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Estimating Value Added Tax (VAT) and Corporate Income Tax (CIT) Gaps in Indonesia

Rong Qian, Grzegorz Poniatowski

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TABLE OF CONTENTS

Executive Summary 1

1. Introduction 3

2. Analytical framework and methodology 5

3. Results 10

- 3.1 VAT analysis 11
- 3.1 CIT analysis 16

4. Summary and Conclusion 20

Appendix One. Methodology and data used for VAT gaps' estimation 24

Appendix Two. Parameter estimation 27

Appendix Three. Methodology and data used for CIT gaps' estimation 28

Bibliography 31

Figures

Figure 1.1: VAT and corporate taxes on income and capital gains as percent of GDP (2002-22) 4
Figure 1.2: VAT and corporate taxes on income and capital gains as percent of GDP, cross-country comparison 4
Figure 2.1: Sources of forgone revenue 6
Figure 2.2: Components of the NIR 7
Figure 2.3: Core methodologies used for tax gap estimation 8
Figure 3.1: VAT C-efficiency in Indonesia (2016-21) 11
Figure 3.2: C-efficiency and VAT revenue-to-GDP ratios (2019) 11
Figure 3.3: VAT compliance gap (2016-21) 12
Figure 3.4: VAT compliance gap and VAT revenue in Indonesia (trillions of IDR) (2016-21) 12
Figure 3.5: VAT compliance gap in Indonesia and selected other middle-income countries (2019 or most recent available data) (% of the VTTL) 12
Figure 3.6: VAT/GST compliance gap in selected high-income countries (2021 or most recent available data) (% of the VTTL) 13
Figure 3.7: Total VAT compliance gap in the EU (2000-21) (% of the EU-wide VTTL) 13
Figure 3.8: Composition of the VTTL (%, average) (2016-21) 14
Figure 3.9: Changes in VAT compliance gap and real GDP growth (2017-21) 14
Figure 3.10: VAT policy gap in Indonesia (2016-21) 15
Figure 3.11: Core components of the VAT policy gap (2021) 15
Figure 3.12: CIT collection efficiency (2016-21) 17
Figure 3.13: CIT revenue and revenue potential (trillions of IDR) (2016-21) 17
Figure 3.14: CIT compliance gap and CIT revenue in Indonesia (trillions of IDR) (2016-21) 18
Figure 3.15: CIT compliance gap (2016-21) 18
Figure 3.16: CIT policy gap in Indonesia (2016-21) 19
Figure 3.17: CIT policy gap and its components (% of GDP) (2021) 19
Figure 4.1: Contributions to changes in VAT revenue (year-over-year, 2017-21) 22
Figure 4.2: Contributions to changes in CIT revenue (year-over-year, 2017-21) 22

Tables

Table 4.1: Summary results (average 2016-21) 21

Boxes

Box 3.1: The VAT compliance gap in advanced economies 13

Abbreviations

AFT	Alternative Final Tax
BPS	Badan Pusat Statistik
C-NTB	Current-Year Net Tax Base
C-TB	Curremt-Year Tax Base
CIT	Corporate Income Tax
FAP	Financial Accounting Profit
GFCF	Gross Fixed Capital Formation
GOS	Gross Operating Surplus
HHC	Household Consumption
IC	Intermediate Consumption
MoF	Ministry of Finance
NIR	Notional Ideal Revenue
NPISH	Non-Profit Institutions Serving Households
SFA	Stochastic Frontier Analysis
SUT	Supply and Use Tables
TB	Tax Base
THL	Tax Harmonization Law
TTL	Total Tax Liability
VAT	Value Added Tax
VTTL	VAT Total Tax Liability
WAR	Weighted Average Rate

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Abstract

Despite their subdued collection efficiency, VAT and CIT are the main sources of government revenue in Indonesia. The sources of the forgone revenue in VAT and CIT remained largely unknown. This paper aims to close this knowledge gap. It finds that the gaps in VAT and CIT accounted for 6.4 percent of GDP on average between 2016 and 2021. Overall, non-compliance had a larger impact on the tax gap—contributing to 58 percent of total forgone notional revenue from these tax instruments. The compliance gaps are very high compared to international peers. They have increased considerably in 2020, likely caused by the economic consequences of the COVID-19 pandemic, resulting in higher incentives to evade and defer tax payments. Despite some decline observed in 2021, the compliance gaps remained elevated compared to the pre-pandemic period. The policy gaps are relatively smaller but also contributed to significant revenue loss. The policy gaps have declined because of the deflation of nominal thresholds, reducing the scope of concessions in the VAT and CIT systems for small and medium-size companies.

EXECUTIVE SUMMARY

This note presents the results of the analysis of Value Added Tax (VAT) and Corporate Income Tax (CIT) compliance and policy gap estimates in Indonesia between 2016 and 2021. The objective of the study is to quantify the magnitude of the tax gaps and to identify drivers behind the low efficiency of collection of the two main sources of tax revenue.

Top-down approaches based on national accounts were used to estimate the tax gaps. To derive the VAT gap using the top-down consumption-side approach, the VAT Total Tax Liability (VTTL) was estimated as the sum of the liability from five main components: final consumption by households, government, and non-profit institutions serving households, intermediate consumption, and gross fixed capital formation using primarily national accounts' use table. The CIT gap was estimated using the International Monetary Fund's (IMF) Revenue Administration Gap Analysis Program framework. This top-down approach uses data from national accounts' gross operating surplus (GOS) and makes appropriate adjustments to reflect conceptual differences between the GOS and CIT base.

The estimated gaps in VAT and CIT accounted, on average, for 6.4 percent of GDP or IDR 944 trillion between 2016 and 2021. The estimates of the policy gap are consistent with the government estimates of tax expenditures. Nevertheless, they are somewhat higher indicating that tax expenditures (that is, the actionable policy gap) account for only a fraction of the overall policy gap. The estimates of the compliance gaps are higher than the available estimates of the share of the underground economy. This indicates that informality is a predominant factor but not the only driver of tax non-compliance.

Compliance gaps have followed a sideways trend during the studied period whereas the policy gaps have declined. The compliance gaps increased considerably in 2020, which was likely caused by the economic consequences of the COVID-19 pandemic, resulting in higher incentives to evade and defer tax payments. In 2021, the compliance gaps have declined and the fast revenue growth in 2022 and 2023 suggests there has been further improvement in taxpayer compliance in recent years. The policy gaps have declined because of the deflation of nominal thresholds, thereby reducing the scope of concessions in the VAT and CIT systems for small and medium-size companies.

Non-compliance had a larger impact on theoretical VAT and CIT revenue than the policy decisions. CIT and VAT compliance gaps contributed to 58 percent of total forgone notional revenue. Non-compliance ratios are very high compared to Indonesia's regional peer countries and in a broader international comparison. The policy gaps are found to be relatively modest. The major source of forgone revenue due to policy decision in VAT was the non-taxability of unprocessed food products, education, health services, and hospitality services. The main components of forgone revenue in CIT from policy decisions were the exemption for companies with turnover below IDR 4.8 billion and the rate discount for companies with turnover below IDR 50 billion.

Due to large compliance gaps and alternative tax regimes to VAT and CIT, the value of the policy gaps needs to be interpreted with caution. Small companies and many service providers are currently taxed at lower effective rates. As non-compliance among these taxpayers is likely very high, to reduce markedly this component of the policy gap, the compliance gap would need to be addressed in parallel. Moreover, the sectors and types of companies subject to lower CIT and VAT tax burden are largely subject to alternative regimes (for example, Alternative Final Tax (AFT) or local tax on hospitality services). If these taxpayers were brought under the umbrella of CIT and VAT, the alternative regimes would need to be discontinued or their scope would need to be narrowed to avoid double taxation. In consequence, the impact of such a policy change on total tax revenue would be lower than the value of the estimated CIT and VAT policy gaps.

Relatively high thresholds for VAT and CIT (of IDR 4.8 billion) contributed to the large size of both compliance and policy gaps. The scale of the overall estimates confirms other evidence of the threshold's substantial impact on tax revenue. Firstly, a relatively large proportion of taxpayers outside the VAT and CIT regime below the threshold contributes to the relevant policy gaps. Secondly, companies below the threshold are subject to simplified reporting and less scrutiny, which likely increases taxpayer non-compliance. Moreover, this large cliff in the system incentivizes and facilitates bunching. Lowering the threshold as well introducing legal prohibition of bunching could narrow the VAT and CIT gaps.

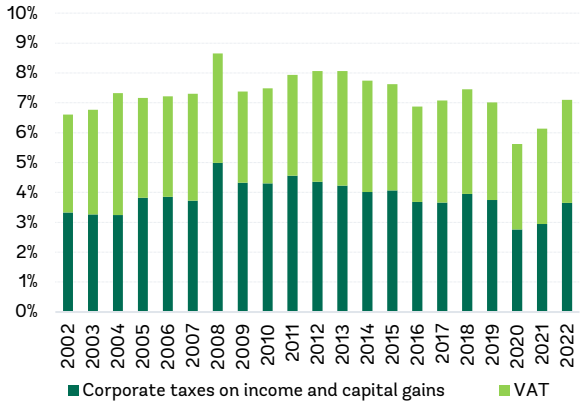
1.c INTRODUCTION

Indonesia significantly underperforms in tax revenue collection. Its tax revenue-to-GDP ratio is among the lowest in the world at just 9.1 percent in 2021. This level is markedly lower than that of other regional middle-income countries such as Cambodia (18.0 percent), Malaysia (11.9 percent), Philippines (15.2 percent), Thailand (15.7 percent), and Viet Nam (14.7 percent).[1] Furthermore, Indonesia has experienced a concerning negative trend in tax revenue-to-GDP ratio over the past decade. In comparison to the ratio observed ten years ago, the 2021 figure reflects a decline of approximately 2.1 percentage points. The COVID-19 crisis compounded this issue, resulting in a sharp drop to 8.3 percent of GDP in 2020.

Value Added Tax (VAT) and Corporate Income Tax (CIT), the main sources of tax revenue, perform below their potential. In 2021, CIT and VAT accounted for about 66 percent of total tax collection, equivalent to about 6 percent of GDP (Figure 1.1). Although VAT and CIT were more productive[2] than other tax instruments, the revenue generated from VAT and CIT remains relatively low compared to Indonesia's structural and regional peers (see Figure 1.2).[3] This can be attributed to a combination of factors, including low compliance, a relatively low effective tax rate, and a narrow tax base.

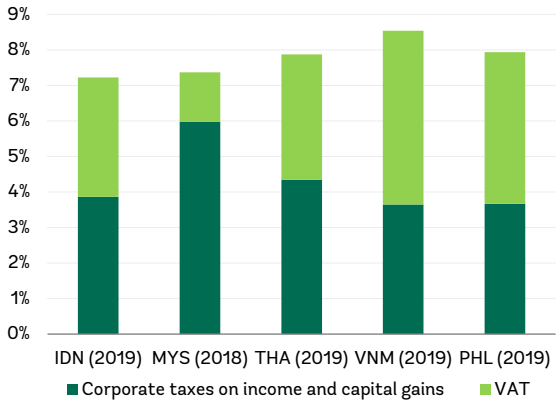
1. IMF, Article IV country reports.
2. Understood as revenue-to-GDP ratio.
3. The group of structural and regional peers used in this report includes Cambodia, Malaysia, Philippines, Thailand, and Viet Nam. Two countries in this group (Malaysia and Thailand) are classified as upper middle income, whereas three of them (Cambodia, Viet Nam, and the Philippines) are classified as lower middle income. Despite structural and geographical similarities, CIT and VAT systems and tax collection efficiency in those countries are somewhat differentiated which allows for informative comparisons.

