



**FISCAL AFFAIRS**

# **Practical sessions: estimating VAT gap -I**

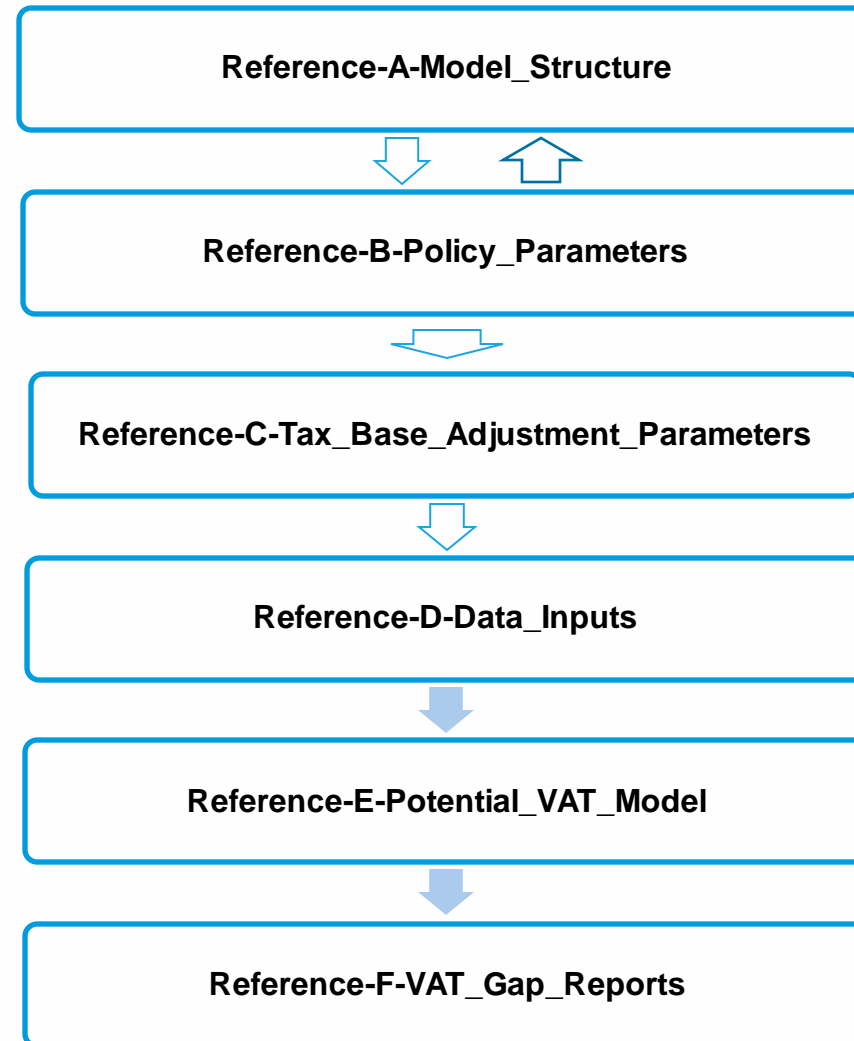
**ATI TAX GAP WORKSHOP**

