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Revealing tax evasion: Experimental evidence from a representative survey of Indonesian firms

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Abstract

This paper examines the pervasiveness of tax evasion among firms in Indonesia and the characteristics associated with higher levels of noncompliance. Tax evasion is estimated through a randomized, double-list experiment embedded in a nationally representative survey of 2,955 registered firms. This revealed whether firms pay all the taxes they owe without them having to disclose this directly. Across both list experiments, around a quarter of the firms indirectly reveal that they have evaded taxes. Firms that do not export, face intense competition from informal firms, and believe tax administration is a major obstacle to their business are the most likely to evade taxes. These findings help to inform the enforcement activities of tax authorities in middle-income countries, which face substantial challenges in estimating levels of tax evasion and identifying noncompliant taxpayers.

Keywords: Tax Evasion; Experimental; Firms; Public Finance; Compliance

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1 Introduction

Tax evasion by firms in middle-income countries is often thought to be one of the key reasons why revenue levels as a share of GDP remain well below those in high-income countries (Slemrod, 2019; World Bank, 2023). However, it can be challenging to measure how pervasive tax evasion is by firms by drawing on tax administrative and survey data (Slemrod and Weber, 2012; Timofte (Coca) et al., 2019). Estimates based on administrative data typically rely on tax declarations being checked for accuracy with the limited third-party information that is available in these settings, and it can be unclear whether lower-than-expected tax declarations are due to changes in economic activity, misreporting, or genuine evasion (Pomeranz, 2015; Carrillo et al., 2017). On the other hand, relying on surveys of taxpayers also has its challenges as respondents may be hesitant to directly admit to evading tax, which leaves many studies using questions about "tax morale" as a proxy for compliance (e.g., see discussion in Luttmer and Singhal, 2014; Ali et al., 2014; and Hoy, 2022). The absence of reliable information about tax evasion levels can undermine revenue authorities' ability to improve firms' compliance and identify the types of firms they should focus their enforcement efforts on (Slemrod, 2008; Mascagni et al., 2023).

To overcome these challenges, we embedded an experiment that indirectly captures levels of tax evasion as part of a nationally representative survey of 2,955 firms in Indonesia. Specifically, we use a list experiment (also known as the "item count technique") whereby respondents only state the number of statements on a list that apply to them but do not reveal directly which of the statements are true (see detailed explanation of this approach in Ahlquist, 2018, Blair and Imai, 2012, Imai, 2011 and Rosenfeld et al., 2016). We draw on best practices in measuring sensitive topics, such as drug use and risky sexual behavior, by fielding a "double" list experiment that overcomes some of the concerns with traditional "single" list experiments[1] (e.g., see Chuang et al., 2021). Namely, all respondents are randomly

[1]For example, one of the most common criticisms of list experiments is that respondents' willingness to answer honestly may be driven by the non-sensitive statements on the list. A double list experiment allows us to check whether, across the two lists with different non-sensitive statements, there are similar levels of

allocated to the treatment group in the first or second of two sequential list experiments. This approach means that estimates across the two list experiments can be directly compared, serving as an internal robustness check to demonstrate the accuracy of the results. We implement this double list experiment as part of one of the largest World Bank Enterprise Surveys (WBES) to date, covering a nationally representative sample of 2,955 registered firms with at least five employees. WBES are among the most comprehensive and reliable surveys about the activities of small, medium, and large firms, containing detailed information about firm characteristics and beliefs, which allows us to examine the heterogeneity of tax evasion extensively.

The results show that around one-quarter of firms report evading taxes and evasion rates vary substantially on only a relatively small number of dimensions. The "double" list experiment produced internally consistent estimates of around 26 percent (varying from 25 to 27 percent) of firms admitting to not paying all the taxes they are required to pay (which is an extensive margin estimate of tax evasion). This result is almost identical across both experiments, which provides considerable reassurance of its accuracy, and it represents a lower bound estimate as it is based on self-reported tax evasion, which is likely to be lower than actual tax evasion. We use machine learning to identify, among an extensive set of firm characteristics, the dimensions in which substantial and consistent variation in tax evasion exists. This revealed that firms that do not export, face substantial competition from the informal sector, and believe tax administration is a major obstacle to their business activities are the most likely to evade taxes. There was limited variation across both list experiments in reported tax evasion based on other dimensions, highlighting just how widespread this behavior is.