Figure 1.1: VAT and corporate taxes on income and capital gains as percent of GDP (2002-22)



Source: Own elaboration based on data from OECD, BKF (2023), and BPS.

Figure 1.2: VAT and corporate taxes on income and capital gains as percent of GDP, cross-country comparison



Source: UNU-WIDER.
Note: IDN stands for Indonesia, MYS for Malaysia, THA for Thailand, VNM for Viet Nam, and PHL for Philippines.

Existing estimates suggest that Indonesia's tax collection efficiency[4] is below that of peers and the tax gap (forgone revenue) is rising. Stochastic Frontier Analysis (SFA), which links a set of country characteristics tax-to-GDP, was used to estimate Indonesia's overall tax gaps. The SFA shows that Indonesia's tax collection efficiency is below that of peers and the tax gap is rising. Indonesia's efficiency score, averaged since 2015, is among the lowest in the selected sample of middle-income countries and has been declining over time. This has translated into a growing distance to the frontier, estimated at about 6 percentage points of GDP for 2018, however, this analysis provides only an approximation of Indonesia's tax gap using a cross-country approach. It does not provide analysis by type of tax or by type of gap (compliance or policy gap) (World Bank 2021).

The government has taken steps to enhance tax revenue collection through the passing of a Tax Harmonization Law (THL) in October 2021. The government increased the VAT standard rate and eliminated certain exemptions. In addition, the previously regulated CIT rate reduction has also been cancelled. The implementation of THL is expected to boost tax revenues by an estimated 0.7 percent to 1.2 percent of GDP per annum from 2022 to 2025 (World Bank 2021). Despite these efforts, tax collection in Indonesia still faces challenges and needs further improvement.

To further improve tax collection, it is important to understand the extent and nature of the forgone revenue. This note aims to quantify the magnitude of the tax gap and to identify drivers of tax gaps by examining the compliance and policy gaps in VAT and CIT between 2016 and 2021. It provides a comprehensive analysis of forgone revenue in VAT and CIT, considering all forms of non-compliance and policy gaps. This information can be used to develop and tailor measures to improve tax collection and reduce revenue loss.

The note is structured into four sections. Following this introduction, Section Two discusses a summary of the analytical framework and methodology used in the analysis. Section Three discusses the findings of overall collection efficiency, compliance and policy gaps analysis for VAT and CIT. Section Four provides a summary and concludes the report. Detailed methodological considerations and approach are presented in the appendixes.

4. Ratio of actual to notional revenue—that is, the revenue that would be collected if the entire theoretical base was taxed and all taxpayers were fully compliant.

2C

ANALYTICAL FRAMEWORK AND METHODOLOGY

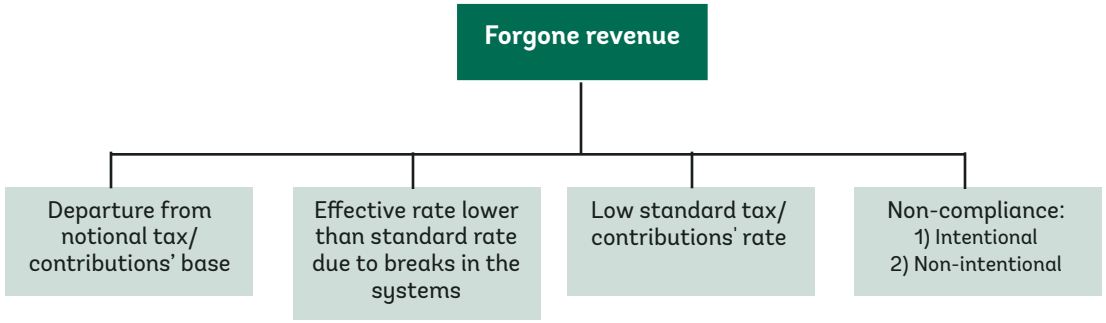
The sources of forgone tax revenue could be linked to the three factors defining revenue in all taxes and contributions—that is, tax/contributions' base, effective rate, and compliance rate (1):

Tax revenue = tax base x effective rate x compliance ratio (1)

The tax base—the total amount of income, property, assets, consumption, transactions, or other economic activity subject to taxation by a tax authority—is one of the factors behind the tax revenue. The departure of the actual base from the notional one covering the entire base could, therefore, be an element of the forgone revenue (see Figure 2.1). It also constitutes one of the elements of the so-called policy gap. Another factor in the revenue equation (1) is the effective rate—that is, the true mean rate applicable on the entire or certain parts of tax base. This rate is determined by the standard rate and tax/contributions expenditures in the form of exemptions, rate reductions, increased allowances, and tax holidays, among others. The latter component is also considered as a part of the policy gap. Finally, the revenue depends on the compliance ratio and the compliance gap.

The compliance gaps refer to all sources of noncompliance, including underreporting, evasion, fraud, insolvencies, bankruptcies, administrative errors, and legal tax optimization. This broad approach ensures that all sources of forgone revenue are considered. Similarly, the policy gaps are a comprehensive measure of forgone revenue from the departure of the tax base from the notional one and the difference between the effective and standard statutory rate. The gaps

Figure 2.1: Sources of forgone revenue



Source: European Commission (2022).

are expressed in nominal terms and in relation to the tax potential. The compliance gaps are reported in reference to the total tax liability, which means the revenue that would have been collected if everyone had fully complied with tax laws. On the other hand, the policy gaps are referred to as the Notional Ideal Revenue (NIR) which assumes full compliance and the entire notional tax base taxed at the standard rate.

The tax compliance gap is the difference between the tax revenue that would be collected in the case of full compliance (assuming an unchanged tax base)—referred to as the Total Tax Liability (TTL)—and the actual revenue. Most often, the compliance gap is expressed in absolute terms (2) or in relation to the benchmark—that is, in relation to the TTL (3):

$$\textit{Tax compliance gap} = \textit{TTL} - \textit{tax revenue} \quad (2)$$

$$\textit{Tax compliance gap (\%)} = \frac{\textit{TTL} - \textit{tax revenue}}{\textit{TTL}} \quad (3)$$

To assess the relative impact of reduced rates, exemptions, and other tax breaks on revenue losses, the liability according to the tax law needs to be compared with the potential revenue that could be collected in a tax system with a uniform rate and the broadest possible base. This benchmark—the NIR—is the revenue that would be collected if the standard rate was applied to the entire base. The difference between the NIR and the TTL is the tax policy gap. The difference between the two concepts is equivalent to revenue losses from applying reduced rates and exemptions, while referring to potential revenue rather than to actual collections. In other words, the policy gap is an indicator of the additional revenue that could be collected under the assumption of perfect tax compliance and maximally broad tax base. The policy gap can be expressed in absolute (4) or in relative terms (5):

$$\textit{Tax policy gap} = \textit{notional ideal revenue} - \textit{TTL} \quad (4)$$

$$\textit{Tax policy gap (\%)} = \frac{\textit{(notional ideal revenue} - \textit{TTL)}}{\textit{(notional ideal revenue}} \quad (5)$$

Importantly, tax policy gap measures may differ from tax expenditures. Firstly, the benchmark or taxable income for estimating tax expenditure is often narrower than the NIR. Secondly, the policy gap is a simpler measure that: (i) does not account for revenue compensation from other taxes (as, for instance, Regional Tax that substitutes VAT on certain services and the Alternative Final Tax (AFT) for firms below the threshold); (ii) includes negative expenditures (these variations increasing the revenue compared to the standard statutory treatment); and (iii) does not account for the economic effects of counterfactual changes in tax burden (that is, the tax base may change if some tax incentives are removed). It is also important to note

that the policy gap is a proxy of forgone revenue while assuming perfect taxpayer compliance. In other words, the revenue gains from decreasing the policy gaps could only materialize if the compliance gap was addressed in parallel. Moreover, the policy gap is calculated under the assumption of no behavioural changes, as a decrease in the overall volume of consumption and adjustments of consumption baskets would be observed if the effective tax rates were shifted upwards.

The tax expenditures underlying the policy gap shall not be treated as undesirable per se as they could allow meeting other fiscal objectives of the tax system. Nonetheless, the cost of these expenditures could outweigh the benefit so, in addition to quantifying forgone revenue, the governance of tax expenditures should also include measures to assess their efficiency and equity.[5] Otherwise, the proliferation of tax expenditures could have negative consequences, hindering the mobilization of resources necessary for governments to provide public goods and services. Moreover, unequal treatment resulting from the proliferation of exemptions could create various disincentives for taxpayers and complicate the system—thereby, deterring enforcement of tax compliance.

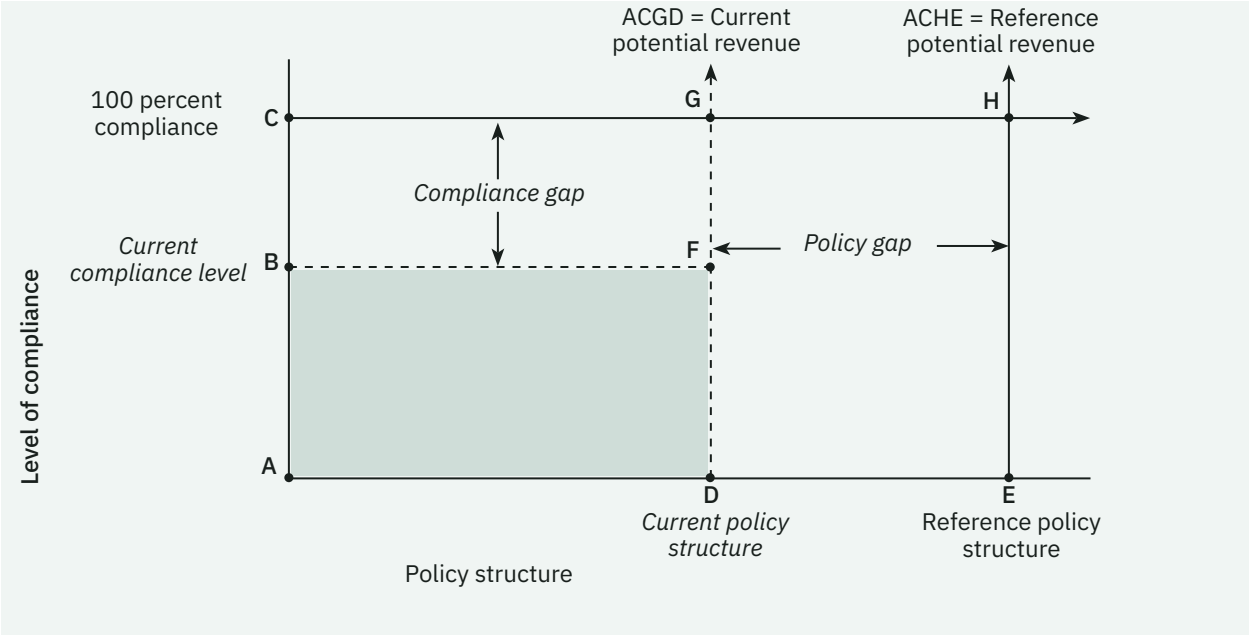
There is a relationship between the gaps and the reference values used for their calculation. The difference between the NIR (100 percent compliance and reference policy structures) and the receipts is the sum of the policy and compliance gaps, which accounts for all revenue losses in a given tax system (see Figure 2.2).

