Reproducibility package for "Estimating Value Added Tax (VAT) and Corporate Income Tax (CIT) Gaps in Indonesia"

README file

I.   **Content of the package.**

The package contains 14 Microsoft Excel files:

- 1_use_tables_rescaling
- 2_VAT_compliance_gap_model
- 3_Graphs_related_to_VCG
- 4a_NIR
- 4b_VTTL_agri_and_food
- 4c_VTTL_edu_and_health
- 4d_VTTL_financials
- 4e_VTTL_hospitality
- 4f_VTTL_mining
- 4g_VTTL_SB
- 5_All_PGs
- 6_CIT_gaps_model
- 7_Other_exhibits
- Readme

In addition, confidential input contains another 3 Microsoft Excel files:

- Confidential data
  - CIT revenue
  - Confidential input for CIT calculation
  - Social transfers in kind

Of the core 12 file, the files with names ordered from "1_" to "5_ " are used to replicate the estimates and exhibits related to VAT compliance and policy gaps. More in detail:

1_use_tables_rescaling.xlsx – Estimates use tables for 2017-2021 based on 2016 tables and national accounts aggregates for 2017-2021.

2_VAT_compliance_gap_model.xlsx – Estimates VTTL for 2017-2021 based on use tables, other information on tax base, and parameters included in the worksheet.

3_Graphs_relate_to_VCG.xlsx – Plots Figures 8, 9, 13, and 14 included in the report, based on the output from 2_VAT_compliance_gap_model.xlsx.

4a to 4g – Files structured like 2_VAT_compliance_gap_model.xlsx, used to estimate:

- **(4a)** Notional Ideal Revenue (to estimate the entire Policy Gap),
- **(4b)** VTTL in the counterfactual case of full taxability of agricultural products and foodstuffs,
- **(4c)** VTTL in the counterfactual case of full taxability of agricultural education and healthcare,
- **(4d)** VTTL in the counterfactual case of full taxability of financials,
- **(4e)** VTTL in the counterfactual case of full taxability of hospitality services,
- **(4f)** VTTL in the counterfactual case of full taxability of mining,
- **(4g)** VTTL in the counterfactual case of full taxability of small businesses.

5_All_PGs.xlsx – Uses the actual and counterfactual VTTL and NIR estimates to calculate the Policy Gap, its components, and to plot the corresponding graphs. The last tab also combines the policy and compliance gap estimates to decompose VAT revenue growth components.

The estimates related to the CIT compliance and policy gap are replicated by the single file:

6_CIT_gaps_model.xlsx – Estimates CIT total actual liability (1_Summary - actual liability tab), CIT notional revenue (2_Summary – potential tab), CIT liability in the counterfactual situation of no exemption in the "final regime" (3_Summary - final regime) and CIT liability in the counterfactual situation of no exemption for public companies and those below <IDR 50 billion threshold (4_Summary - public and SMEs).

Figures and transformations underlying other exhibits are presented in **7_Other_exhibits.xlsx**

## II.	Instructions to set up Excel files.

1. Unzip the folder.
2. Change the path in **2_VAT_compliance_gap_model.xlsx** from "https://syntesiasrl-my.sharepoint.com/personal/grzegorz_poniatowski_syntesia_eu/Documents/Apps/Desktop/Reproducibility_package - amended/" to the path where you stored the folder (use the Excel option "Replace All" for the entire workbook).
3. Apply the same operation to files **4a to 4g, 5 and 6**. To receive the estimates in those files, paste the confidential data of social transfers in kind to the **STK_liab (B4:C9)** tab. The estimates in these files are presented in **row 191** of the **Results_table** tab. The year is selected in the **Year** tab.
4. The file **3_Graphs_relate_to_VCG.xlsx** requires the manual copy of the estimates (row 191 of the **Results_table** tab in **2_VAT_compliance_gap_model.xlsx**) to the **B2:L7** range in the tab titled **Estimates_to_paste**.
5. The files **4a to 4g, 5 and 6**, similarly to **1_use_tables_rescaling.xlsx**, require changing the path from "https://syntesiasrl-my.sharepoint.com/personal/grzegorz_poniatowski_syntesia_eu/Documents/Apps/Desktop/Reproducibility_package - amended/" to the path where you stored the folder.
6. Similarly, the file **5_All_PGs.xlsx** requires the output of the simulations from the VTTL model and the counterfactual VTTL calculated in files **4a to 4g**.