These results provide important insights into how common tax evasion is among firms and the specific firm characteristics and beliefs most associated with evading tax. Many challenges associated with firms evading taxes in Indonesia are similar to those in other

tax evasion reported.

middle-income countries where tax revenue to GDP has remained stubbornly low (Alm, 2019; Basri et al., 2021). This study is particularly valuable for revenue authorities in these settings that face sizable challenges in accurately estimating levels of tax evasion and identifying non-compliant taxpayers. The results show that substantially more revenue could be collected if the government increased compliance by registered firms.[2] This study may also assist revenue authorities with their compliance activities by identifying the dimensions where the most significant heterogeneity exists in tax evasion between firms. For example, the higher rates of tax evasion among non-exporting firms suggest that many firms may perceive that the revenue authority lacks third-party information about economic activities that do not cross international borders. Furthermore, the notably higher rates of tax evasion by firms that see tax administration as a major obstacle to their business activities provide suggestive evidence that efforts to simplify the tax system may lead to increases in compliance.

This study contributes to two strands of the existing literature about tax evasion by firms and methods for surveying sensitive topics. Regarding research about tax evasion by firms, we make three main contributions. First, we focus on measuring levels of tax evasion in a middle-income country in a novel way compared to previous studies that have typically relied on tax administrative data for a subset of firms (e.g., see Pomeranz, 2015; Carrillo et al., 2017; Basri et al., 2021; Waseem, 2022; Waseem, 2023; Artavanis et al., 2016)[3] or survey questions that either directly ask about compliance or focus on tax morale (both of which are likely to underestimate tax evasion) (e.g., see Ali et al., 2014; Luttmer and Singhal, 2014; Hoy, 2022). Secondly, our focus is on the tax compliance behavior of almost exclusively domestically owned firms,[4] as opposed to multi-national firms, which have received far

[2]However efforts by the authorities to increase compliance could raise the incentives for firms to remain informal.

[3]Some of these studies draw solely on tax administrative data to estimate evasion among taxpayers close to thresholds or between different sectors. While this work provides incredibly valuable insights into tax evasion among specific subsets of firms, it is rarely generalizable to all registered firms.

[4]Only 97 of the 2,955 firms were foreign owned. As such we refer to the survey sample as effectively being solely domestically owned firms.

more attention in the recent literature (e.g., see Tørsløv et al., 2023) and can evade taxes in unique ways (such as transfer pricing across countries). Thirdly, by implementing a double list experiment as part of the WBES, we have far more comprehensive data about firm characteristics to examine heterogeneity than prior studies. It is worth noting that while there has been rapid growth of work examining ways to increase tax compliance (primarily through using behavioral science), these studies have not focused directly on measuring tax evasion (instead, they aim to improve compliance through multiple channels, such as increasing the salience of deadlines) (e.g., see Suharnoko et al., 2020; Mascagni, 2017 and Hoy et al., 2024).

Concerning survey methodology, this work contributes to the literature on how indirect elicitation methods can be used to provide a more accurate depiction of sensitive topics in surveys (see discussion about these approaches in Ahlquist, 2018, Blair and Imai, 2012, Imai, 2011 and Rosenfeld et al., 2016). While traditional single list experiments have been used in an array of studies on different topics in low- and middle-income countries (e.g., see Chuang et al., 2021; Blair et al., 2014; McKenzie and Siegel, 2013; Karlan and Zinman, 2012), the use of double list experiments is still in a nascent stage. We add considerable value to this line of inquiry by implementing one of the most extensive double list experiments to date (see Yang and Moerenhout, 2024 for an example of a large-scale single list experiment in a middle-income country) and collecting data from a nationally representative sample so that inferences can be made about the general population. In addition, this is the first study to apply the double list experiment approach to tax evasion of firms (single list experiments examining tax evasion include Genest-Grégoire et al., 2022, Heide-Jørgensen, 2022 and Iraman et al., 2022). Furthermore, to the best of our knowledge, this is the first study to combine the use of a double list experiment and machine learning algorithms to extensively examine variation in levels of the sensitive item among subgroups of respondents.