A measure that could be used as a proxy of both the VAT compliance and the policy gap is C-efficiency. C-efficiency is an indicator of the departure of the VAT from a perfectly enforced tax levied at a uniform rate on all consumption. It is expressed as:

$$CE = \frac{VR}{tC} \qquad (6)$$

where, *VR* stands for VAT revenue, *t* for statutory standard rate, and *C* for final consumption (net of VAT). The values of the measure could range from zero to one, however, values larger than 65 percent are rarely observed (see Keen 2013). Even in a utopian situation of full compliance and a flat

Figure 2.2: Components of the NIR



Source: IMF (2017).

5. See, for example, World Bank (2011) that analyzes the distibutional impact of the reduction of the policy gap in Indonesia envisaged under the reforms carried out in 2021-22.

rate system, C-efficiency should be considerably lower than one as domestic final consumption in the denominator of C-efficiency is broader than the actionable VAT base. Domestic final consumption, which is the core of the notional VAT base, includes components that cannot be taxed. The list of elements that are difficult or impossible to tax includes government and consumption by non-profit institutions serving households (NPSIH)—like imputed consumption of public education services which are largely untaxed.

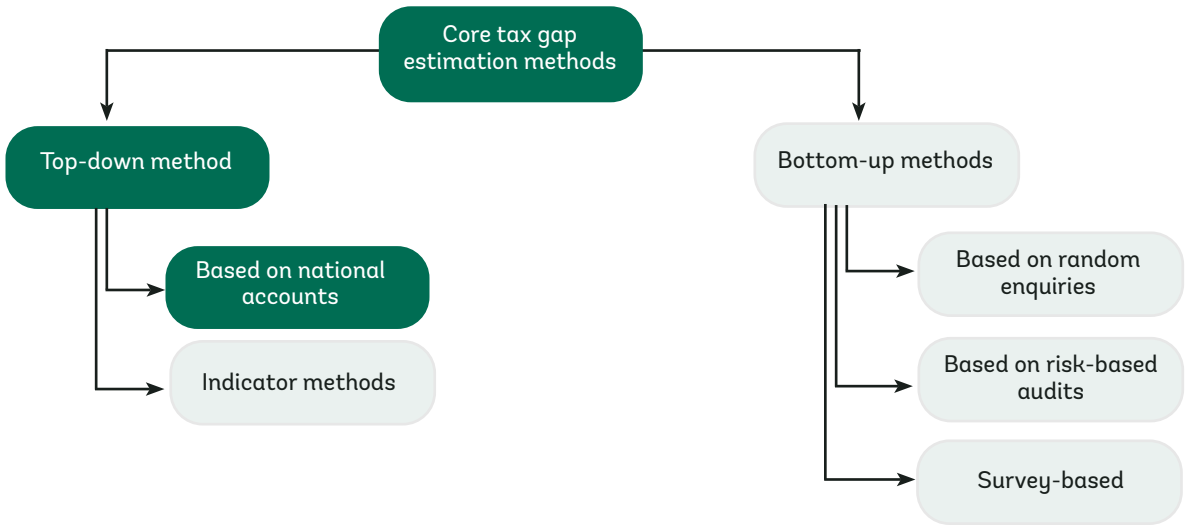
In contrast to the C-efficiency that is a broadly accepted measure for VAT, there is no harmonized approach to measuring efficiency of CIT collection. More specifically, there is no commonly accepted benchmark for CIT base. For this purpose, we define a broad reference base, which covers all sources of income of all incorporated businesses, while assuming the current depreciation schedule and the rules of loss carry forward in the reference tax base.

The World Bank team investigated the potential application of different well-established methodologies for estimating the tax gap. The most common methods used to estimate the VAT and CIT gaps involve top-down approaches. These methods rely on national accounts which cover the full tax base and all productive activities. On the contrary, bottom-up approaches rely on data gathered by tax administrations—including audits, surveys, and enquiry programs. These data allow estimating non-compliance in VAT or CIT for specific taxpayer groups and types of non-compliance (see Figure 2.3).

Both the VAT gap and CIT gap analysis use top-down up approaches based on national accounts. The bottom-up methodologies that could serve as a complement or a substitute to top-down methods could not be implemented due to unavailability of sufficient quality audit results and granular information from tax returns. At the same time, the implementation of the top-down methods was possible thanks to the availability of national accounts data as a source of information on the tax base and the availability of detailed administrative and third-party data that are used for estimating parameters of the model.

In addition to relatively low data requirements, top-down approaches based on national accounts are considered to be accurate and consistent in

Figure 2.3: Core methodologies used for tax gap estimation



Source: World Bank staff elaboration.

time (European Commission 2022). Since national accounts are a complete source of information on all economic transactions and they are compiled using standardized methodologies that do not change from year to year, potential imprecisions to the estimates of the scale of the gap rarely impact the estimated trends. In contrast, the accuracy of bottom-up methodologies may change over time due to, as an example, changes in the audit selection process or the effectiveness of auditors. At the same time, bottom-up methodologies allow for the scrutiny of the sources and components of the compliance gaps, while the top-down approaches could often derive only the aggregate scale of the gap.

The method applied to the VAT gap analysis, the top-down consumption-side approach, is often used as an initial method to estimate VAT gaps thanks to relatively low data requirements (European Commission 2022). The alternative method, the production-side approach, could not be employed as it requires national accounts' statistics such as supply and international trade tables, which are not available. Moreover, a sectoral breakdown of VAT revenue statistics that would allow for a breakdown of the compliance gap by the sector of economic activity is not available.

The CIT gap was estimated using the IMF's Revenue Administration Gap Analysis Program (RA-GAP) framework. This top-down approach uses data from national accounts' gross operating surplus (GOS) and makes appropriate adjustments to reflect conceptual differences between the GOS and CIT base (Ueda 2018).

Aside from different methodologies used, the estimates of tax gap could also be differentiated by the treatment of tax collected through audit activities and assessed but not collected on time. The estimates presented herein show a net gap—meaning that they account for all revenue including late payments and VAT collected because of an audit. The estimates of a gross gap, containing only the liabilities paid on time, would be larger.

The precision of tax gap estimates based on top-down approaches primarily hinges on the accuracy of parameter estimates, reliability of data on the tax base (national accounts), and the alignment of tax revenue figures with information on the tax base. Of these elements, potential inaccuracies in parameter estimates and imprecisions in national accounts data could lead to somewhat inaccurate estimates of the scale, but usually have a minor impact on changes in the gaps over time. The latter element, the misalignment of tax revenue figures and tax liability estimates, typically affects the trend, while rarely impacting the scale of the gap over longer time frames. Such misalignment might be caused by late payments, varying pace of granting refunds and changing amounts of tax recovered by the audit function. The inaccuracy of the tax base data is often related to the difficulties in accounting for the underground economy, especially if tax records serve as a core source of information for compiling national accounts.

3.C RESULTS

3.1. VAT analysis

Over the core period of the analysis, the main parameters of the VAT system in Indonesia remained stable. Before the introduction of the 2021 THL (effective in April 2022) the standard VAT rate was set at 10 percent. While no reduced rates were in place, Indonesia has excluded relatively broad categories of goods and services from the VAT base or exempted them entirely. The VAT treatment of both 'non-taxable' and exempt categories remained the same, with the main difference between the two lying in the reporting and invoicing obligations. The list of exclusions and exemptions covered mining and drilling (except coal mining); agricultural products/staple foods (for example, rice, grain, eggs, salt); electricity (for connections below 6,600 watts); domestic public transport; health care; education; employment services; and margin-based financial services. Following the destination principle, exports are 'zero-rated' (that is, exempt with no right to deduct). The VAT registration threshold since 2014 has been set at a relatively high value of IDR 4.8 billion (US$320,000 in 2021).

VAT C-efficiency

Indonesia's estimated ratio of actual VAT revenue to notional potential VAT revenue was 52.8 percent in 2021 and also averaged 52.8 percent between 2016 and 2021. This suggests that if addressing the entire compliance and policy gap was possible and desired, the country could nearly double its current VAT receipts.[6] Over the last decade, C-efficiency followed a downward trend (see Figure 3.1). From 2016 to 2018, C-efficiency[7] showed slight improvement, however, it continued

6. Assuming no impact of the increased VAT burden on the value of the tax base.
7. C-efficiency ratio is the most commonly used indicator for evaluating the revenue performance and overall efficiency of the VAT system. It is simply the ratio of actual revenues to theoretical revenues from a perfectly enforced tax levied at a uniform rate on all consumption (Ueda 2017).

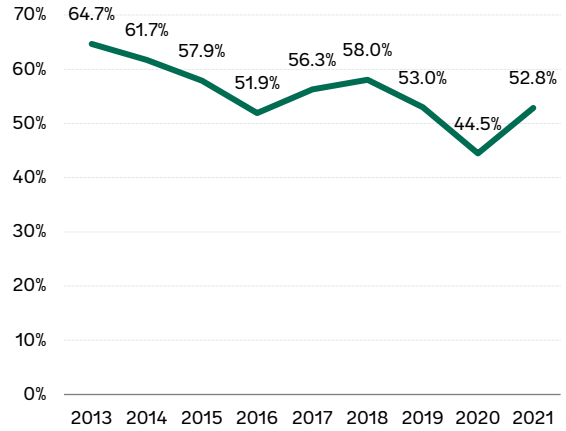
to decline after 2018, reaching a low of 44.5 percent in 2020. The decrease in C-efficiency in 2020 was primarily caused by the introduction of deferrals and late payments resulting from the COVID-19 crisis.[8]

Indonesia's C-efficiency was consistently below the average of its structural and regional peers. In 2018, when C-efficiency reached a short-term peak at 58 percent, it was still 1 percentage point below the average of developing Asian countries (Gupta and Jalles 2022). In 2019, however, when comparable data was available, Indonesia's VAT C-efficiency ratio was about 17 percentage points lower than the average of its regional peers. This is reflected in VAT revenue accounting for only 3.4 percent of GDP—which was nearly one percentage point below the average of its regional and income peers (Figure 3.2). For instance, Thailand, which operates a VAT system with similar scope of exemptions, and policy gap size, has a C-efficiency of 76.7 percent and VAT revenue-to-GDP ratio of 4.7 percent, despite a substantially lower standard statutory rate. This suggests that Indonesia is experiencing relatively significant amounts of forgone revenue due to non-compliance.

