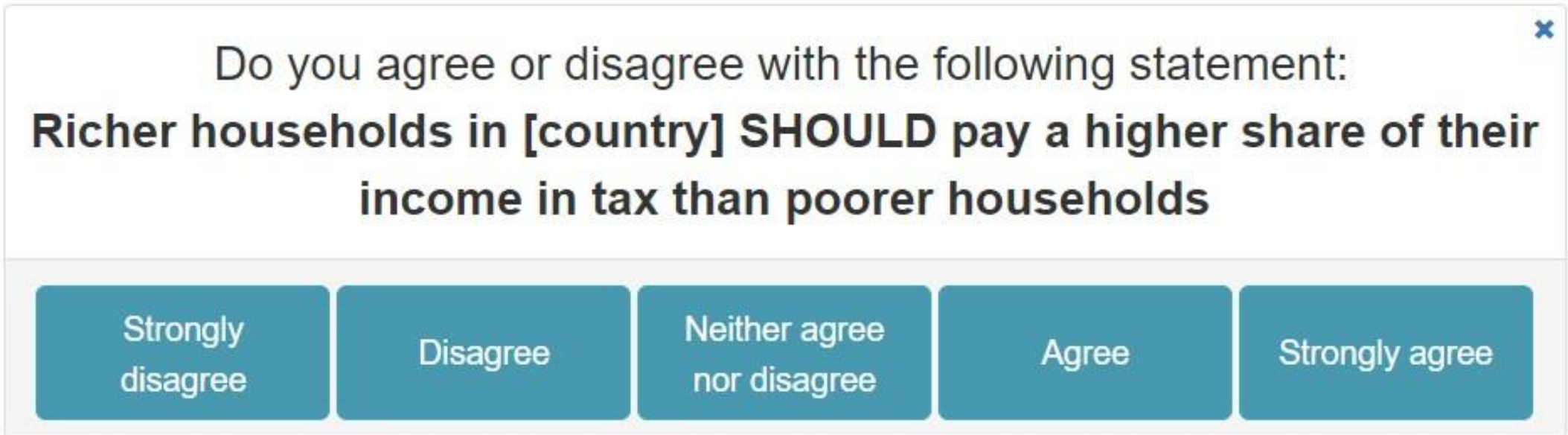
**Government transfers increase household income either directly (e.g., an elderly pension) or indirectly by decreasing the prices of goods and services (e.g., a fuel subsidy).*

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Q8 (**q08_rich_pay_more_tax_now)**



Q9 (**q09_rich_should_pay_more_tax)**



Q10 (**q10_poor_incr_transfers_now)**

Do you agree or disagree with the following statement:

Currently, poorer households in [country] receive a higher share of their income in government transfers than richer households

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Q11 (**q11_poor_should_incr_transfers)**

Q12 (**q12_continue_with_survey)**

Before proceeding, please confirm that you are willing to answer the final 5 questions of the survey. If you cannot answer the next 5 questions, please indicate so below.

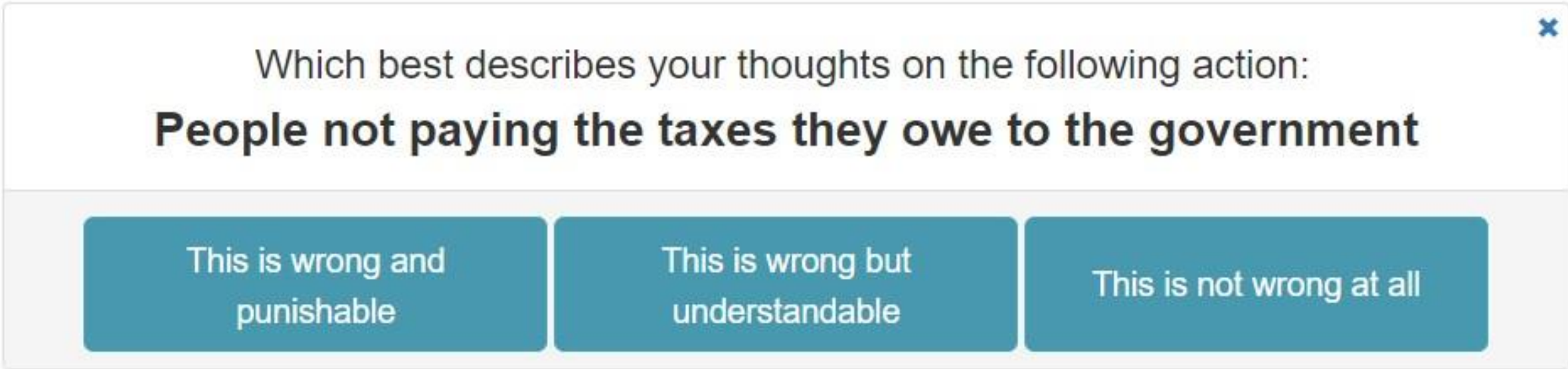
Yes, I can answer another 5 questions

No, I don't have time to answer another 5 questions

Country Specific Experiments (Q13)