III. Data included in the Excel sheets.

Reference		Description	Link	Accessed on
File name	Tab name			
1_use_tables_rescaling.xlsx	2016	Input-output tables for 2016	https://www.bps.go.id/en/statistics-table/1/MjExNiMx/indonesian-input-output-table-domestic-transactions-at-basic-price--185-products---2016--million-rupiah-.html	January 2023
1_use_tables_rescaling.xlsx	Expenditure	GDP and its breakdown	https://www.bps.go.id/en/statistics-table/2/MTk1NSMy/-2010-version--1--gdp-at-current-market-prices-by-expenditure--billion-rupiahs-.html	January 2023
2_VAT_compliance_gap_model.xlsx and files 4a to 4g	Revenue	VAT revenue	Source: https://www.bps.go.id/en/statistics-table/2/MTA3MCMy/actual-government-revenues--billion-rupiahs-.html	February 2023
2_VAT_compliance_gap_model.xlsx and files 4a to 4g	GFCF	GFCF broken by groups of products and sector of economic activity	https://www.bps.go.id/en/statistics-table/2/MjA3NSMy/gfcf-by-industrial-origin-and-24-types-of-asset--billion-rupiahs-.html	February 2023
2_VAT_compliance_gap_model.xlsx and files 4a to 4g	Other adjustments	Estimated value of selected VAT expenditures	https://fiskal.kemenkeu.go.id/publikasi/tax-expenditure-report	March 2023
2_VAT_compliance_gap_model.xlsx and files 4a to 4g	sheet "WAR_HH", sheet "WAR_IC", sheet "WAR_GOV_NPISH", sheet "WAR_GFCF", sheet "IC_pro_rata"	Rates, pro-rata coefficient (parameters of the VTTL model)	Own calculation/assignment based on legal mapping	-
2_VAT_compliance_gap_model.xlsx and files 4a to 4g	sheet "SB_corrected"	Share of small companies below the VAT registration threshold	World Bank Enterprise Survey triangulated with administrative data (confidential)	-
3_Graphs_related_to_VCG	Input data	GDP	https://www.bps.go.id/en/statistics-table/2/NTQyIzI=/-2010-version--3--distribution-of-grdp-at-	March 2023

Reference		Description	Link	Access ed on
File name	Tab name			
			current-market-prices-by-expenditure--percent-.html	
3_Graphs_related_to_VCG	Figure 3.9	GDP in constant prices	https://www.bps.go.id/en/statistics-table/2/NTMzlzI=/-2010-version--2--grdp-at-constant-market-prices-by-expenditure--2010-100---million-rupiahs-.html	March 2023
5_All_PGs	Figure 4.1	Household final consumption ("VAT base")	https://www.bps.go.id/en/statistics-table/2/MTk1NSMy/-2010-version--1--gdp-at-current-market-prices-by-expenditure--billion-rupiahs-.html	March 2023
5_All_PGs	Figure 3.10 and Figure 3.11	VTTL in alternative counterfactual scenarios	*2_VAT_compliance_gap_model.xlsx and files 4a to 4g*	-
6_CIT_gaps_model.xlsx	1_Summary - actual liability 2_Summary – potential 3_Summary - final regime 4_Summary - public and SMEs	Integrated Institution Balance Sheet: Financial corporations	https://www.bps.go.id/en/statistics-table/1/MjE4MyMx/financial-corporation---sectoral-accounts-and-balance-sheets--trillions-rupiah---2016---2022.html	February 2023
6_CIT_gaps_model.xlsx	1_Summary - actual liability 2_Summary – potential 3_Summary - final regime 4_Summary - public and SMEs	Integrated Institution Balance Sheet: Non-financial corporations	https://www.bps.go.id/en/statistics-table/1/MjE4MiMx/non-financial-corporation---sectoral-accounts-and-balance-sheets--trillions-rupiah---2016---2022.html	February 2023
6_CIT_gaps_model.xlsx	Non-confidential input	CIT expenditures	https://fiskal.kemenkeu.go.id/publikasi/tax-expenditure-report	March 2023