VAT compliance gap

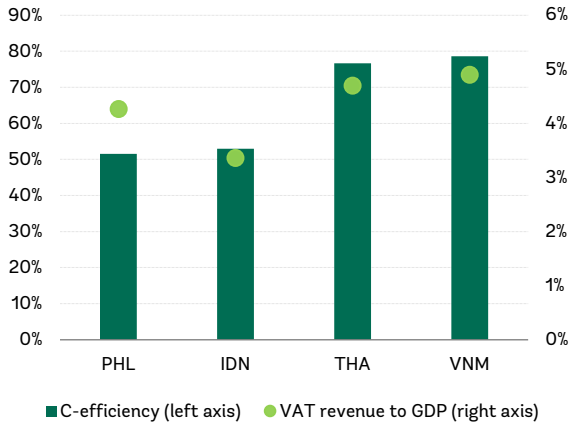
Between 2016 and 2021, the average VAT compliance gap accounted for 43.9 percent of the VTTL or 2.6 percent of GDP (Figure 3.3). In nominal terms, the compliance gap amounted to an average of approximately IDR 386 trillion for the same period (Figure 3.4). In 2020, forgone revenue due to non-compliance was relatively the largest reaching 50.7 percent of the VTTL or IDR 463 trillion, equivalent to over 102 percent of actual VAT receipts.[9] The estimated VAT compliance gap fluctuated over the analyzed period ranging from 39.5 percent in 2018 to 50.7 percent of the VTTL in 2020. Between 2016 and 2018, the compliance gap as a percentage of VTTL declined by 5.6 percentage points, however, in 2019, the trend reversed where the compliance gap increased to 43.6 percent. In 2020, the estimated compliance gap increased further by 7.1 percentage points—reaching 50.7

Figure 3.1: VAT C-efficiency in Indonesia (2016-2021)



Source: World Bank staff calculation.

Figure 3.2: C-efficiency and VAT revenue to GDP ratios (2019)



Source: World Bank staff estimates.
Note: IDN stands for Indonesia, THA for Thailand, VNM for Viet Nam, and PHL for Philippines.

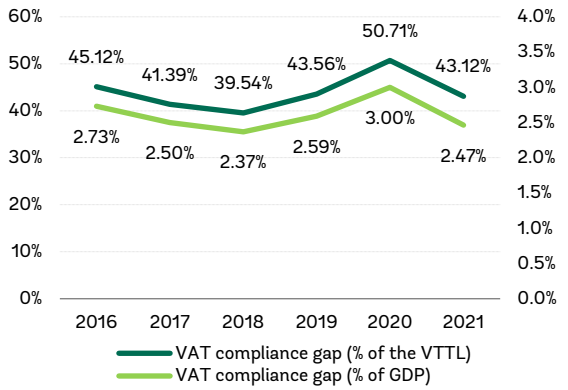
8. The estimates use cash-based rather than accrual-based revenue.
9. The relatively high level of compliance gap in 2020 is likely contributed by the unavailability of information to control for deferrals and late payments. As a part of the stimulus measures, Indonesia allowed for six months of import VAT payments to be deferred in 19 manufacturing sectors. Tax debt payments, including VAT debt, were delayed up to six months for micro loan credit for businesses affected by COVID-19 (see https://kpmg.com/xx/en/home/insights/2020/04/indonesia-government-and-institution-measures-in-response-to-covid.html). Later payments of VAT liability could also result from the liquidity problems of the businesses affected by the pandemic but not covered by the stimulus package.

percent. This increase can be attributed to the economic consequences of the pandemic, as well as the challenge to control for deferred VAT payments in this calculation. When the economic situation improved in 2021, the compliance gap fell by 7.6 percentage points—down to 43.1 percent of the VTTL.

A steep increase in VAT revenue in 2022 suggests that the VAT compliance gap has further declined. In 2022, VAT revenue went up by approximately 25 percent year-to-year and the accumulated two-year growth between 2020 and 2022 amounted to approximately 53 percent. At the same time, the VAT base proxied by household final consumption increased at a much slower pace (about. 10 percent compared to 2021 and about 14 percent compared to 2020). Despite the upward shift of the statutory VAT rate from 10 to 11 percent as of April 2022, relatively fast growth or revenue should be partially attributed to the increase in taxpayer compliance. It could be expected that the compliance gap fell in 2022 below the pre-pandemic level.

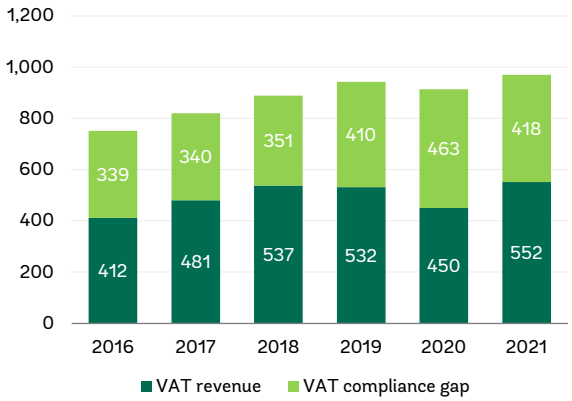
The VAT compliance gap in Indonesia was relatively high compared to its structural peers. While only limited middle-income countries and Indonesia's peers in the Asia-Pacific region undertake estimations of the VAT compliance gap and publish their estimates, the existing evidence suggests that Indonesia's performance is relatively weak. In fact, the estimated compliance gap for Indonesia (as a percentage of the VTTL), is significantly higher than the median in the region. More specifically, it falls among the 25 percent of the highest gaps observed in Asia and the Pacific as documented by the IMF's RA-GAP program, which covers data up to 2022 (Gupta and Jalles 2022). Moreover, Indonesia's VAT compliance gap surpasses that of the Philippines where the IMF estimated gap was 38 percent in 2015. It is also higher than the compliance gap observed in those other middle-income countries where reliable estimates of the compliance gap are publicly available (Figure 3.5).

Figure 3.3: VAT compliance gap (2016-21)



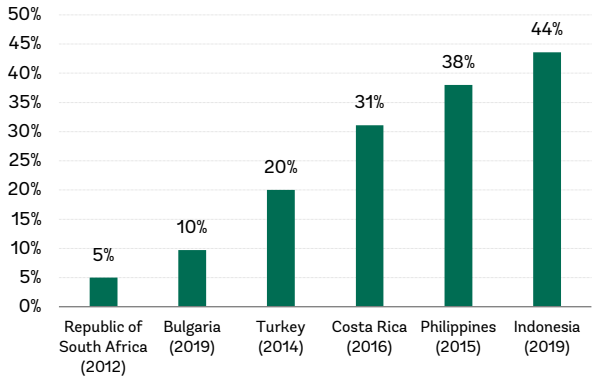
Source: WB staff calculation.

Figure 3.4: VAT compliance gap and VAT revenue in Indonesia (trillions of IDR) (2016-21)



Source: WB staff elaboration.

Figure 3.5: VAT compliance gap in Indonesia and selected other middle-income countries (2019 or most recent available data) (% of the VTTL)



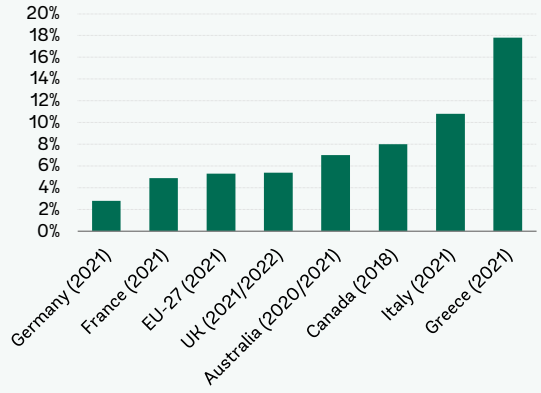
Source: World Bank staff calculation based on Canıkalp et al. (2016), IMF (2015), IMF (2018), OECD (2018), and European Commission (2022).

Box 3.1: The VAT compliance gap in advanced economies

The available estimates of the VAT compliance gap in high-income countries point to non-negligible losses of VAT revenue in these jurisdictions. The VAT compliance gaps in advanced economies typically range from 2 to 20 percent (Figure 3.6). This indicates that advanced economies also face taxpayer compliance challenges and complete sealing of the compliance gap is difficult, if not impossible. At the same time, there is broad evidence of success stories, where jurisdictions have much lower gaps than other comparators. Overall, more than one-half of the European Union (EU) member states recorded a compliance gap of below 5 percent of the VTTL in 2021.

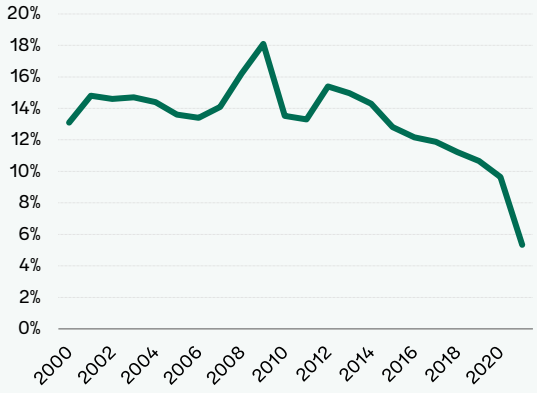
The evolution of the compliance gap in recent years in selected high-income countries also indicates that the compliance gaps are actionable. In 2009, the EU-wide compliance gap reached its peak of over 18 percent before reducing to 5.3 percent in 2021 (Figure 3.7). The increase in taxpayer compliance was accompanied by numerous reforms and efforts of tax administrations. For example, actions such as the introduction of domestic reverse charge, later replaced with the split-payment mechanism, the introduction of e-reporting, and increased penalties for fraud have contributed to a decrease in the VAT compliance gap in Poland from 24 percent in 2015 to under 10 percent in 2021.

Figure 3.6: VAT/GST compliance gap in selected high-income countries (2021 or most recent available data) (% of the VTTL)



Source: European Commission (2023), Canada Revenue Agency (2022), Australian Taxation Office. (https://www.ato.gov.au), HM Revenue & Customs (2023).

Figure 3.7: Total VAT compliance gap in the EU (2000-21) (% of the EU-wide VTTL)

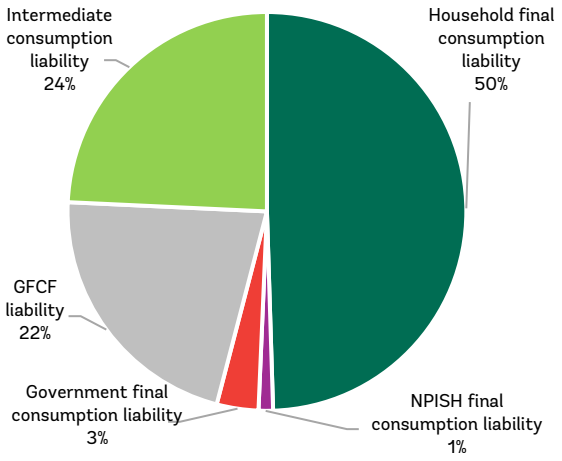


Source: Own elaboration based on European Commission (2023).

Non-deductible investment and intermediate consumption (where there is a large share of taxpayers without the right to deduct) contributed significantly to the VTTL (Figure 3.8).[10] On average, Gross Fixed Capital Formation (GFCF)—comprising household, public, and exempt sectors—accounted for 22 percent of the VTTL. This points to relatively frequent breaks in VAT chains that bring the VAT system closer to the turnover tax regime. Approximately 24 percent of the VTTL resulted from hidden VAT on intermediate consumption of goods and services that do not qualify for input VAT deduction. This includes purchases made by government entities, companies operating below the VAT registration threshold, the mining sector, food production, and agricultural industries. The primary contributor to the VTTL, however, was household final consumption—representing about 50 percent of the VTTL. On the other hand, government and NPISH final consumption, mainly through in-kind social transfers, accounted for a comparatively modest 4 percent of the VTTL in total.