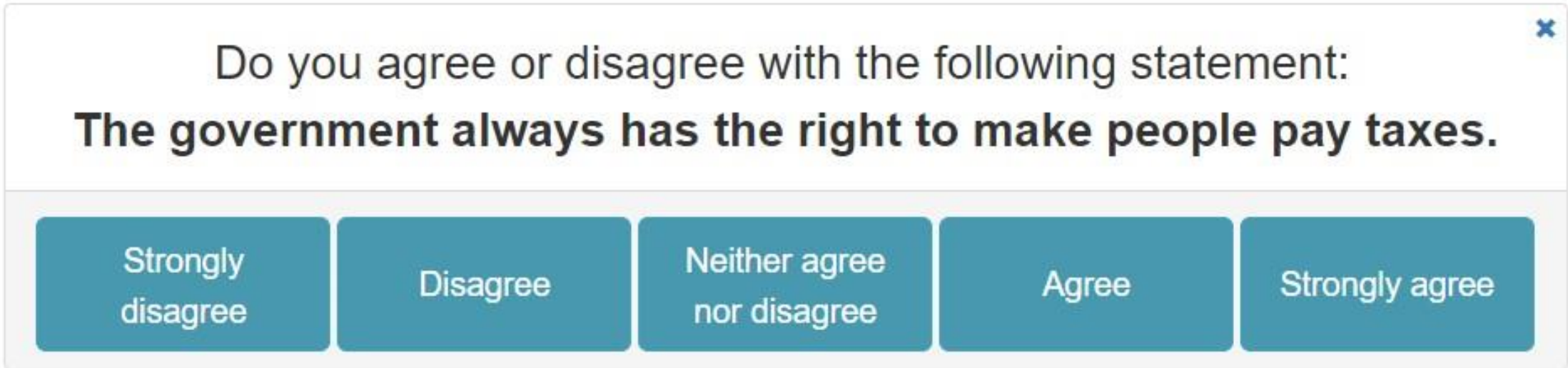
Q14 (**q14_wouldnt_pay_if_not_caught)**

Q15 (**q15_not_paying_taxes)**

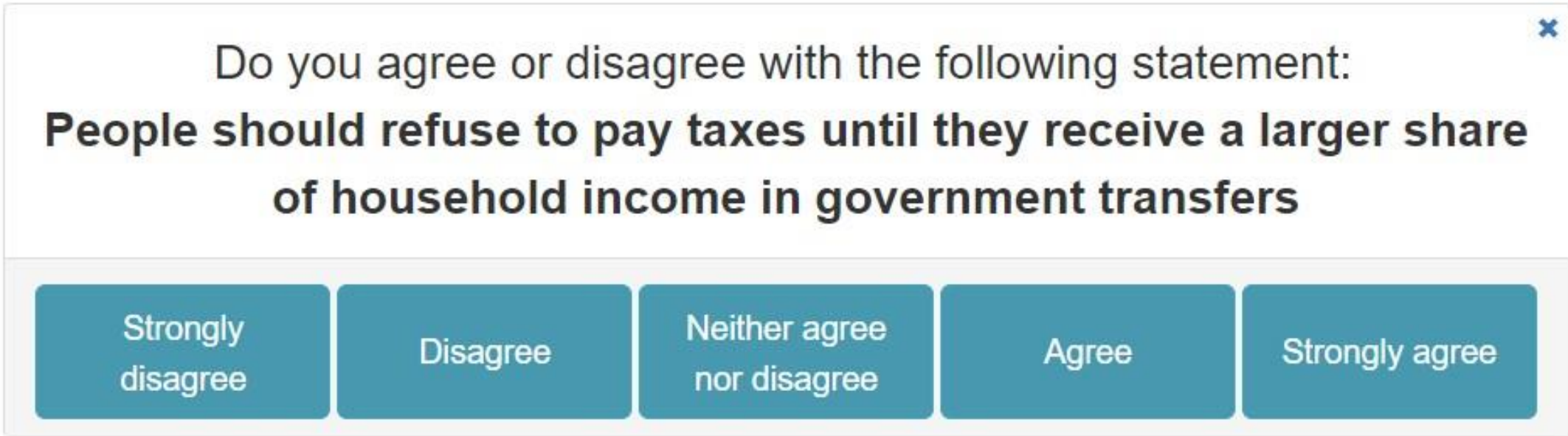


Q16 (**q16_important_to_pay_tax)**

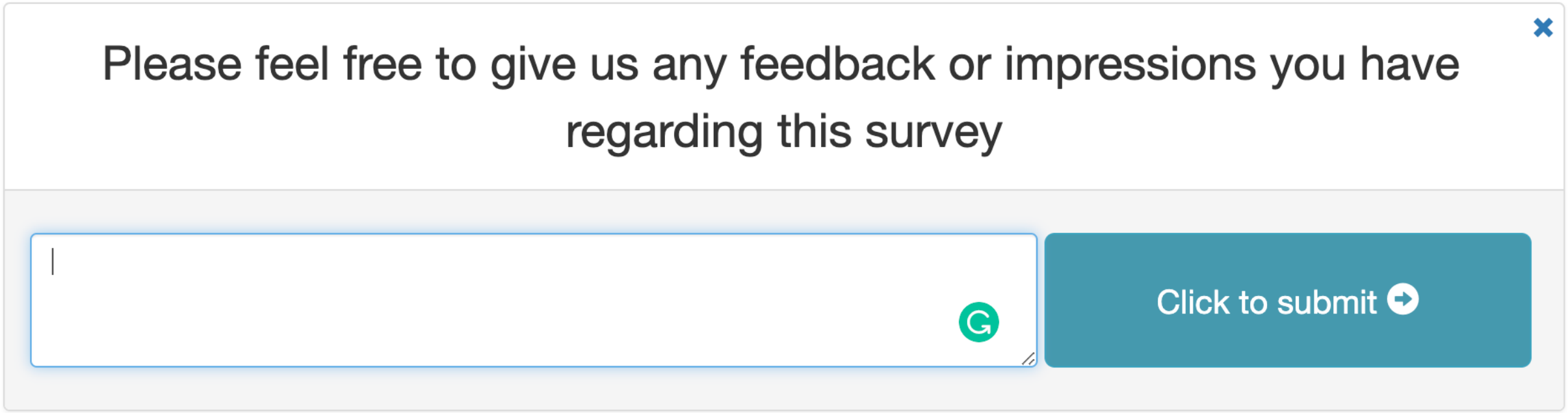
Q17 (**q17_gov_right_to_make_ppl_pay)**



Q18 (**q18_refuse_taxes)**

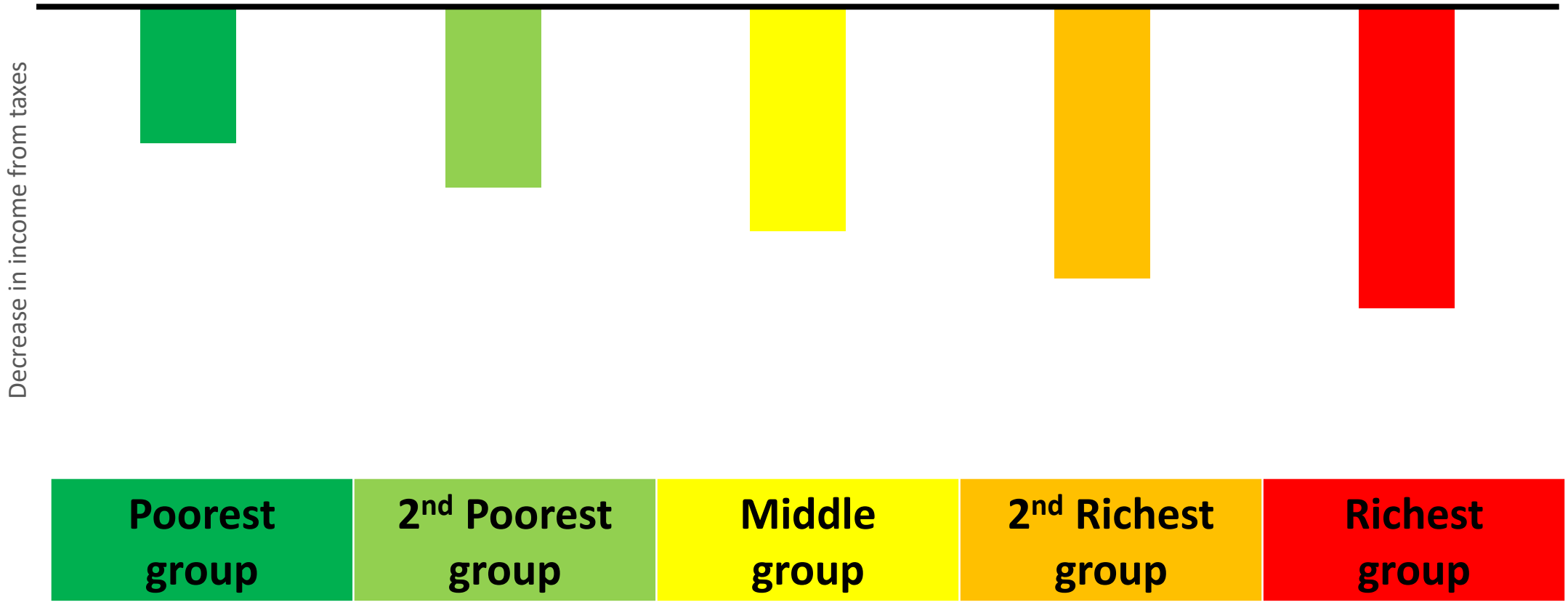


Q19 (**q19_feedback)**



Taxes treatment - Colombia

Recent research in Colombia shows:* Richer households pay a larger share of their income in taxes than Poorer households



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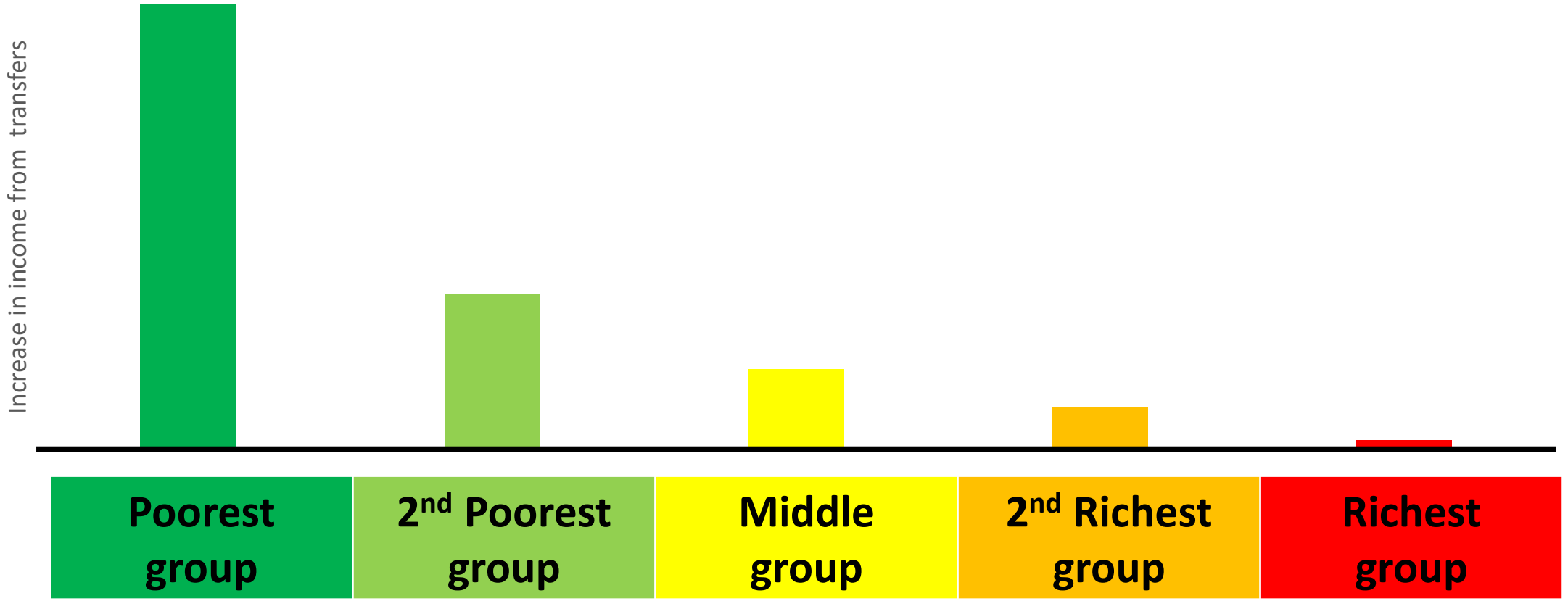

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Taxes and transfers treatment - Colombia

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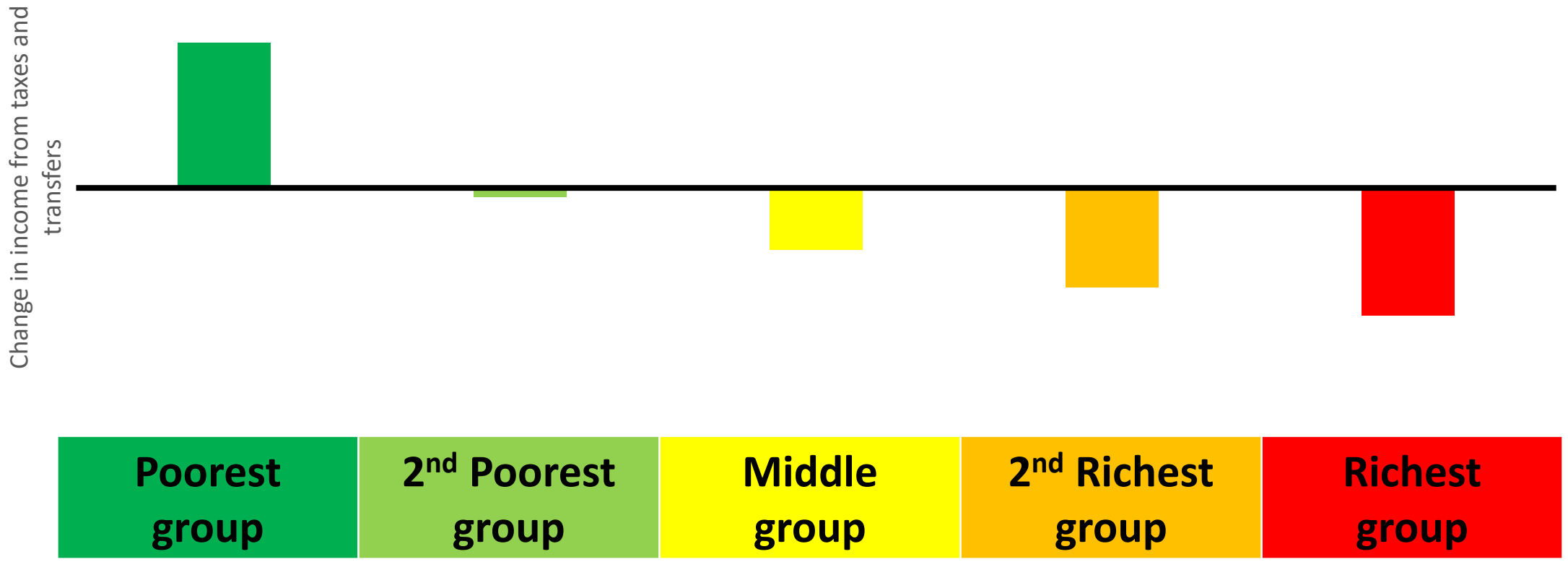