**MARCH 19, 2024**

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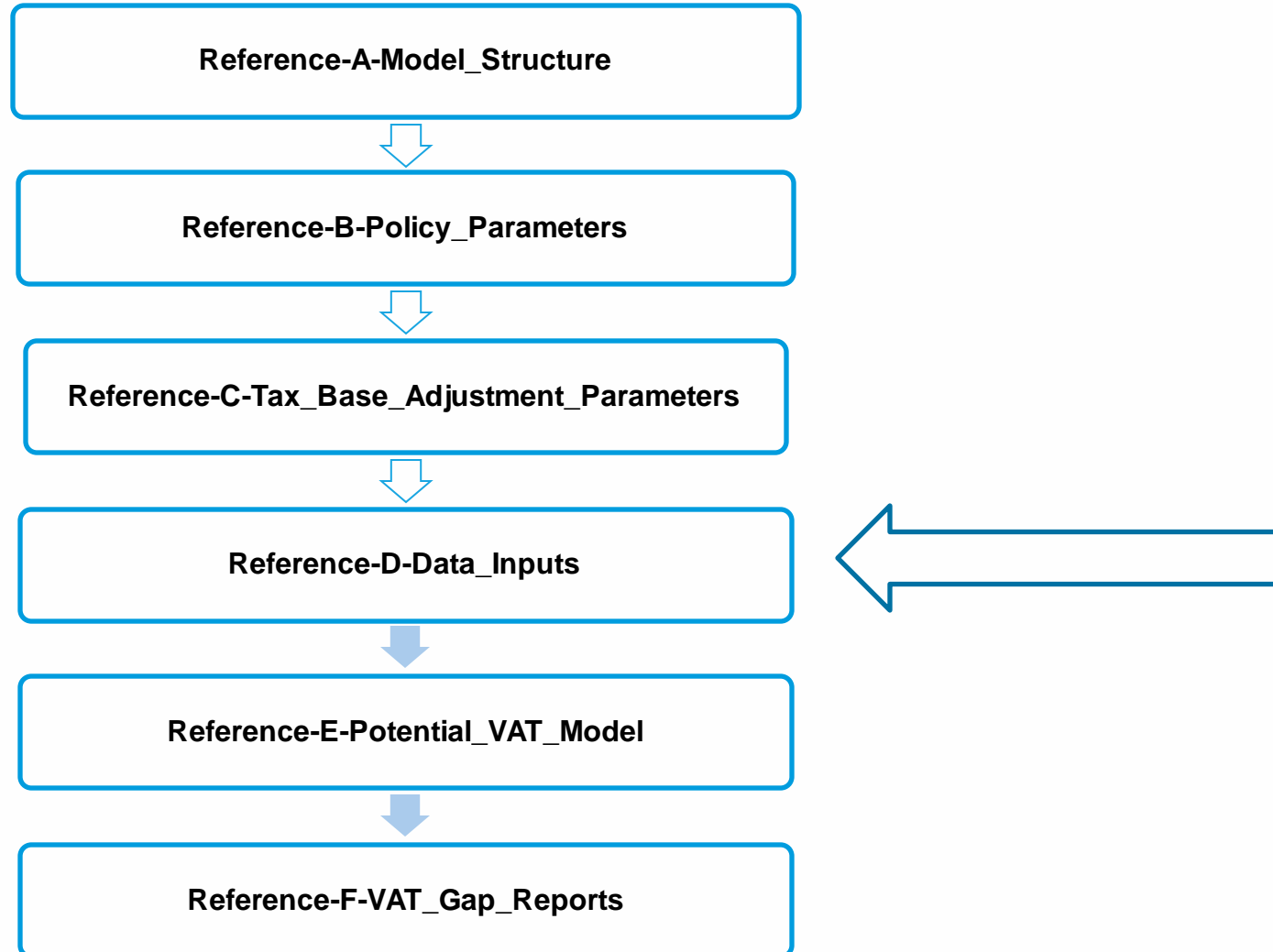
# Model workbooks flows (1/3)