Reference		Description	Link	Access ed on
File name	**Tab name**			
6_CIT_gaps_model.xlsx	GDP	GDP	https://www.bps.go.id/en/statistics-table/2/NTQylzI=/-2010-version--3--distribution-of-grdp-at-current-market-prices-by-expenditure--percent-.html	March 2023
6_CIT_gaps_model.xlsx	"Figure 4.2": CIT effective rates	Estimated share of public companies with turnover below the Rp 4.8 billion threshold and between Rp 2.4 and Rp 50 billion thresholds subject to exemption and rate reduction.	World Bank Enterprise Survey(https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/country/Indonesia-2023.pdf) triangulated with administrative data (confidential)	-
CIT revenue.xlsx	-	CIT revenue	Data received from Ministry of Finance's Directorate General of Taxes, BKF (confidential)	-
Confidential input for CIT calculation.xlsx	-	Income taxes paid other than CIT (element of the gross operating surplus deducted from CIT base), CIT revenue, Correction (%) for tax base in the final regime	Data received from Ministry of Finance's Directorate General of Taxes, BKF (confidential)	-
Social transfers in kind.xlsx	-	Values of social transfers in kind	Data received from BPS-Statistics Indonesia (confidential)	-

IV.   Description of exhibits.

Exhibit	Description	Data sources	Reference
Figure 1.1	VAT and corporate taxes on income and	OECD. 2023. Data warehouse. OECD.Stat (database). https://doi.org/10.1787/data-00900-en	See: **7_Other_exhibits.xlsx**

Exhibit	Description	Data sources	Reference
	capital gains as percent of GDP (2002-22) (central government)	For 2021 and 2022, figures were extrapolated using tax revenue data from the Ministry of Finance's Directorate General of Taxes, BKF, and GDP growth published by BPS: https://www.bps.go.id/en/statistics-table/2/MTk1NSMy/-2010-version--1--gdp-at-current-market-prices-by-expenditure--billion-rupiahs-.html	
Figure 1.2	VAT and corporate taxes on income and capital gains as percent of GDP, cross-country comparison	https://www.wider.unu.edu/project/grd-government-revenue-dataset	See: **7_Other_exhibits.xlsx**
Figure 3.1	VAT C-efficiency in Indonesia (2016-21)	Own calculation based on VAT revenue data from Ministry of Finance's Directorate General of Taxes, BKF, and final consumption data from BPS: https://www.bps.go.id/en/statistics-table/2/MTk1NSMy/-2010-version--1--gdp-at-current-market-prices-by-expenditure--billion-rupiahs-.html	See: **7_Other_exhibits.xlsx**
Figure 3.2	C-efficiency and VAT revenue-to-GDP ratios (2019)	Own calculation base on VAT revenue data from UNU-WIDER (https://www.wider.unu.edu/project/grd-government-revenue-dataset) and final consumption data from national statistical institutes.	See: **7_Other_exhibits.xlsx**
Figure 3.3	VAT compliance gap (2016-21)	Own estimates.	See: **3_Graphs_related_to_VCG.xlsx**
Figure 3.4	VAT compliance gap and VAT revenue in Indonesia (trillions of Rp) (2016-21)	Own estimates.	See: **3_Graphs_related_to_VCG.xlsx**
Figure 3.5	VAT compliance gap in Indonesia and selected other	Multiple sources: Canıkalp, E., I. Ünlükaplan, and M. Çelik. 2016. "Estimating Value Added Tax Gap in Turkey." International Journal of	See: **3_Graphs_related_to_VCG.xlsx**