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Taxes treatment - Ghana

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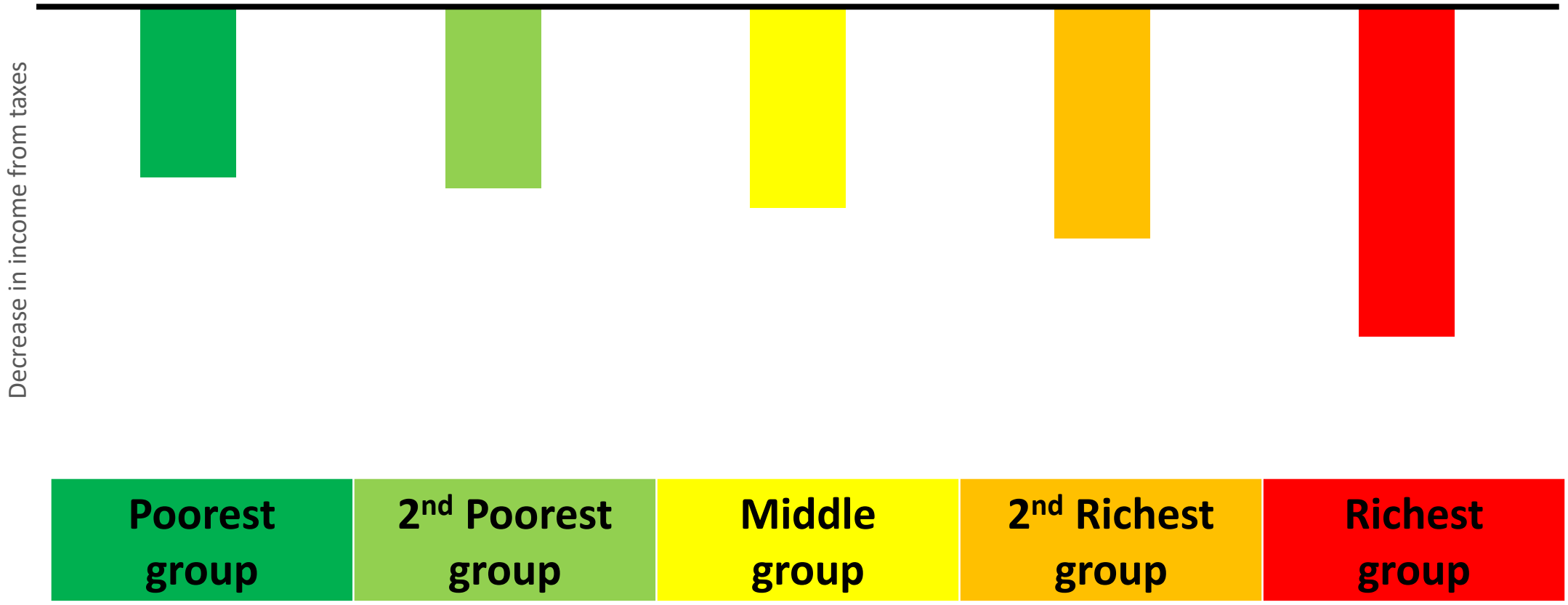

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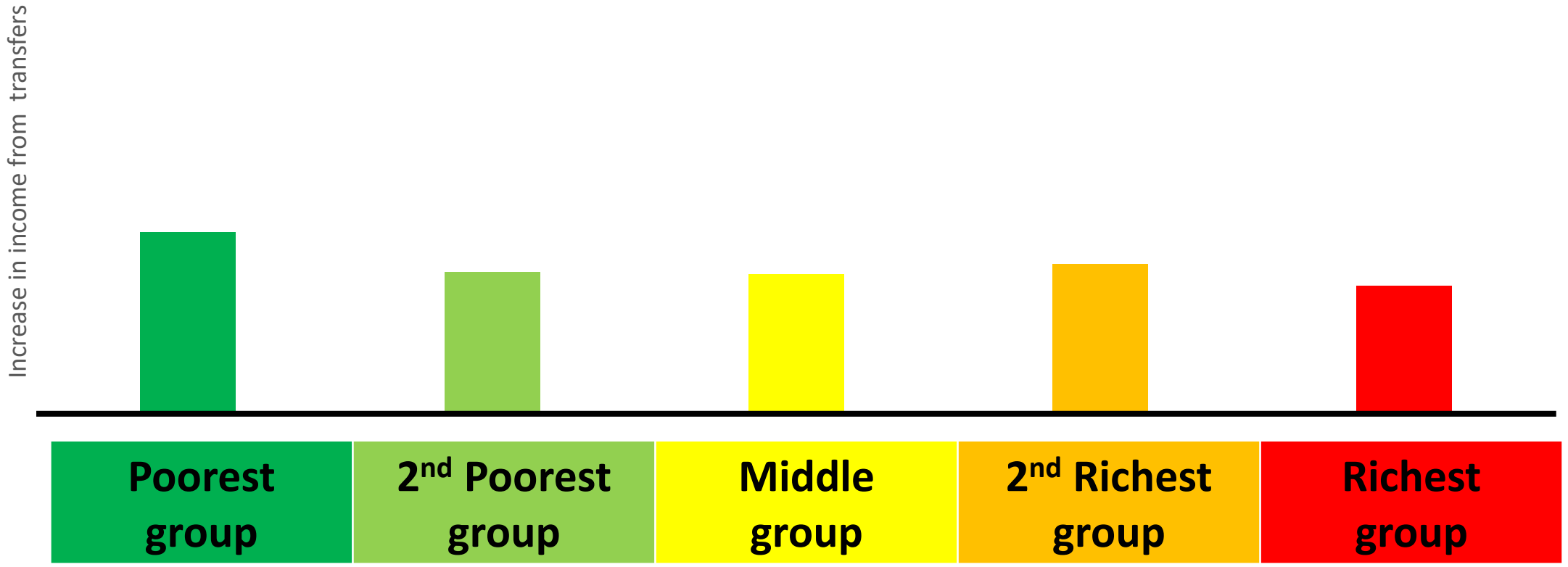

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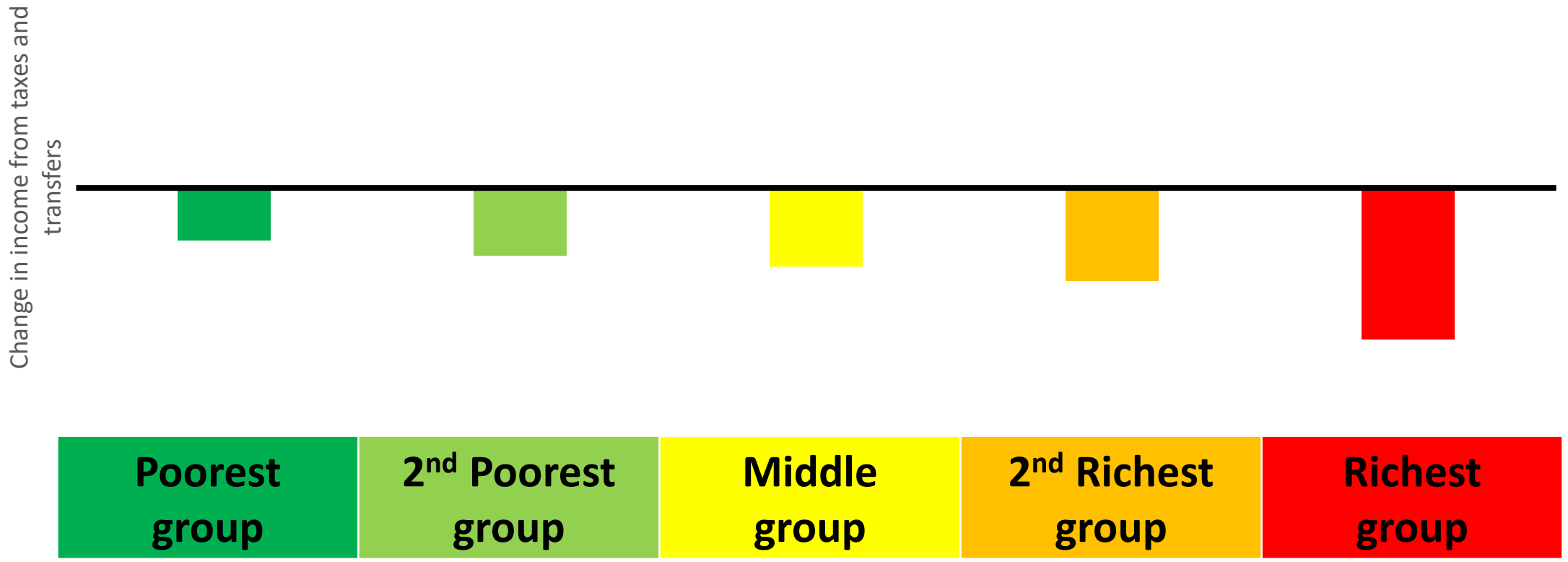
Taxes and transfers treatment - Ghana

Recent research in Ghana shows:* Most households pay more in taxes than they receive in government transfers and Richer households pay more than Poorer households



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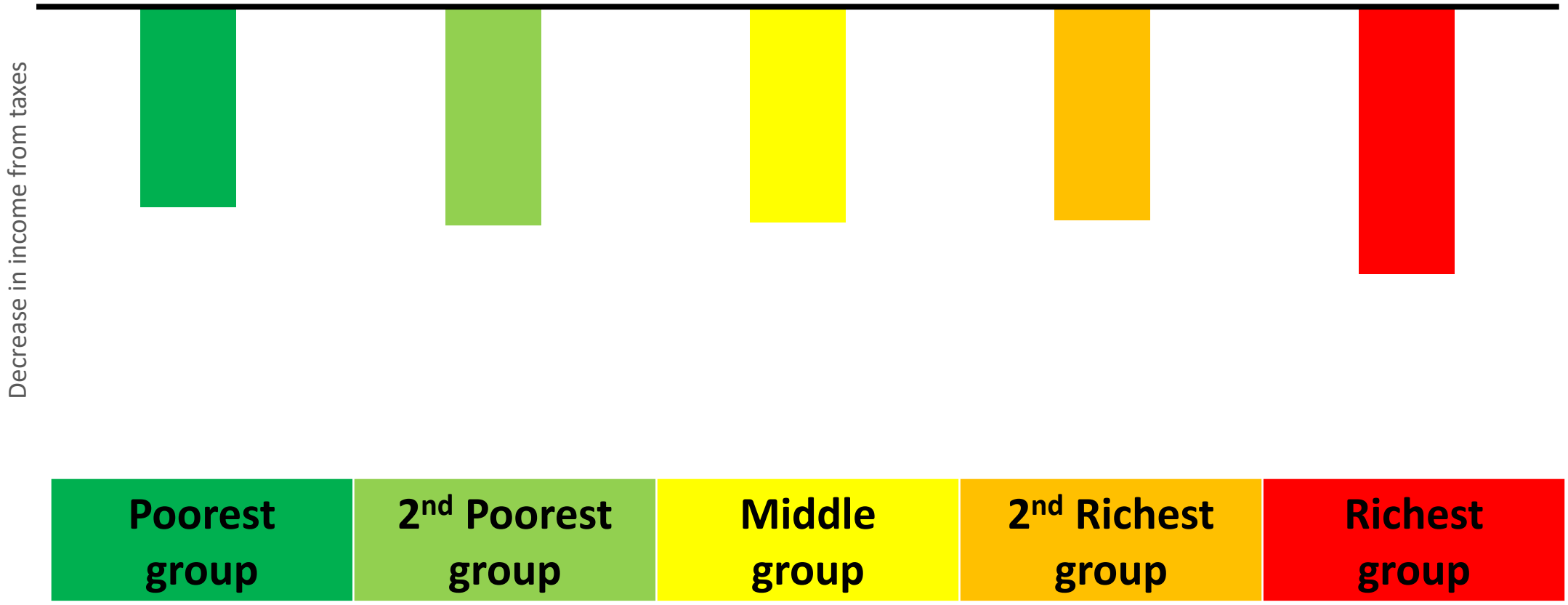