This paper is structured as follows. Section 2 provides details about the study's setting, Section 3 describes the data, and Section 4 explains the methodology used. Section 5 presents the findings, and Section 6 discusses the implications of the results. The Appendix

provides more details about the study's design and the analysis that was conducted.

2 Setting

Domestic revenue mobilization efforts in Indonesia lag many comparable countries. Between 2009 and 2019, Indonesia's revenue collection as a share of GDP was less than two-thirds of the average for countries in Emerging East Asia and less than half of the average for Emerging Market economies more generally. Even though reasonably similar tax policies are in place in some neighboring countries (e.g., the Philippines, Cambodia, and Malaysia), Indonesia collects several percentage points of GDP less in tax revenue. Moreover, Indonesia's revenue as a share of GDP exhibited a downward trend from a peak of around 20 percent in 2009 and falling to 15 percent of GDP by 2019 (World Bank 2024a; IMF, 2024). Weak tax compliance is often blamed for the country's relatively low and worsening revenue collection.

Taxes paid by firms constitute the primary source of government revenue and thus are essential for examining why relatively low tax revenue exists. Over the past three decades, taxes collected from firms (e.g., Corporate Income Tax (CIT) and Value Added Tax (VAT), among others) have gained increased significance in Indonesia's tax revenue composition. These taxes increased from 60 percent of total tax revenue in the 1990s to around 67 percent in the 2010s.[5] This has occurred concomitantly with a decline (around six percentage points) in the share of tax revenue collected in personal income taxes. Indonesia has a statutory CIT rate of 22 percent on business profits. Firms with gross annual revenue less than around US 3.2 million receive a 50 percent tax rate discount on the profits attributable to their first US 310,000 in gross revenue. When a firm is newly registered, it may be temporarily eligible for a simplified alternative scheme with a tax rate of 0.5 percent on gross revenues (rather than the CIT on profits). Firms are eligible so long as gross annual revenue is less than around US 310,000, and eligibility expires after 3 years for incorporated companies or 4 years for other registered businesses. Firms in the construction, real estate, shipping, and airline services

[5]IMF data and World Bank staff calculations.

sectors are also subject to special final tax rates on their gross turnover, instead of the CIT. There is a statutory VAT rate of 11 percent. There are various exempted or zero-tax-rated categories, including essential food, health, education, financial services, and exports. Participation in the VAT regime is only compulsory for firms with gross annual revenues of at least US 310,000, though smaller firms may voluntarily opt-in.

There is considerable evidence that incomplete tax compliance by firms is pervasive in Indonesia. Previous studies have found that nine out of ten firms were not registered with the revenue authority (Rothenberg et al., 2016), and that most registered firms reported zero net income and paid no income tax (e.g., Ikhsan et al., 2005). Audit data suggests that in some instances there is substantial misreporting between taxpayer self-declared liabilities and auditor-assessed liabilities among firms that do pay tax.[6] Moreover, such non-compliance seems exceptionally high among professional services corporations (Breuer et al., 2018). Recent World Bank (2024b) research has estimated Indonesia's combined CIT and VAT compliance gap at around 3.8 percent of GDP in lost revenues per year from 2016 to 2021. This includes losses due to deliberate or unintentional underpayment of businesses' tax obligations, such as the type of tax evasion focused on in this paper. More generally, a few studies have also estimated Indonesia's tax losses based on estimates of the informal economy. Tax losses are calculated by applying an average tax rate to this economic activity which is assumed to have remained outside the tax net. These studies have arrived at a wide range of tax-loss estimates, from 0.7 to 3.8 percent of GDP per annum (see Tatariyanto, 2014; Mulyawan, 2017; Nizar and Purnomo, 2011; Ramadhan, 2019; Indupurnahayu and Walujadi, 2019).

The revenue authority in Indonesia, the Directorate General of Taxation (DGT), has implemented many strategies to address low compliance by firms. Identification of unregistered firms includes drawing on data from business registries, licensing regimes, and banking

[6]Based on a joint World Bank and Directorate General of Taxation exercise conducted in 2017. It analyzed a sample of business tax returns, comparing income tax estimated by taxpayers with that estimated by tax auditors.