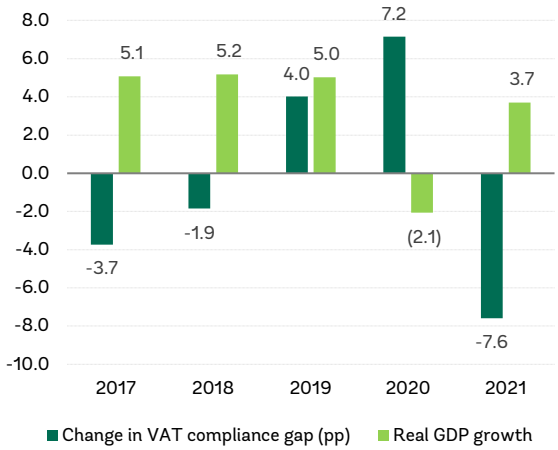
10. See Appendix One for the description of the VTTL components.

Figure 3.8: Composition of the VTTL (%, average) (2016-21)



Source: World Bank staff calculation.

Figure 3.9: Changes in VAT compliance gap and real GDP growth (2017-21)



Source: World Bank staff calculations.

Tax administration measures, alongside robust economic growth pre-pandemic, contributed to the decline in VAT non-compliance. The reduction of the VAT compliance gap in 2017 and 2018 can be attributed to the introduction of mandatory e-Invoicing which became applicable to all VAT-registered taxpayers from July 2016 onwards. Similar experiences in other countries indicate that improved access of tax administration to taxpayer information through digital reporting requirements increases voluntary compliance and strengthens enforcement measures.[11] At the same time, the decline of the compliance gap during this period coincided with favourable economic conditions, characterized by annual real GDP growth exceeding 5 percent (Figure 3.9). Robust economic growth plays an important role in bridging tax compliance gaps by mitigating business bankruptcies and improving firms' financial liquidity, thereby incentivizing for compliance. In 2020, however, the economic headwinds likely had an adverse impact and were among the primary reasons for the observed decline in VAT compliance during that year.

VAT policy gap

The VAT policy gap was relatively low, averaging 13.5 percent of NIR or 0.9 percent of GDP between 2016 and 2021 (Figure 3.10). This estimated value of the policy gap is in line with the estimates of tax expenditures (BKF 2023) at about 0.8 percent of GDP in 2021. The slightly higher value of the policy gap presented in this note (1 percent of GDP in 2021) is due to the broader notional tax base than the VAT benchmark set by BKF.[12] At the same time, the tax expenditure study does not calculate the impact of the "variations" that increase the revenue.[13]

The stability of the tax rates' system prior to the introduction of the THL resulted in a stable VAT policy gap over time. Changes in the economic structure–primarily driven by changes in household final consumption baskets and the share of companies falling below the statutory thresholds in

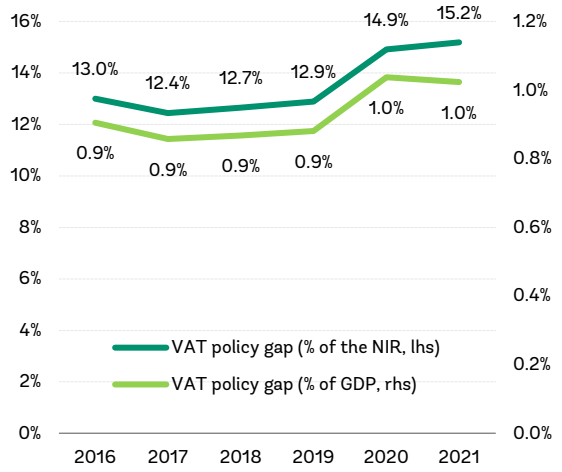
11. See European Commission (2022) on the analysis of the impact of digital reporting requirements in the EU, https://op.europa.eu/s/yKu6
12. See paragraph 11 for the relevant discussion.
13. Certain exemptions in VAT may increase VAT revenue as shown in Figure 3.9 and discussed below.
14. Changes in household final consumption baskets impact the share of exempt goods and services in the VAT base, which is one of the core drivers of the policy gap.

the system–led to fluctuations in the policy gap.[14] The slight increase in the weighted average rate (WAR)[15] observed up to 2020 can be attributed to changes in consumption patterns. Despite an overall decrease in household final consumption, the values of purchases of non-taxable staple goods showed an upward trend in 2020 and 2021. In 2021 another interesting pattern might be observed. The policy gap denoted as a percentage of the NIR increases, whereas the relation of the gap to GDP increases. This is due to the components of GDP growth, mainly driven by 'zero-rated' (that is, exempt with the right to deduct) exports (36 percent increase year to year).

The major sources of forgone revenue were non-taxability of financial and insurance services (1.9 percent of the NIR), private education and health services (1.7 percent of the NIR), and hospitality services (1.7 percent of the NIR) in 2020 (Figure 3.11).[16] Forgone revenue due to non-taxability or final taxation of food and agricultural products accounted for 1.4 percent of the NIR, equivalent to IDR 15 trillion. Similar revenue loss could be attributed to non-taxability of companies below the VAT registration threshold. Despite the relatively large share of companies below the threshold, forgone revenue was relatively low due to the prevalence of small companies in branches that predominantly provided non-taxable goods and services such as agriculture and hospitality services. Furthermore, the value of forgone revenue was partially mitigated by the inclusion of hidden, non-deductible VAT on inputs of small companies. In other words, since companies below the VAT registration threshold have no right to deduct, they contribute to the VTTL and VAT revenue by purchasing taxed goods and services.

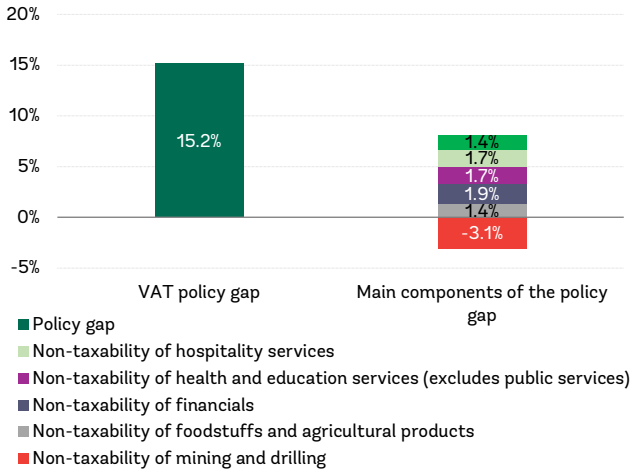
The non-taxability of mining and quarrying activities contributed to a decrease in the value of the policy gap by 3.1 percent of the NIR or 0.2 percent of GDP in 2021. This value has substantially declined due to the inclusion of coal

Figure 3.10: VAT policy gap in Indonesia (2016-2021)



Source: World Bank staff calculation.

Figure 3.11: Core components of the VAT policy gap (2021)



Source: World Bank staff elaboration.
Note: Due to the interdependence between non-deductible VAT and rate applied on intermediate use, components of the VAT policy gap are not cumulative.

15. Tax rate attributed to the entire household final consumption consisting of goods and services taxed at different rates.
16. In contrast to the estimates of tax expenditures, the calculation of the VAT policy gaps does not account for revenue from other taxes such as, for instance, Regional Tax.

mining under the standard VAT treatment as of the third quarter of 2020. The positive impact of non-taxability of mining and quarrying results from the fact that the output of this industry is used mostly as intermediate inputs. In such cases, when the final products and services are still subject to taxation but the input VAT cannot be deducted VAT cascades, hence mining and quarrying producers overpay the VAT—resulting in a decrease in the policy gap.

Compared to other middle-income and aspirational peers, Indonesia's VAT policy gap is relatively low, primarily due to relatively low expenditure on health, education, and financial services which typically remain untaxed in most VAT systems. For instance, in the EU , where the average policy gap is approximately 46 percent of the NIR, health, education, and financial services contribute about 21 percentage points to the gap. In contrast, these categories accounted for only 7 percentage points in Indonesia. The size of the policy gap in Indonesia is also influenced by the type of relief implemented—namely exemptions without the right to deduct input tax, non-taxability, or flat-rate taxation without the right to deduct input tax. Middle-income countries that rely heavily on reduced rates, such as Turkey (with a VAT policy gap above 40 percent) and South Africa (with a VAT policy gap of about 30 percent), tend to have higher gaps. The reduced rate applicable to goods sold for final use reduce liability on the entire chain (proportionally to the difference between the reduced and standard statutory rate). The exemptions without the right to deduct often have more moderate impact on the liability. This is because they create hidden VAT, which reduces the fiscal impact of exemptions while creating an undesirable cascading effect.

3.2. CIT analysis

Between 2016 and 2019, the CIT rate in Indonesia applicable to business income after adjusting for allowable deductions such as costs of materials, employment, depreciation, and losses carried over from previous years, was set at 25 percent. In 2020, the CIT rate was reduced to 22 percent. Stockmarket-listed companies ware entitled to a three-percentage point discount, whereas the businesses with annual turnover below IDR 50 billion were eligible to a 50 percent tax discount of the standard rate on taxable income on the part of gross turnover up to IDR 4.8 billion. During the period covered by this analysis incorporated businesses, standard businesses, and individual businesses could opt for the presumptive AFT regime. Importantly, from 2018 the rate applicable in this alternative regime was reduced, and, at the same time, firms' eligibility was now subject to sunset clauses.

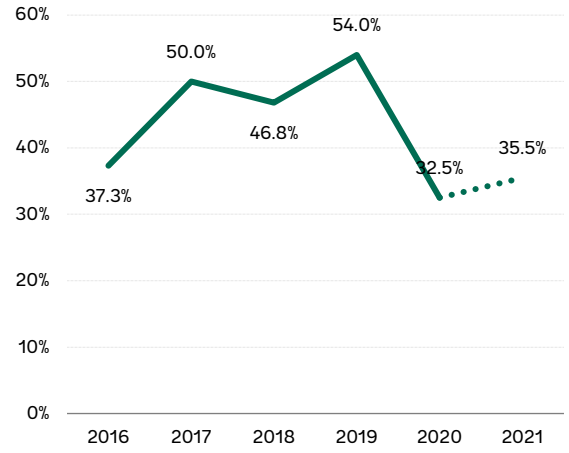
CIT collection efficiency

The estimated revenue potential for CIT was more than double the actual CIT revenue.[17] On average, the ratio of CIT revenue to the CIT potential, was about 42 percent between 2016 and 2021. In other words, if all incorporated businesses were fully compliant, CIT revenue would see a remarkable increase of over 130 percent.[18] The estimated revenue potential and collection efficiency exhibited volatility, primarily due to substantial year-over-year shifts in the components of financial profit accounting which are strongly influenced by economic conditions such as financial profits.

17. In line with the calculation of the CIT collection efficiency, the theoretical base for CIT assumes that all interpolated businesses are subject to the standard rate with the right to deduct the cost of all business expenses (under the current depreciation scheme) and could take advantage of the loss carry-forward.

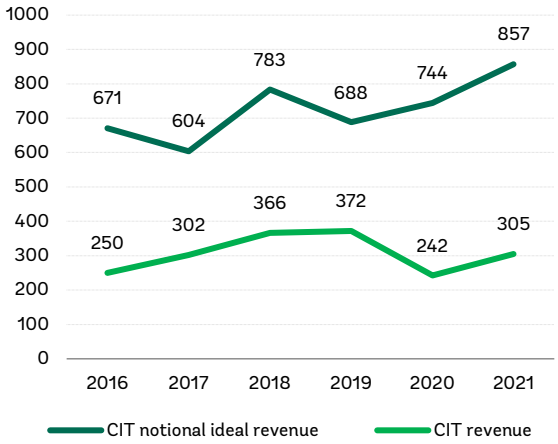
18. CIT revenue is defined as CIT payments and withholding taxes credited against CIT payments collected during the year (PPh Pasal 22 and PPh Pasal 23). The calculation does not account for the impact of the burden on the value of tax base. See more in Appendix Three.