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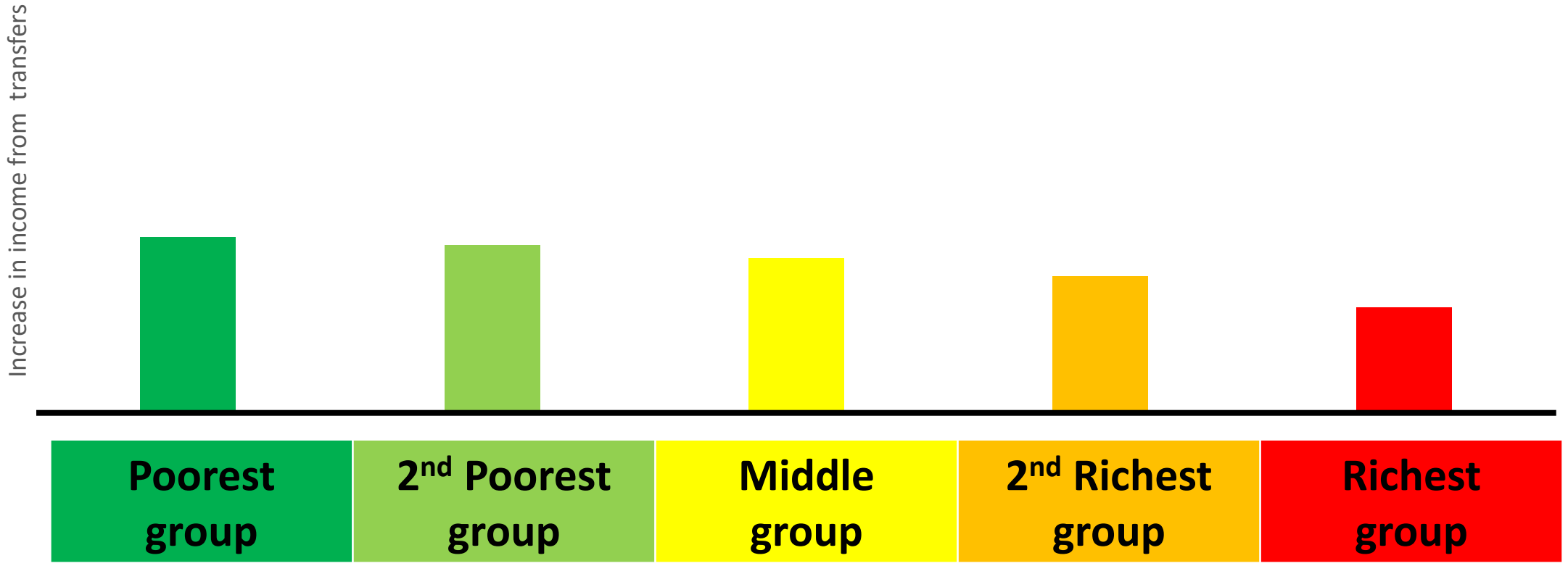

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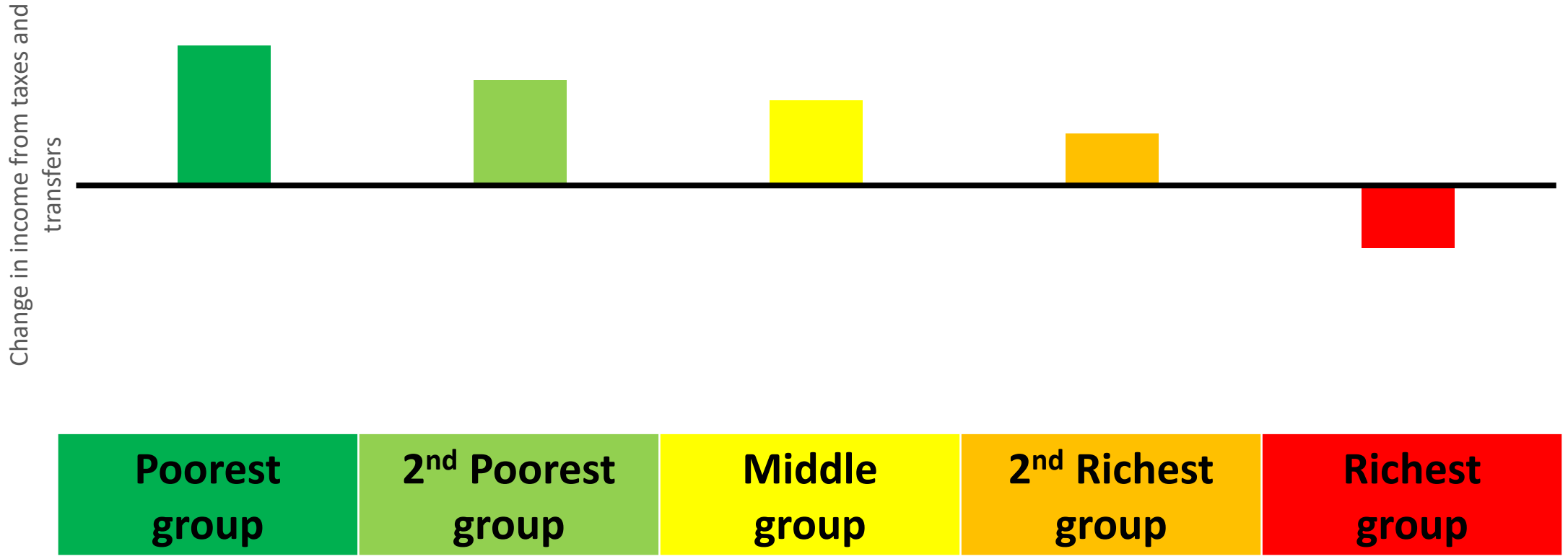

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Taxes treatment - Jordan

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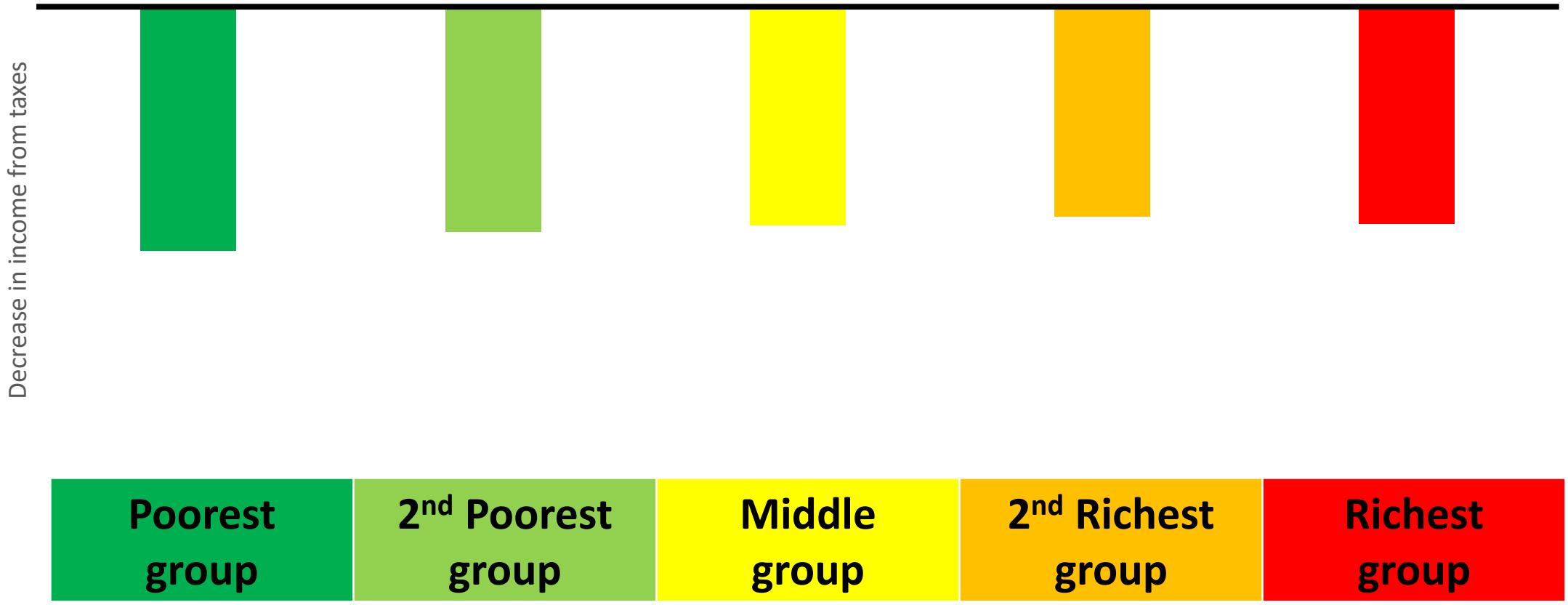