Exhibit	Description	Data sources	Reference
	middle-income countries (2019 or most recent available data) (% of the VTTL)	Innovation and Economic Development 2 (3): 18-25. International Monetary Fund (IMF). 2015. "South Africa Technical Assistance Report—Revenue Administration Gap Analysis Program—The Value-Added Tax Gap." IMF Country Report No. 15/180. Washington DC: IMF. International Monetary Fund (IMF). 2018. "Costa Rica Technical Assistance Report—Revenue Administration Gap Analysis Program—Tax Gap Analysis for General Sales Tax and Corporate Income Tax." IMF Country Report No. 18/124. Washington DC: IMF. European Commission, Center for Social and Economic Research (CASE). Poniatowski, G., M. Bonch-Osmolovskiy, A. Śmietanka, and A. Pechcińska. 2022. "VAT gap in the EU – Report 2022." Luxembourg: Publications Office of the European Union. Organisation for Economic Co-operation and Development (OECD). 2018. "Revenue Statistics in Asian and Pacific Economies." Paris: OECD Publishing. https://doi.org/10.1787/9789264308091-en	
Figure 3.6	VAT/GST compliance gap in selected high-income countries (2021 or most recent available data) (% of the VTTL)	Multiple sources: Canada Revenue Agency. 2022. "Overall Federal Tax Gap Report: Estimates and key findings for non-compliance, tax years 2014-2018." Ottawa: Canada Revenue Agency. European Commission. 2023. Poniatowski, G., M. Bonch-Osmolovskiy, A. Śmietanka, and A. Sojka. "VAT gap in the EU – Report 2023." Luxembourg" Publications Office of the European Union.	See: **7_Other_exhibits.xlsx**

Exhibit	Description	Data sources	Reference
		HM Revenue & Customs. 2023. "Measuring tax gaps 2023 edition: tax gap estimates for 2021 to 2022." ATO: https://www.ato.gov.au/about-ato/research-and-statistics/in-detail/tax-gap/australian-tax-gaps-overview/the-performance-of-the-tax-system-202021	
Figure 3.7	Total VAT compliance gap in the EU (2000-21) (% of the EU-wide VTTL)	Own elaboration based on: European Commission. 2023. Poniatowski, G., M. Bonch-Osmolovskiy, A. Śmietanka, and A. Sojka. "VAT gap in the EU – Report 2023." Luxembourg" Publications Office of the European Union.	See: **7_Other_exhibits.xlsx**
Figure 3.8	Composition of the VTTL (%, average) (2016-21)	Own estimates.	See: **3_Graphs_related_to_VCG.xlsx**
Figure 3.9	Changes in VAT compliance gap and real GDP growth (2017-21)	Own estimates.	See: **3_Graphs_related_to_VCG.xlsx**
Figure 3.10	VAT policy gap in Indonesia (2016-21)	Own estimates.	See: **5_All_PGs.xlsx**
Figure 3.11	Core components of the VAT policy gap (2021)	Own estimates.	See: **5_All_PGs.xlsx**
Figure 3.12	CIT collection efficiency (2016-21)	Own estimates.	See: **6_CIT_gaps_model.xlsx**
Figure 3.13	CIT revenue and revenue potential (trillions of Rp) (2016-21)	Own estimates.	See: **6_CIT_gaps_model.xlsx**
Figure 3.14	CIT compliance gap and CIT revenue in Indonesia (trillions of Rp) (2016-21)	Own estimates.	See: **6_CIT_gaps_model.xlsx**
Figure 3.15	CIT compliance gap (2016-21)	Own estimates.	See: **6_CIT_gaps_model.xlsx**

Exhibit	Description	Data sources	Reference
Figure 3.16	CIT policy gap in Indonesia (2016-21)	Own estimates.	See: **6_CIT_gaps_model.xlsx**
Figure 3.17	CIT policy gap and its components (% of GDP) (2021)	Own estimates.	See: **6_CIT_gaps_model.xlsx**
Table 4.1	Summary results (average 2016-21)	Own estimates sourced from *2_VAT_compliance_gap_model.xlsx, 5_All_PGs.xlsx* and *6_CIT_gaps_model.xlsx*	See: **5_All_PGs.xlsx**
Figure 4.1	Contributions to changes in VAT revenue (year-over-year, 2017-21)	Own estimates.	See: **5_All_PGs.xlsx**
Figure 4.2	Contributions to changes in CIT revenue (year-over-year, 2017-21)	Own estimates.	See: **6_CIT_gaps_model.xlsx**