Figure 3.12: CIT collection efficiency (2016-21)



Source: World Bank staff elaboration.
Note: Estimates for 2021 may be subject to larger imprecision due to data unavailability.

Figure 3.13: CIT revenue and revenue potential (trillions of Rp) (2016-21)



Source: World Bank staff calculation.

The collection efficiency increased sharply between 2016 and 2019 from 37.3 percent to 54 percent but declined rapidly in 2020 to 32.5 percent (see Figure 3.12). Despite all main components of the financial accounting profit and CIT base increasing in 2020, CIT revenue declined by about 35 percent (see Figure 3.13). This decline was partially related to the government's decision to allow a six-months postponement of CIT payments and the challenge of accurately controlling for late payments in this calculation.[19] Nevertheless, despite the economic backwinds in 2021, it is expected that collection efficiency improved only marginally.[20]

CIT compliance gap

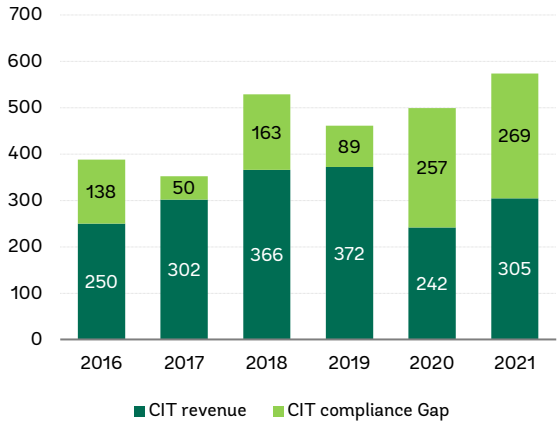
Between 2016 and 2021, the average CIT compliance gap accounted for about 33 percent of the CIT Total Tax Liability (CTTL), equivalent to 1.1 percent of GDP (Figure 3.15). In nominal terms, the average yearly forgone revenue due to non-compliance in CIT was about IDR 160 trillion (Figure 3.14). These estimates are broadly in line with the estimates of Anjariadi (2011) and the compliance ratio among audited companies (Al Rikabi 2018). Moreover, these estimates substantially exceed the estimates of the underground economy which is about 20 percent according to Medina and Schneider (2018).

The estimated CIT compliance gap fluctuated significantly between 14.2 percent (2017) and 51.5 percent (2020). During the pre-pandemic period it followed a sideways trend but increased significantly in 2020 and remained elevated also in 2021 (Figure 3.15). This hike was 30 percentage points due to the economic consequences of the pandemic as well as the challenge in controlling deferred CIT payments. The considerable fluctuations of the estimated CIT gap in other years could also result from misalignment in time

19. OECD (2020). The analysis of measures implemented by tax administrations in different countries shows that the majority of them provided additional time for taxpayers for dealing with tax affairs. These deferrals ranged from several weeks to several months and were both automatic and on request.

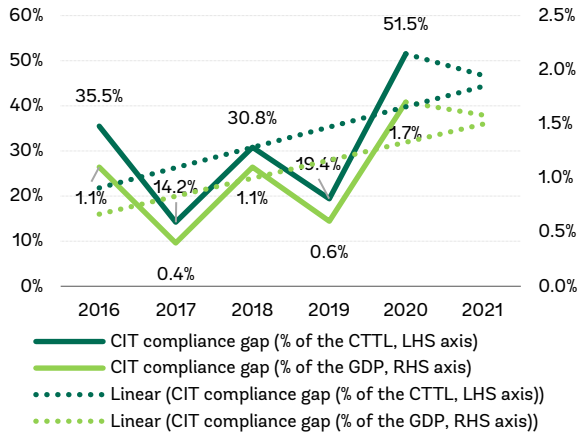
20. Estimates for 2021 may be subject to greater imprecision due to data unavailability. The value of GOS for 2021 was not available, thus it is projected using 2020 values and growth rates of GDP and intermediate consumption between 2020 and 2021.

Figure 3.14: CIT compliance gap and CIT revenue in Indonesia (trillions of IDR) (2016-21)



Source: World Bank staff calculation.
Note: Estimates for 2021 may be subject to greater imprecision due to data unavailability.

Figure 3.15: CIT compliance gap (2016-21)



Source: World Bank staff elaboration.
Note: Estimates for 2021 may be subject to greater imprecision due to data unavailability. Dotted lines indicate simple linear trend lines.

between tax revenue figures and liability estimates. More specifically, variations in CIT revenue recovered by the audit function and tax amnesty in 2016 and 2017 have likely led to a non-negligible difference between cash and not available accrual-based revenue. The fluctuations in the estimated gap may indicate measurement error[21] but also the underlying issue–a significant contribution from the largest taxpayers who may change their tax optimisation practices over time.[22] Due to the existence of imprecisions that inflate the volatility of the estimated CIT compliance gap, the point estimates should be interpreted together with the trend lines observed over the time period.

The high estimate of the CIT compliance gap for Indonesia is in line with publicly available estimates reported for other countries.[23] For example, in 2015, the estimated CIT compliance gap in Costa Rica was about 60 percent (IMF 2018). In the case of another middle-income country, South Africa, Jansen et al. (2020) found that the CIT compliance gap fluctuated between 8 percent (2015) and 12 percent (2017). Poland, on the other hand, had an estimated CIT compliance gap of about 30 percent in 2019 and 2020 (Sawulski et al. 2022). In the Slovak Republic, the estimated gap ranged from approximately 41 percent in 2012 (which was similar to average value estimated for Indonesia in the time period covered), to 8 percent in 2016 (Fiscalis 2018). In the UK, Her Majesty's Revenue and Customs (2019) estimated the compliance gap for CIT in 2017-18 at approximately 8.7 percent of the CTTL.

CIT policy gap

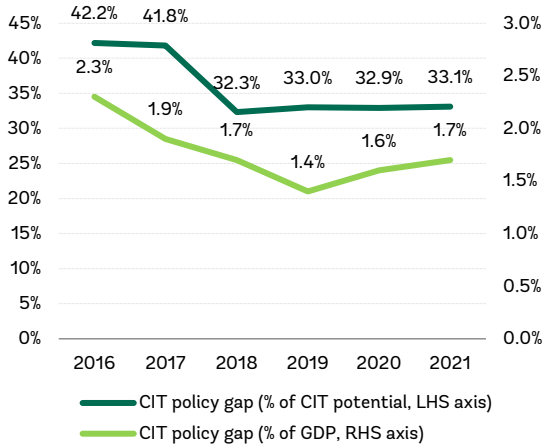
On average, the CIT policy gap accounted for about 35.9 percent of its potential or 1.8 percent of GDP between 2016 and 2021 (Figure 3.16). The estimates of the CIT policy gap are approximately three times higher than the estimates of tax expenditures in CIT by BKF (2023) which point to three big-ticket sources of forgone CIT revenue: (i) effective rate reduction for certain enterprises with gross turnover of not more than IDR 4.8

21. Due to inability to control accurately for tax optimization and unavailability of granular information on GOS, imprecisions related to estimating CIT gaps are considered to be higher than in the case of VAT gaps.
22. Tax optimization is the use of processes to reduce a company's or individual's tax charges to a minimum by using the law's advantages. It entails recognizing tax deductions, credits, exemptions, and other tax-saving options while adhering to tax law.
23. The estimates of the CIT compliance gap for regional peers were not available.

billion; (ii) tax rate discount for small companies with yearly turnover of IDR 50 billion; and (iii) tax rate reduction for public companies. The disparity in estimates shows that tax expenditures—the actionable policy gap—account for only a fraction of the overall policy gap. It also stems from different assumptions. The policy gap estimates assume full compliance, whereas the estimates of tax expenditures are derived based on actual revenue figures and compliance rates. The policy gap and the estimated fiscal cost of tax expenditures must, therefore, be interpreted differently. The policy gap accounts for the theoretical revenue loss that would be obtained if all taxpayers were compliant. The fiscal cost of tax expenditures reported by BKF reflects the actionable growth in revenue under the assumption that behaviour of taxpayer would remain unchanged (with the prevailing compliance rate) if tax expenditures were withdrawn.

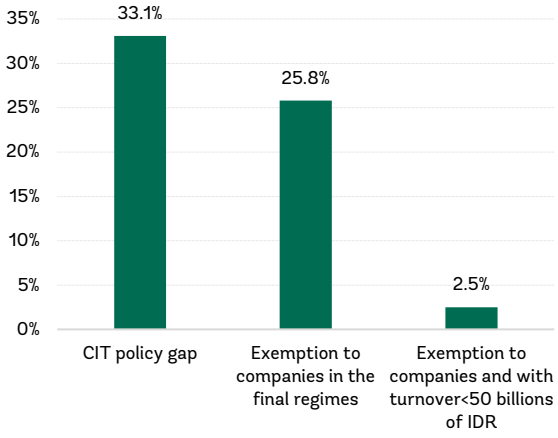
Between 2016 and 2018, the CIT policy gap declined sharply from 42.2 percent to 32.3 percent, whereas between 2018 and 2021 it remained stable (Figure 3.16). The long-term downward trend in the CIT policy gap is closely linked to the structure of the policy gap and its main elements, namely the discount rate for companies with turnover below IDR 50 billion and the exemption for companies in the final regime (Figure 3.17). Due to price inflation and (real) economic growth, the share of companies covered by these preferential regimes has gradually declined—reducing forgone CIT revenue.

Figure 3.16 CIT policy gap in Indonesia (2016-21)

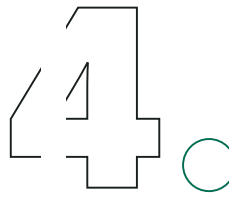


Source: World Bank staff calculation.

Figure 3.17: CIT policy gap and its components (% of GDP) (2021)



Source: World Bank staff elaboration.



SUMMARY AND CONCLUSION

On average, the estimated gaps in VAT and CIT accounted for 6.4 percent of GDP on average, or IDR 944 trillion, between 2016 and 2021 (see Table 4.1). Overall, non-compliance had a larger impact on VAT revenue than the policy decisions. In contrast, the CIT policy gap was larger on average than the compliance gap. CIT and VAT compliance gap contributed to 58 percent of total forgone notional revenue for both tax instruments. Non-compliance ratios are very high compared to Indonesia's peer countries and in a broader international comparison. Meanwhile, the policy gaps are relatively modest.

Due to large compliance gaps and alternative tax regimes to VAT and CIT, the value of the policy gaps needs to be interpreted with caution. Small companies and many service providers are currently taxed at lower effective rates. As non-compliance among these taxpayers is likely very high, to reduce markedly this component of the policy gap, the compliance gap would need to be addressed in parallel. Moreover, the sectors and types of companies subject to a lower CIT and VAT tax burden are largely subject to alternative regimes (for example, AFT or local tax on hospitality services). If these taxpayers were brought under the umbrella of CIT and VAT, the alternative regimes would need to be discontinued or their scope would need to be narrowed to avoid double taxation. In consequence, the impact of such a policy change on total tax revenue would be lower than the value of the estimated CIT and VAT policy gaps.