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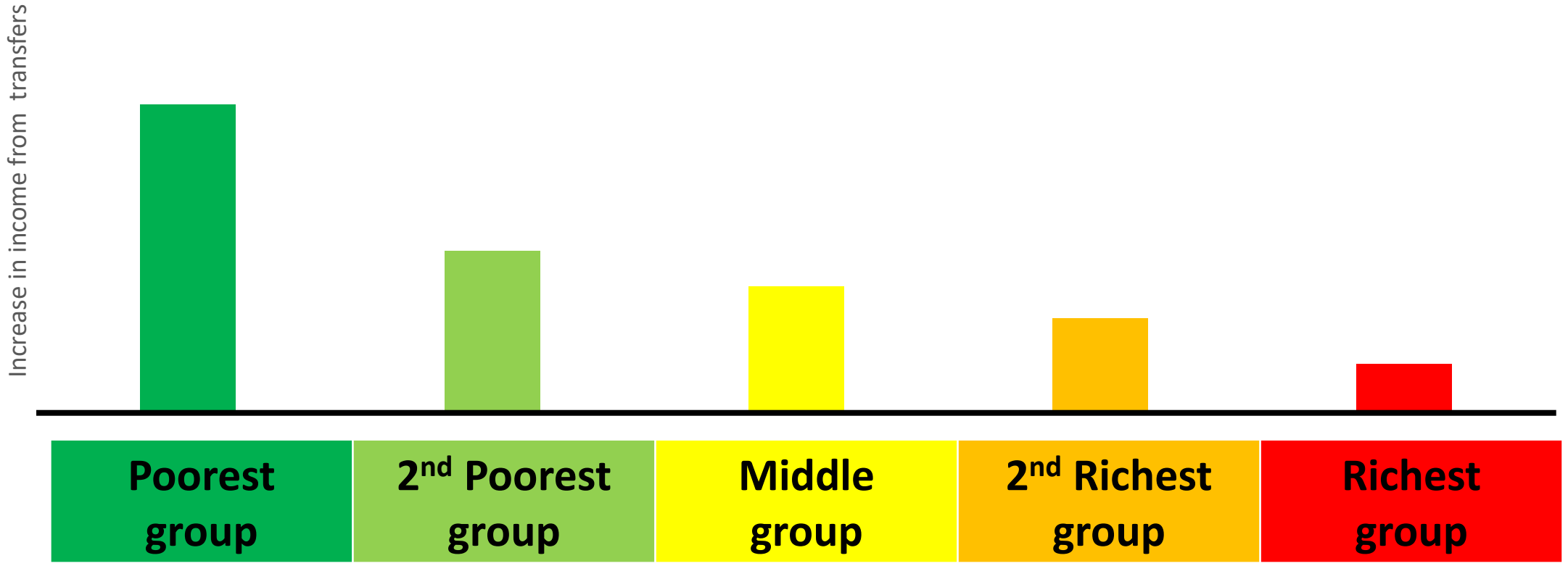

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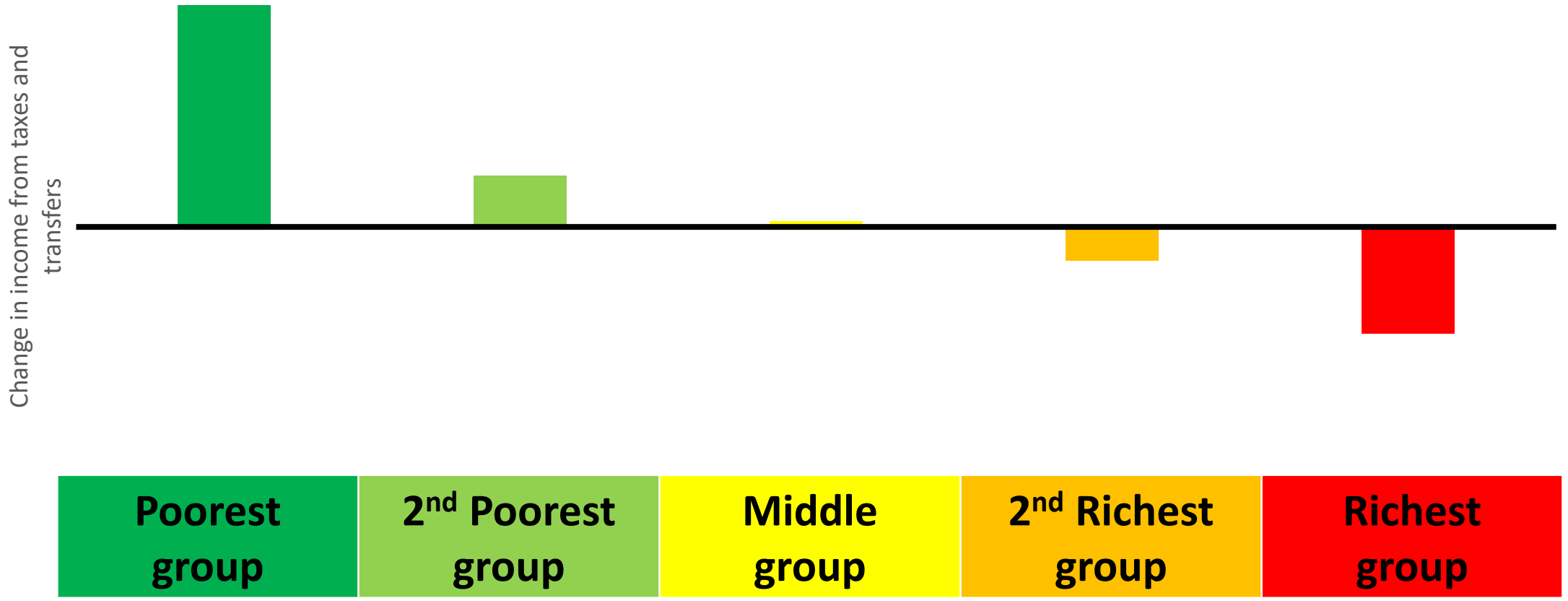

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Taxes treatment - Mexico

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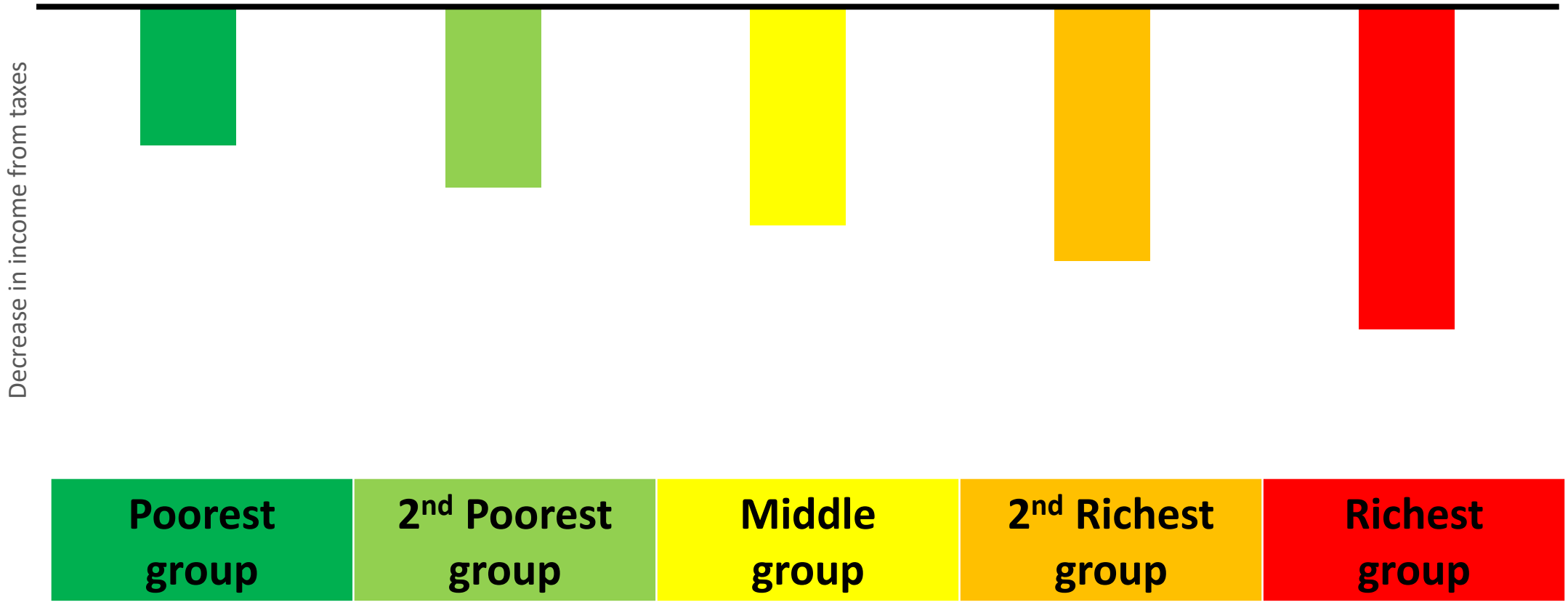

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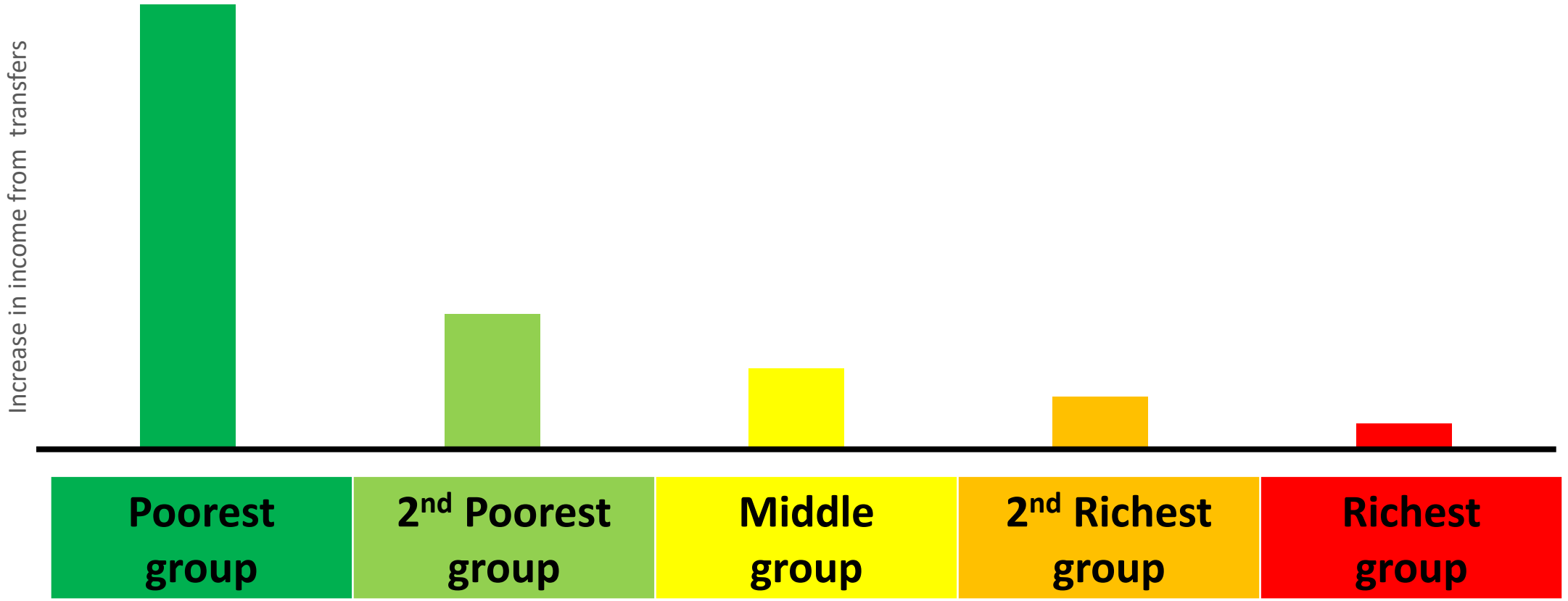

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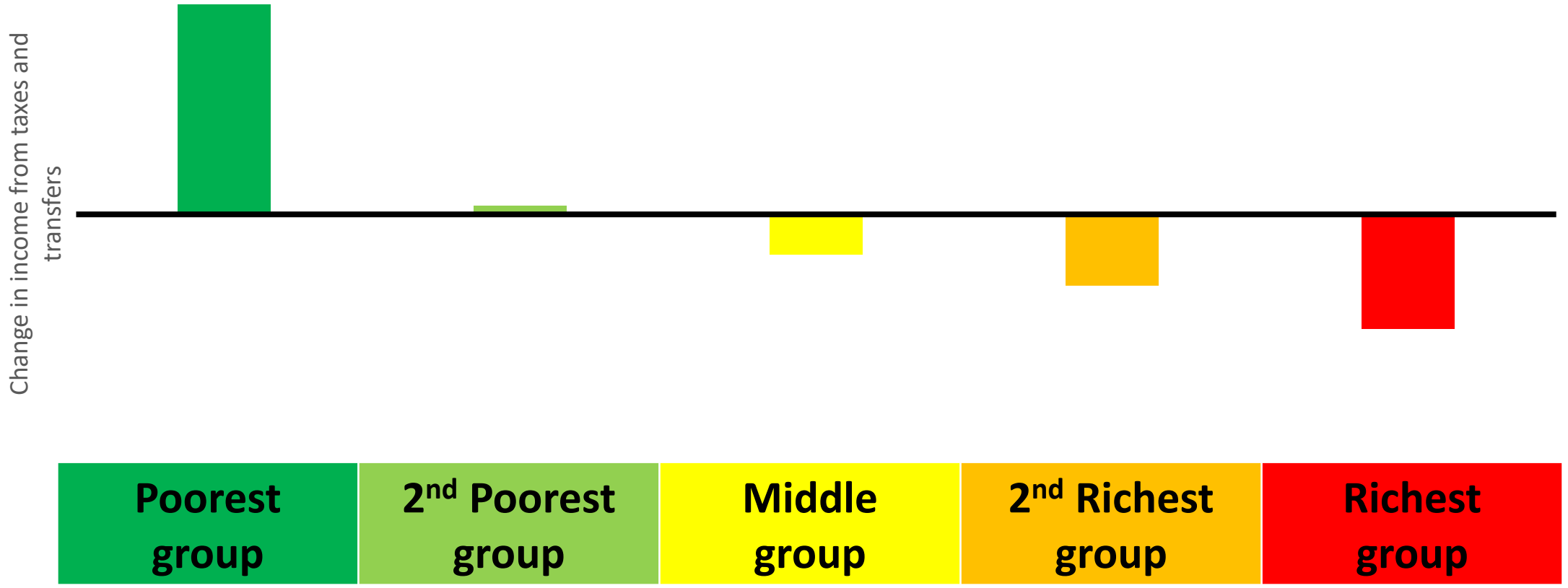

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Taxes treatment – Sri Lanka

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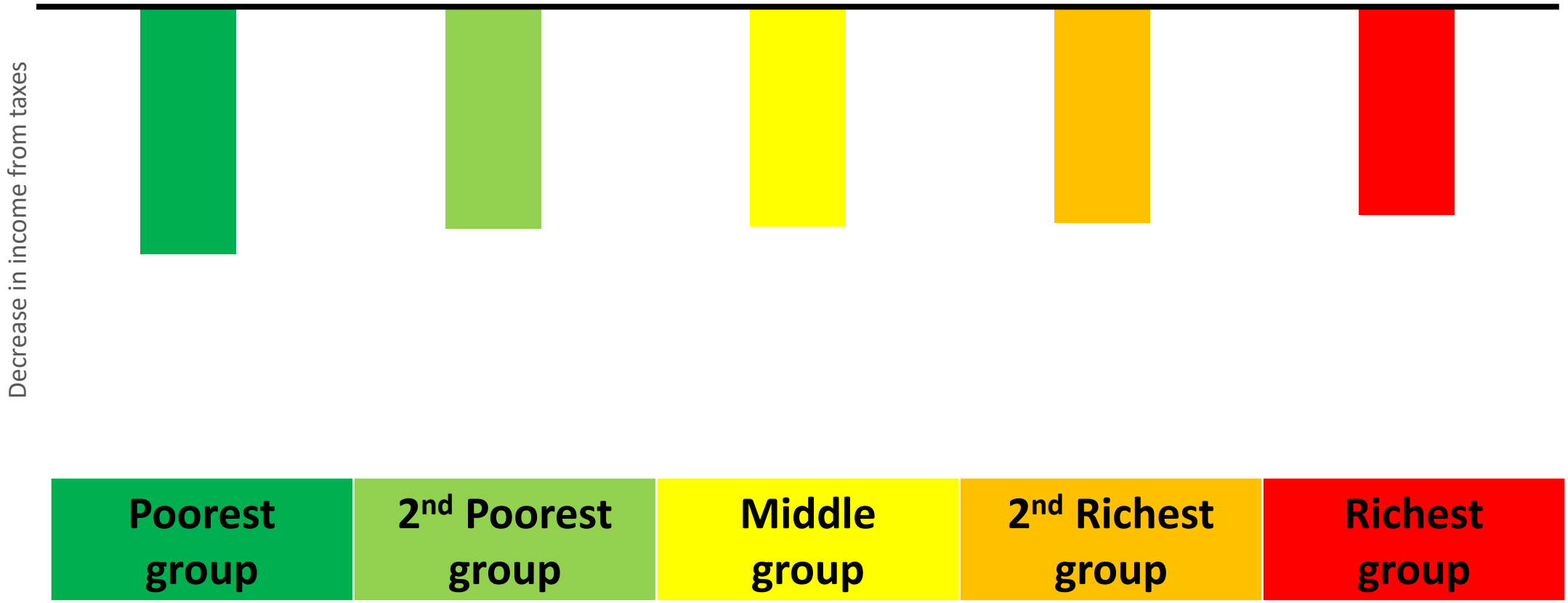

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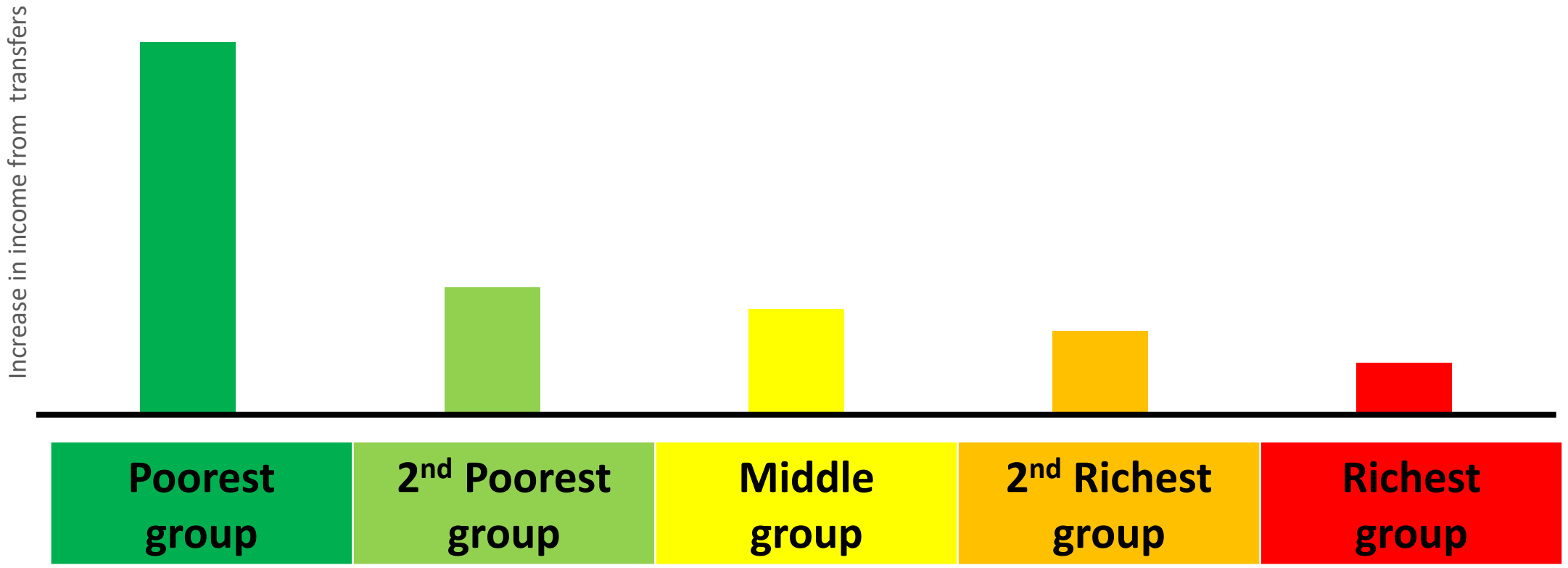