Changes in taxpayer compliance between 2016 and 2021 were the primary factor behind the

Table 4.1: Summary results (average 2016-21)

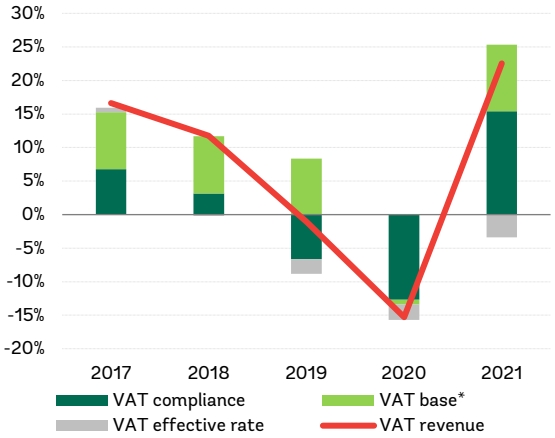
	Actual collection (1)	Potential		Compliance gap (4)	Policy gap (5)
		Current policy (2)	Benchmark (3)		
VAT					
IDR trillion	494	881	1,019	387	138
% GDP	3.3	5.9	6.9	2.6	0.9
CIT					
IDR trillion	306	467	725	161	258
% GDP	2.1	3.1	4.9	1.1	1.7
Total					
IDR trillion	800	1,348	1,744	**548**	**396**
% GDP	5.4	9.1	11.8	**3.7**	**2.7**

Source: World Bank staff elaboration
Note: numbers may not add up to rounding. Values denotes in % refer to yearly averages than total values over the period.

shifts in revenue. The value of the actual VAT and CIT revenue can be decomposed into components, which is helpful in understanding the underlying sources of its evolution. Between 2016 and 2018, the increase in tax base for VAT contributed about 17 percent of revenue growth, whereas the increased compliance contributed to about 10 percent growth (Figure 4.1). Since 2019, the trend reversed, changes in non-compliance were the main factor hampering revenue growth. At the same time, statutory VAT rates were stable, thus only minor shifts in the VAT effective rate resulting mostly from changes in household consumption structure. CIT compliance rate and tax bases have been volatile, suggesting potential measurement errors in estimating the base primarily using national accounts data (Figure 4.2). Nonetheless, the figures for 2020 and 2021 indicate that for both VAT and CIT follow a similar pattern. In 2020, the revenue decline outpaced the liability, primarily due to decreased compliance and some deferred tax payments. In 2021, in the case of both VAT and CIT tax base and compliance have increased. Fast growth of VAT and CIT revenue in 2022 and 2023, following the period covered by this study, suggests that CIT and VAT compliance have further improved in recent years.

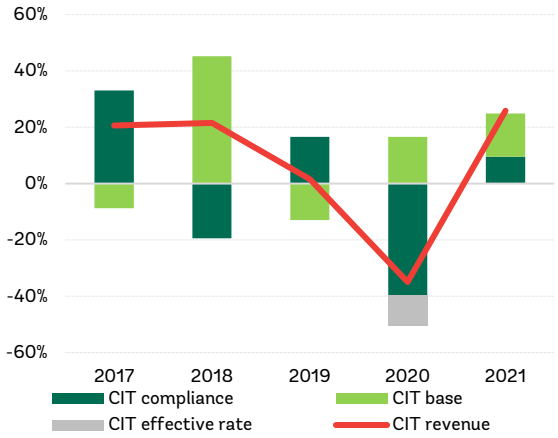
A relatively high threshold for VAT and CIT (of IDR 4.8 billion) had a sizable contribution to the large size of both policy and compliance gaps. Although the top-down approaches do not allow a breakdown of the compliance gaps into components, the scale of the overall estimates confirm other evidence of the threshold's substantial impact on tax revenue. Firstly, a relatively large proportion of taxpayers outside the VAT and CIT regime below the threshold contributes to the relevant policy gaps. Secondly, companies below the threshold are subject to simplified reporting and less scrutiny, which likely increases taxpayer non-compliance. Moreover, this large cliff in the system incentivizes and facilitates bunching. As shown by Saputro (2020) using administrative data, an excess mass of the firms in Indonesia were bunched in the turnover interval of IDR 4.4-4.8 billion, which may result in non-compliant behaviour like underreporting or artificial separation of business. Lowering the threshold as well as introducing legal prohibition of bunching could decrease the VAT and CIT gaps.

Figure 4.1: Contributions to changes in VAT revenue (year-over-year, 2017-21)



Source: World Bank staff calculation.
Note: See Analytical framework and methodology for the description of VAT revenue components.

Figure 4.2: Contributions to changes in CIT revenue (year-over-year, 2017-21)



Source: World Bank staff calculation.
Note: See Analytical framework and methodology for the description of VAT revenue components.

Indonesia's sizeable underground economy contribute to tax compliance gaps.[24] A relatively low VAT and CIT revenue-to-GDP ratio compared to Indonesia's peer countries operating at similar rates indicates a lack of efficiency in tax collection. One important factor contributing to this inefficiency is the prevalence of informality, which results in gaps in tax compliance. According to a study by Medina and Schneider (2018), the underground economy in Indonesia was estimated to account for 21.8 percent of GDP in 2015. Similarly, Marhamah and Zulaikha (2020) estimated it to be about 17.6 percent on average between 2016 and 2019. Unfortunately, recent estimates of the compliance gaps in taxes paid by corporations are not available. Previous evidence suggests, however, that the amount of tax revenue forgone due to noncompliance could exceed the estimates of the underground economy.[25]

Tax expenditures are estimated to have a moderate impact on the efficiency of tax collections and policy gaps. According to estimates provided by the Ministry of Finance (MoF), the revenue forgone from tax expenditures accounted for about 1.5 percent of GDP in 2019. Additionally, due to the implementation of fiscal stimulus measures from COVID-19 pandemic, this figure increased by about 0.4 percentage point in 2020. Most of the revenue loss, approximately 1 percent of GDP, was attributed to VAT and sales tax exemptions on luxury goods. The remaining 0.5 percent of GDP in revenue loss was a result of tax incentives offered in income taxes.

The CIT policy gaps have declined since 2016, whereas the VAT policy gap has increased. The shifts in the CIT policy gap were largely driven by the real deflation of the thresholds in the CIT system that define the scope of preferential treatment for small- and medium-size companies. The change in the VAT policy gap was largely driven by the change in the consumption structure of households, as the share of expenditure on non-taxable financial, education, health care, and hospitality services has increased.

24. Underground economy refers to unregistered activities by tax and statistical authorities.
25. See Anjariadi (2011). Note that underground economy often presents in the sectors taxed at lower rates (for example, small companies that would be in the AFT regime if their activity was recorded). Furthermore, the underground economy and tax gap is not the same. The compliance gap includes errors, omissions, and bankruptcies that are not a part of the underground economy. At the same time, companies may evade taxes on recorded transactions (for example, overstate their input VAT).

The 2021 Tax Harmonization Law (2021 THL) implemented many changes in the system that have likely affected the size of the gaps. The introduced reforms include, among others, the extension of a flat rate scheme to a number of businesses that were outside the VAT base (as financial services and agricultural companies). THL has also increased the scope of VAT obligations by reclassifying non-tangible goods and services to exempt. To verify the impact of these and other changes, the gaps in CIT and VAT shall be monitored further.

To increase revenue and fairness in VAT and CIT, improving taxpayer compliance remains the government's priority. Expanding access to timely information on taxpayers' operations by utilizing third-party data and effectively utilizing available information today is a prerequisite for enhancing compliance enforcement. Without improvements in taxpayer compliance, potential revenue gains from removing tax expenditures—such as reducing the policy gap—will be constrained. Simultaneously, taxpayers who remain outside of the system (small taxpayers and non-taxable sectors) should be brought under the umbrella of VAT and CIT reporting to fully integrate them into the system in the future.

APPENDIX ONE: METHODOLOGY AND DATA USED FOR VAT GAPS' ESTIMATION

Methodology

The estimates of the VTTL necessary to estimate both the compliance and policy gap, were derived using a top-down "consumption-side" approach. This approach hinges on national accounts' use tables as a source of information on tax base. The parameters are calibrated or derived based on third-party or fiscal data. These figures are used to estimate the VAT liability generated by different sub-aggregates of the total economy: household, government, and final consumption of NPISH; intermediate consumption (IC); gross fixed capital formation (GFCF); and other specific adjustments.

The VTTL could be denoted using the following formula (6):

$$VTTL = \sum_{i=1}^{N} (HHC\ rate_i \times HHC\ Value_i) + \sum_{i=1}^{N} (GOV\ rate_i + GOV\ Value_i) + \sum_{i=1}^{N} (NPISH\ rate_i + NPISH\ Value_i) + \sum_{i=1}^{N}\sum_{j=1}^{M} (IC\ rate_i + prorata_j + IC\ Value_{i,j}) + \sum_{i=1}^{N}\sum_{j=1}^{M} (GFCF\ rate_i + prorata_j + GFCF\ Value_{i,j})$$

where:

i denotes groups of products and services,
j denotes sectors of economic activities,
(HHC, GOV, NPISH, IC, GFCF) Rate are the effective rates for respective sub-aggregates of economy and groups of products and services,
(HHC, GOV, NPISH) Value are respective components of the final use (denoted in net terms),
IC Value is the value of IC (denoted in net terms),
GFCF Value is the value of GFCF (denoted in net terms), and
Prorata is the percentage of output in a given sector that is exempt from VAT or non-taxable (without the right to deduct).

Use tables are recorded in purchasers' prices, thus final use values need to be net out before applying the formula (6). At the same time, the values of intermediate use in the use tables contain non-deductible VAT (but exclude deductible VAT). Net values of intermediate consumption liability for a group of products and services i and for consuming sector j are thus calculated as:

$$IC\ Value_{ij} = IC\ Gross\ Value_{ij} * \frac{tax\ rate_i * pro\text{-}rata_j}{+1\ tax\ rate_i * pro\text{-}rata_j}$$

Household consumption liability

The core component of VTTL is the household consumption liability,[26] which is a product of the effective VAT rates and household consumption values of each of the groups of products and activities. Household consumption values, similar to other components of the use tables, are recorded in purchasers' prices, thus they require correction for the included VAT component. Moreover, the calculation requires adjustment for non-taxable consumption, in that self-supply and imputed rents.

Government and NPISH consumption

The government and NPISH consumption liabilities are estimated as a product of respective VAT rates and government and NPISH consumption values. Contrary to household consumption, most government and NPISH transactions do not constitute a taxable event. The exception is transfers in kind, which are one of the components of individual government consumption.

Intermediate consumption

The liability from intermediate consumption is computed for each industry as a product of intermediate use of each of the inputs times the average VAT rate for these groups of inputs times industry average proportion of non-deductible VAT in the intermediate consumption. The latter, propex or *non-deductibility pro-rata coefficient*, is estimated using the breakdown of sectoral production to narrow categories of goods and services. Importantly, as intermediate consumption is reported in purchasers' prices, it includes non-deductible VAT that needs to be excluded from the use tables to reflect the net tax base.

GFCF liability

Similar to intermediate consumption liability, non-deductible investment is estimated as a product of tax rate, propex, and the base—that is, industry's GFCF. The core components of this liability component include investment in dwelling (household investment) and public investment.

Net adjustments

In addition to the core components of the base, the estimation method involves corrections that are accounted for aside the main formula of the VAT gap model. More specifically, the main adjustments are: (1) the correction for small businesses under the VAT threshold, (2) exemption for public transport, (3) exemption for electricity, except for houses with power above 6600 VA.

26. See, for example, Barbone et al. (2013) for comparison of the VTTL components in European Union member states

Data sources

A complete description of data, their sources and treatment are summarized in Table A1.1.

Table A1.1: Data sources summary for VTTL calculation

	DESCRIPTION	PURPOSE	SOURCE	COMMENT
1	Household final expenditure by groups of products and services.	Estimation of Household Consumption (HHC) liability.	Statistics Indonesia (*Badan Pusat Statistik*: BPS): Use tables and aggregate national accounts.	For 2016, Available for 185 groups of products and services. For other years, values for 185 categories were forecast using up-to-date values broken down by main product and service categories.
2	Government final expenditure by groups of products and services.	Estimation of government liability.	BPS: Direct request of the value of social transfers in kind.	
3	NPISH final expenditure by groups of products and services.	Estimation of NPISH liability.		
4	Intermediate consumption broken down by groups of products and services.	Estimation of Intermediate Consumption (IC) liability of industries for which VAT on inputs cannot be deducted.	BPS: Use tables and aggregate national accounts.	Available for 2016 for 185 groups of products and services and 185 sectors (185x185). For other years, values for 185 categories were forecast using up-to-date values broken down by main product and service categories.
5	Investment (GFCF).	Estimation of VAT liability from investment of exempt sectors (housing investment inclusive).	BPS: GFCF by Industrial Origin and 24 Types of Assets (Billions of IDR, 2018).	For other years than 2018, rescaled using more aggregate national accounts.
6	WARs for HHC and IC.	Estimation of HHC and IC components.	Own calculation.	See following section. Rates derived for 2016-20.
7	WAR for government and NPISH.	Estimation of government and NPISH liability.	Own calculation: Economy-wide WAR.	See following section.
8	Pro-rata coefficients for estimating IC liability.	Estimation of IC liability of industries for which VAT on inputs cannot be deducted and companies below the VAT threshold.	Own calculation.	See following section.
9	Pro-rata coefficients for estimating GFCF liability.	Estimation of GFCF liability of industries for which VAT on inputs cannot be deducted.	Own calculation base on the sectoral split in GFCF by Industrial *Origin and 24 Types of Assets*.	See following section.
10	Percentage of output of companies below the VAT registration threshold.	Net adjustments.	World Bank Enterprise Survey triangulated with administrative data.	See following section.
11	Other net adjustments.	Net adjustments.	Tax expenditure report.	-
12	VAT revenue.	VAT revenue.	Fiscal Policy Agency, MoF.	Due to the unavailability of accrual revenue, cash collections had to be used.

APPENDIX TWO: PARAMETER ESTIMATION

Effective rates

The effective rates, or the WARs, were estimated consistently for all products and services categories (185 groups) using the statutory list of exemptions. For all categories except air transport, a *zero* or *standard* rate (10 percent in the entire analyzed period) was assigned. Such a simple categorisation was possible thanks to high granularity of products breakdown and homogeneity of the distinguished categories.

For air transport, the weighted rate was estimated at about 6.3 percent using the statistics on the number of passengers in domestic and international flights provided by BPS.

Pro-rata coefficients

Similarly to the WARs, the estimation of pro-rata coefficients for intermediate consumption, was based on a categorisation (exempt vs. standard-rated category). It was assumed that all fully exempt categories have no right to deduct input VAT (pro-rata = 100 percent). The values of the coefficients' also account for the fact that the fraction of companies below the VAT registration threshold cannot deduct their input VAT.

The pro-rata coefficient for estimating GFCF liability was calculated using *GFCF by Industrial Origin and 24 Types of Assets.* It was assumed that the following sectors cannot deduct the VAT accrued on their investment:

- A Agriculture, Forestry and Fishing
- B Mining and Quarrying
- K Financial and Insurance Activities
- O Public Administration and Defence; Compulsory Social Security
- P Education
- Q Human Health and Social Work Activities

Percent of output of companies below the VAT registration threshold

For manufacturing (International Standard Industrial Classification (ISIC) sectors 10 to 33), the calculation of the liability for each sector and groups of products uses the fraction of value added created by micro and small companies published by BPS. For the primary sectors and services, due to unavailability of exact information, a 20 percent proxy is used. The calculation assumes that the ratio of intermediate use (that generates non-deductible VAT) to output is two times smaller than for medium and large companies.

APPENDIX THREE: METHODOLOGY AND DATA USED FOR CIT GAPS' ESTIMATION

Methodology

Similarly to the estimation of the VTTL, the estimation of the CTTL uses a top-down approach. More specifically, the approach is based on RA-GAP methodology (Ueda 2018). Under this approach the tax base is calculated from existing macroeconomic data carefully adjusted to match with the statutory tax base.

The starting point for estimating the tax base is GOS. GOS denotes the magnitude of value added that is produced by resident corporations and not allocated to employees through compensation or to governments through taxes on production and imports.

To match the actual tax base GOS needs to be adjusted, first to derive current-year net tax base, then current-year tax base, and finally tax base:

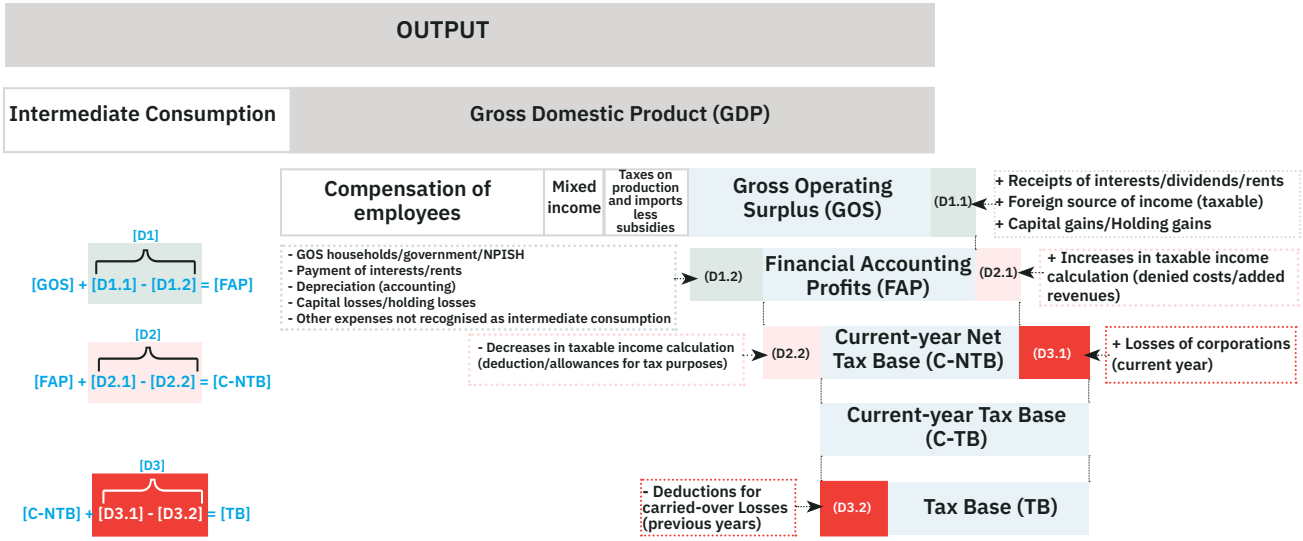
- Current-year net tax base (C-NTB): An aggregated result reflecting both profit-making corporations and loss-making corporations in a current year; this is generally smaller than current-year tax base because losses made by loss-making corporations are netted out from aggregate profits in C-NTB. The derivation of C-NTB requires adjusting GOS by net capital gains, payments of interest and rents, and any other expenses that are not recognised as intermediate inputs (or calculated differently in national accounts and companies' books). It also requires an adjustment for the increase in taxable income due to not qualified/denied expenses (Figure A3.1).

- Current-year tax base (C-TB): An aggregated result of profit-making corporations in a current year; this is before deducting carried-over losses.

- Tax base (TB): An aggregate result of profit-making corporations in a current year minus deductions for carried-over losses; this is the base for calculating aggregate CIT liability in a year (Ueda 2018).

On top of estimating the tax base, in systems where more than one statutory CIT rate is in place, the CTTL requires an estimate of the effective or, in other words, weighted average CIT rate. This calculation, to the extent possible, should use third-party information, to account for varying non-compliance across types of companies. Data sources and assumptions taken in this calculation for Indonesia are presented in the following sub-sections.

Figure A3.1: Steps in calculating CIT base



Source: Ueda, J. (2018).

Estimation of tax base

The estimation algorithm is presented step-by-step in Table A3.2.

Table A3.2: Adjustments to derive CIT tax base

STEP	NAME OF ADJUSTMENT	PURPOSE	SOURCE OF INFORMATION	COMMENT
From GOS to Financial Accounting Profit (FAP)				
1	Adjustment of GOS for received interest, dividends, and rents.	Estimation of FAP, correction for elements that are included in statutory tax base but not in GOS.	BPS: Integrated Institution Balance Sheets for S.11 and S.12.	Added to GOS.
2	Adjustment of GOS for received interest, dividends, and rents.			Subtracted from GOS.
3	Adjustment of GOS for net capital gains.			Added to GOS.
Adjustment of FAP for other taxes				
4	Adjustment of FAP for income taxes other than CIT.	Adjustment of FAP, correction for elements that are included in statutory tax base but not in GOS/FAP.	BKF (tax revenue figures).	Income taxes that are not a component of CIT base are deducted.
5	Correction for the share of tax base in the final regime.		BKF and World Bank Enterprise Survey.	

From FAP to C-NTB				
6	Accounting depreciation.	Correction for the proxy of accounting depreciation.	Own calculations based on BPS.	Accounting depreciation is not included in GOS and must be subtracted. Due to unavailability of data, accounting depreciation was proxied by the consumption of fixed capital adjusted by the share of GFCF purchased by corporations and shifts in prices of capital.
From C-NTB to C-TB				
7	Correction for losses.	Adjustment of C-NTB since it is a sum of positive and negative values.	Individual level data from EMIS, 833 largest taxpayers.	Own calculations of loss as percentage of gross profit.
From C-TB to TB				
8	Correction for loss carry forward.	Adjustment of C-TB since some companies are carrying forward their losses, which decreased their liability.	Individual level data from EMIS, 833 largest taxpayers.	Own calculations of loss carry forwards as percentage of net profit, maximum 5-year loss carry forward assumed.

Estimation of the effective rate

The effective rates were estimated at:

Table A3.3: Effective CIT rate

2016	2017	2018	2019	2020	2021
23.67%	23.67%	23.67%	23.67%	21.09%	21.09%

The estimates are based on the estimated share of public companies, companies with turnover below the IDR 4.8 billion threshold and between IDR 2.4 and IDR 50 billion thresholds subject to exemption and rate reduction, respectively.

Other adjustments

On top of estimating tax base and the effective rate, the liability from CIT was adjusted by exemptions, allowances, and other expenditures that could not be deducted from tax base. These adjustments are based on the tax expenditure reports.

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