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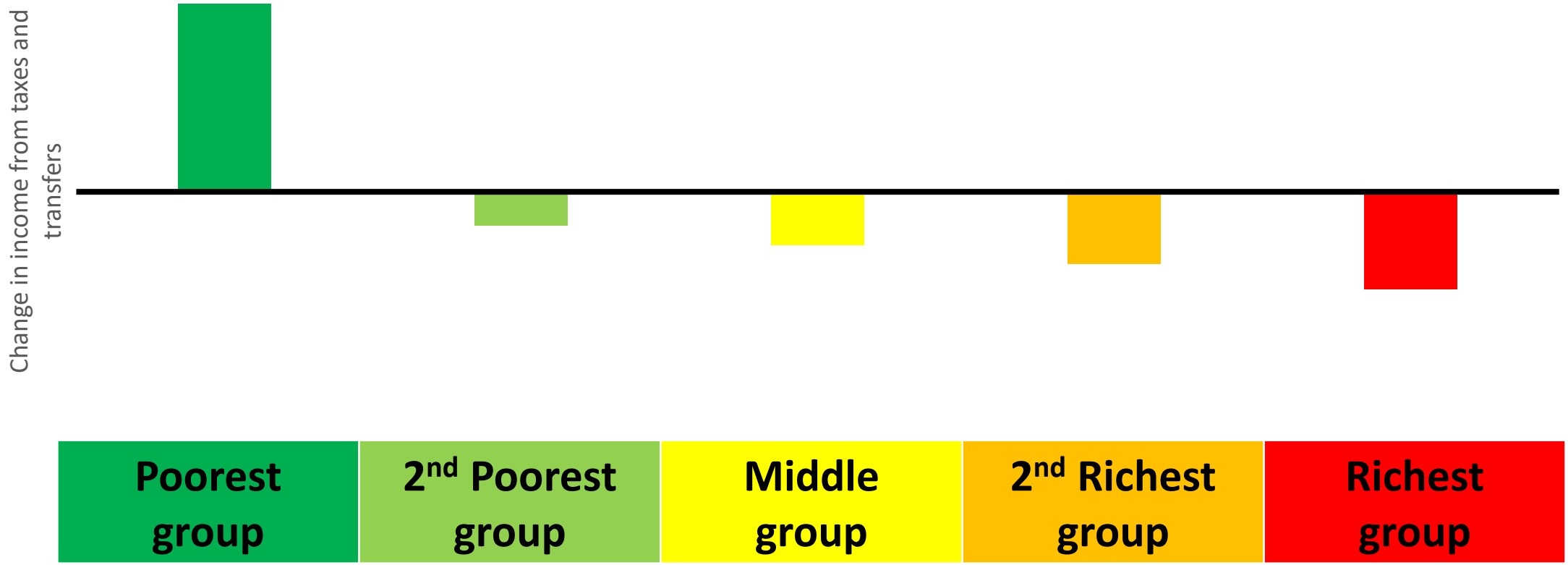

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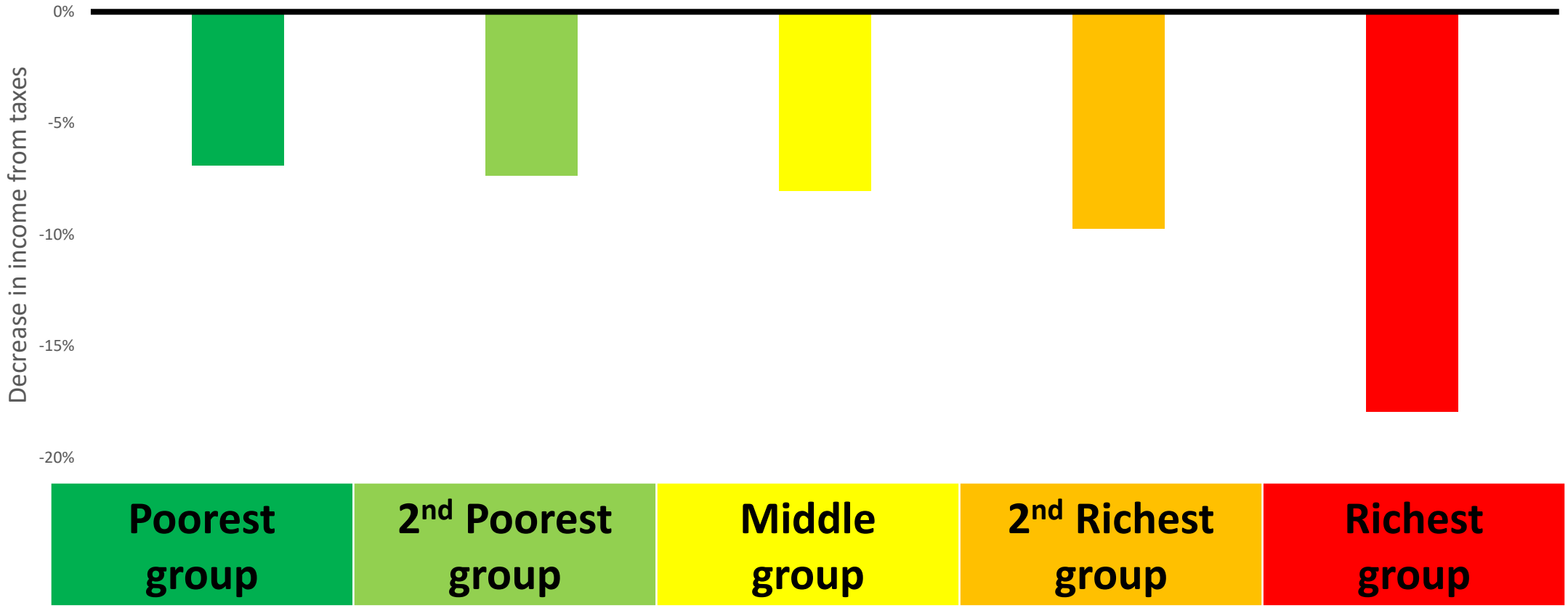

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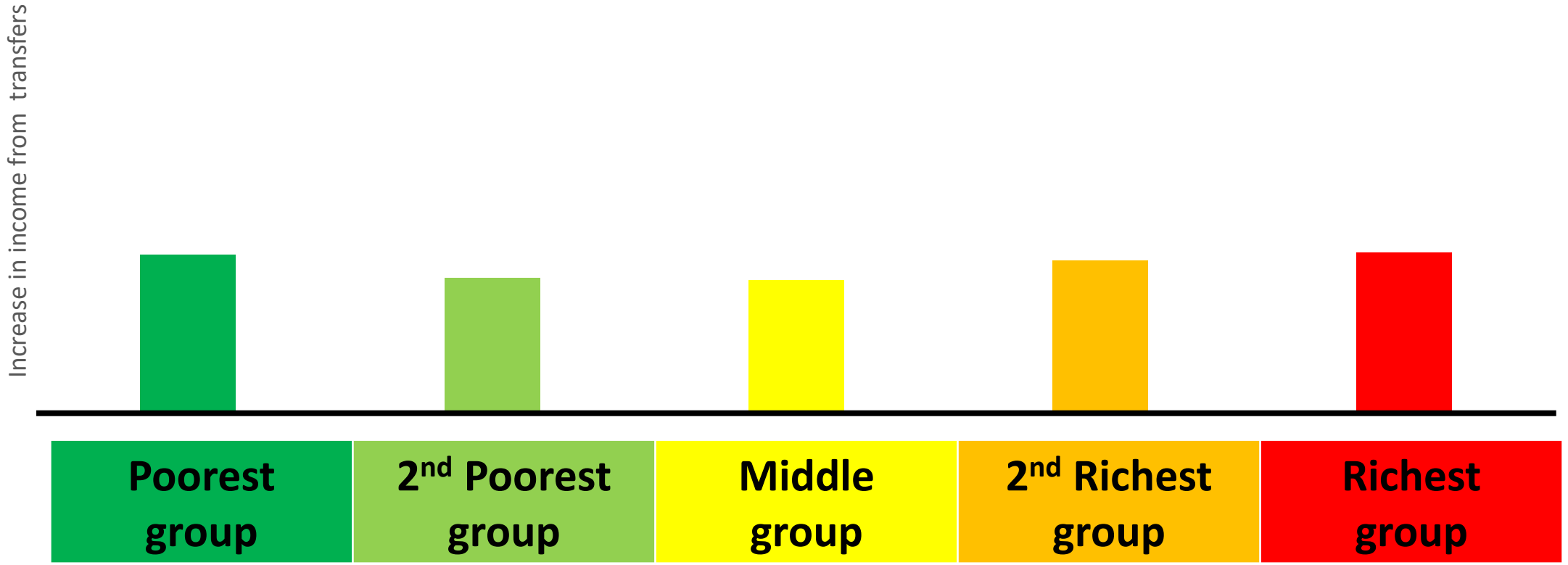

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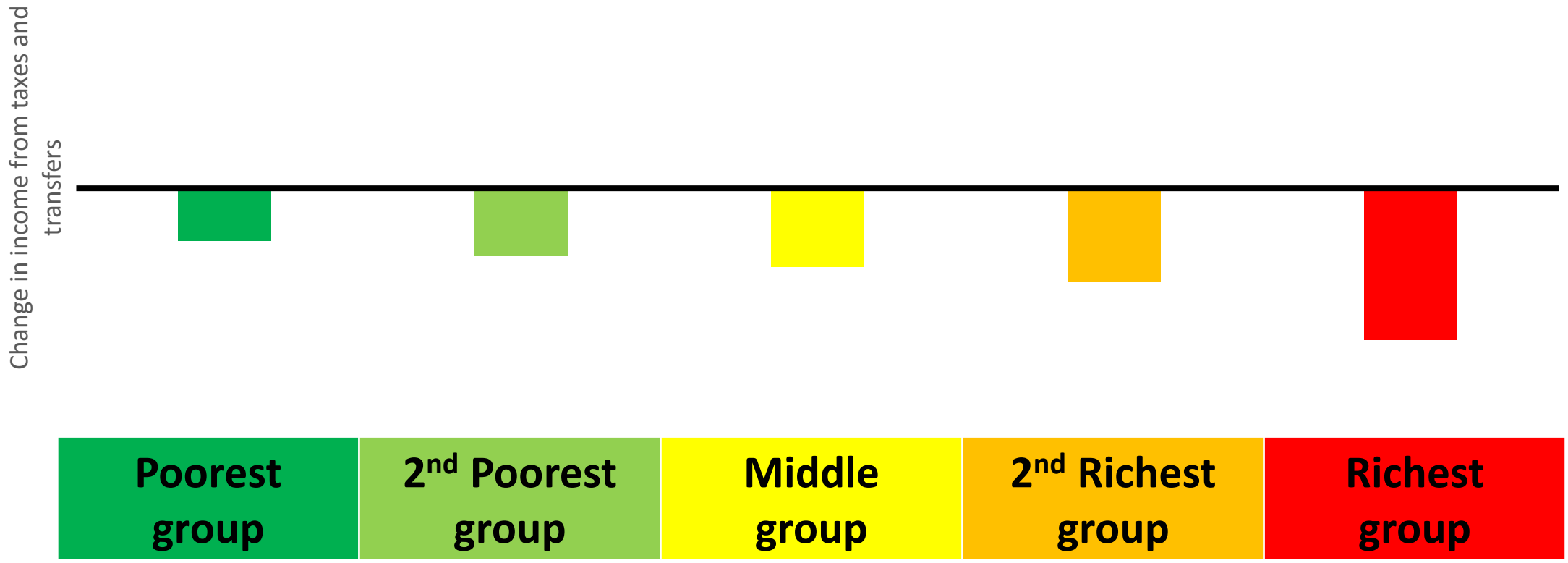

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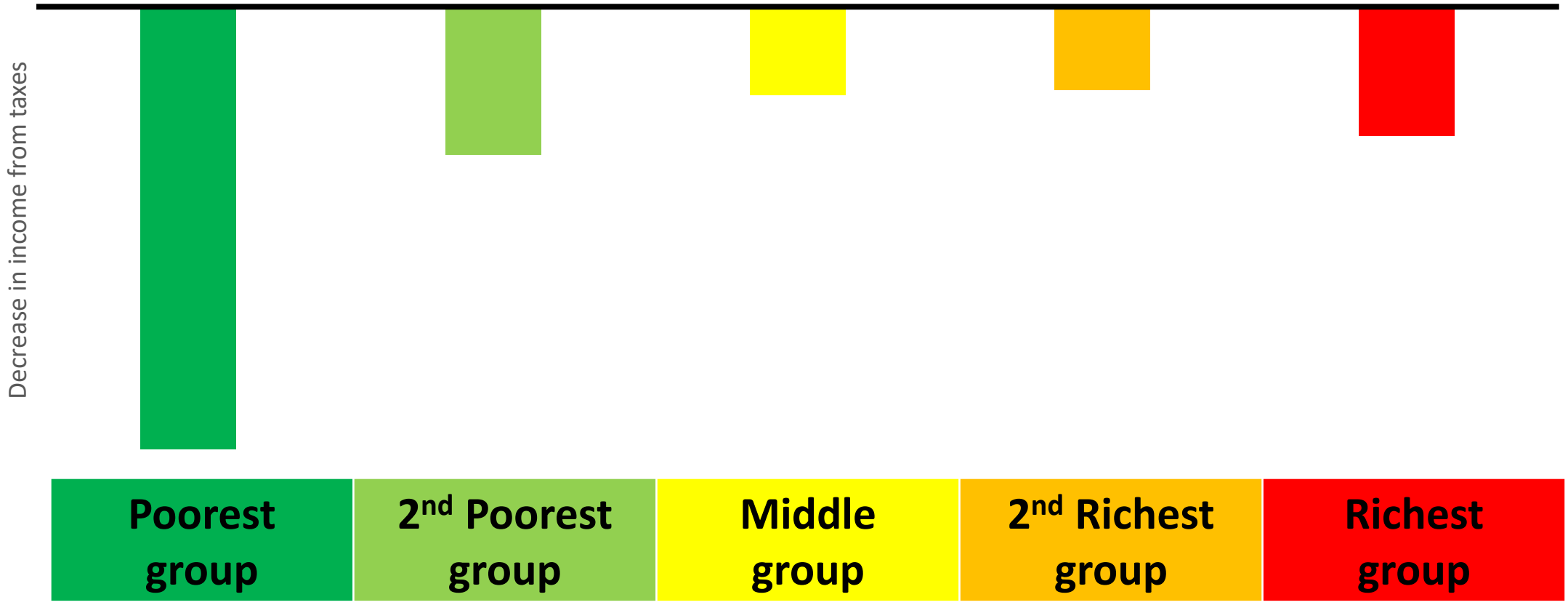

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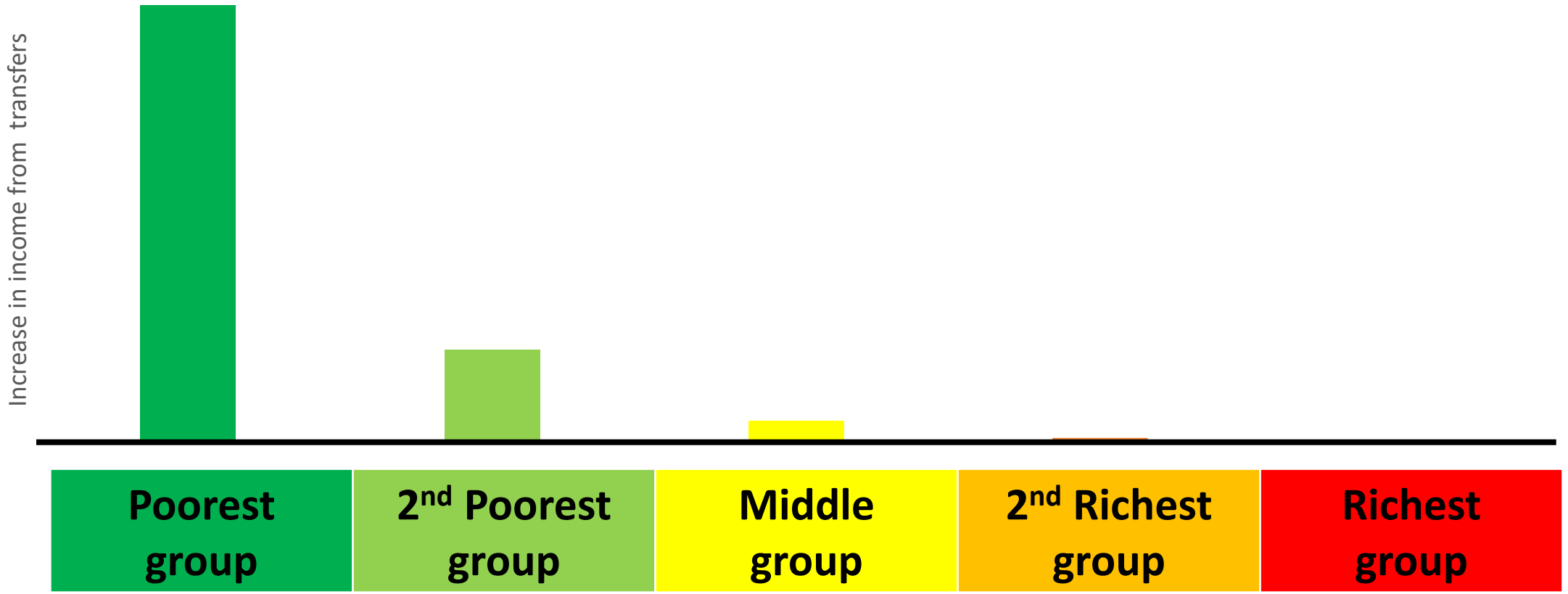

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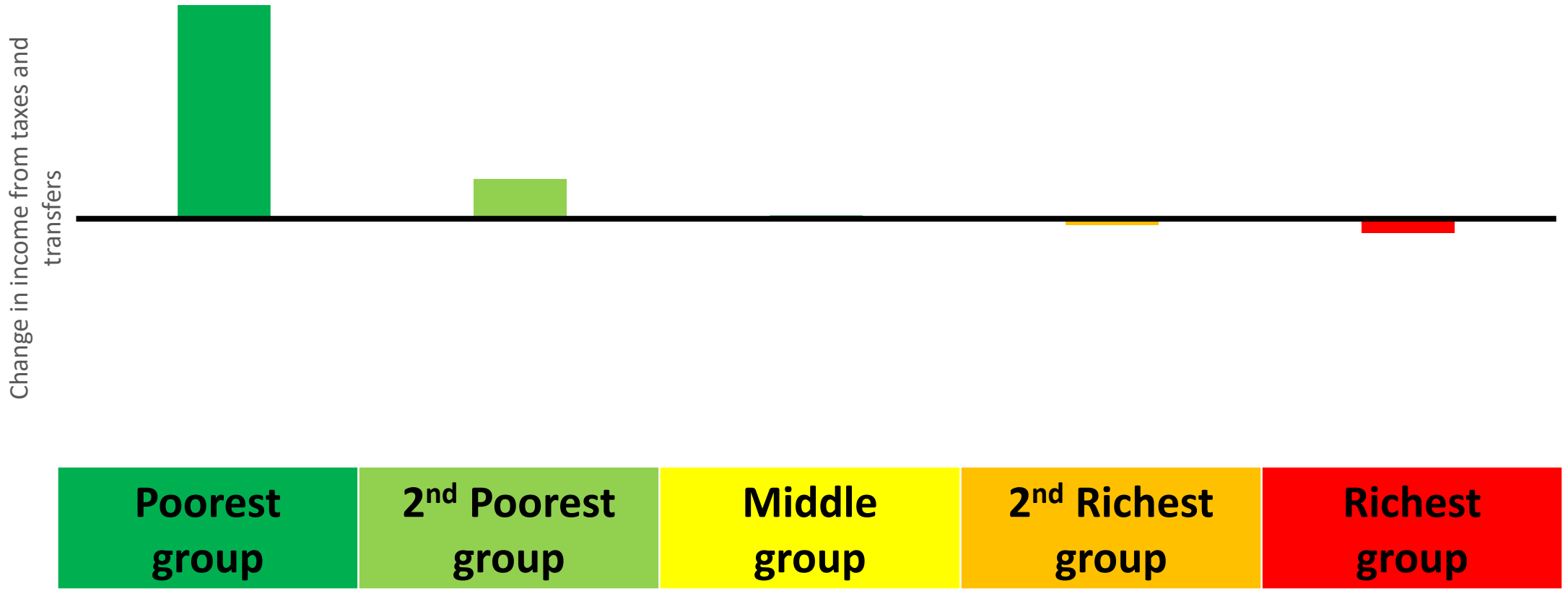

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