## Main workbooks

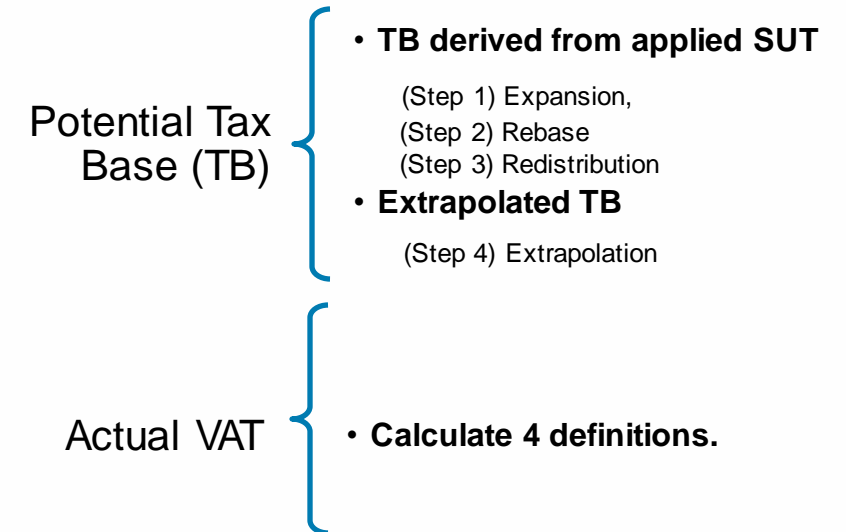


# Model workbooks flows (2/3)

## Main workbooks

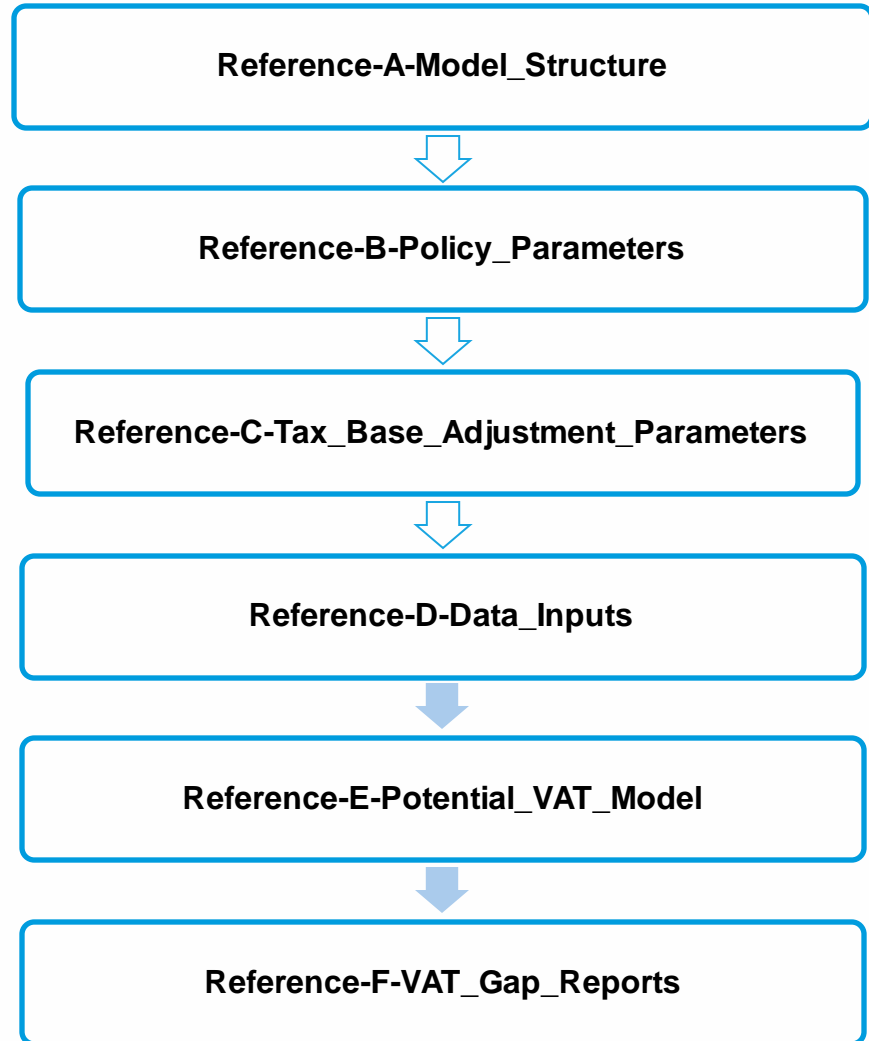


## Ancillary workbooks

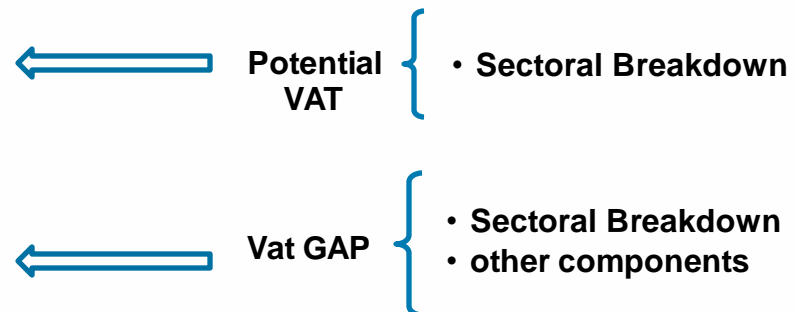


# Model workbooks flows (3/3)

## Main workbooks



## Outputs



**Download the following files from One Drive:**

**A-Model\_Structure\_v23**

**B-Policy\_Parameters\_v23**

**C-Tax\_Base\_Adjustment\_Parameters\_v23**

**D-Data\_Inputs\_v23**

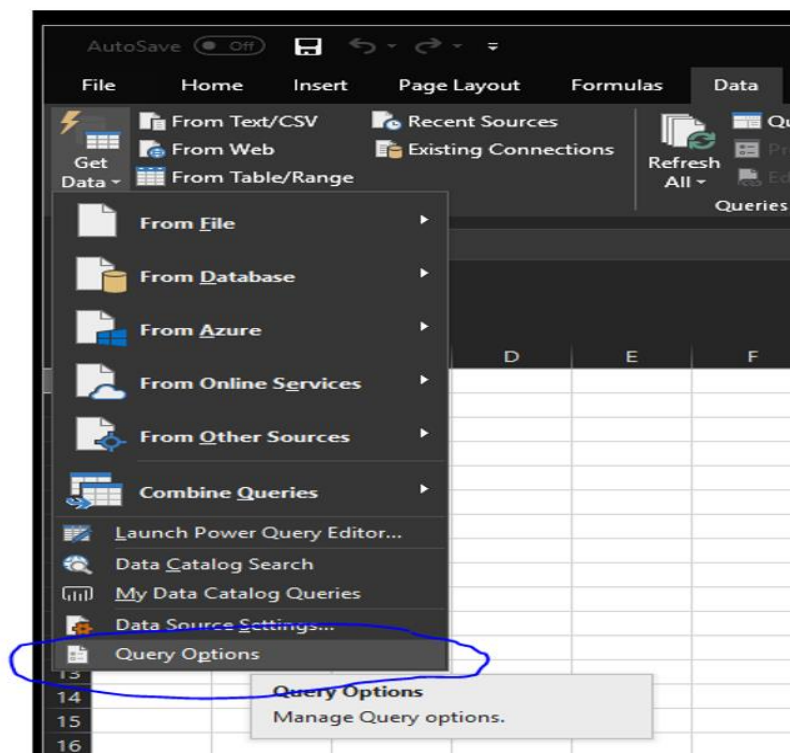
**E-Potential VAT Model\_v23**

**F-VAT\_Gap\_Reports\_v23**

**and save them on a dedicated folder of your laptop**

## Before running the model, check that the privacy parameters are set correctly

For the model to run properly, a change to the “data privacy” settings for Excel’s Power Query tool needs to be adjusted. In Excel, under the Data Menu, select the option “Query Options” from the “Get Data” drop down menu:



In the Query Options dialog box, under “Global” select “Privacy”, and choose the option “**Always ignore Privacy level settings**” and then select “ok”.

# Reference-A-Model\_Structure

The model structure workbook should be left open in the background at all times when working with the other workbooks,

# Reference-A-Model\_Structure\_V23

Worksheet *Language selection*. No action is required.

	A	B	C	D
1				
2		Select Language for Descriptions		
3		Choose Language:	English	▼
4				
5				
6				



# Reference-A-Model\_Structure\_V23

Worksheet *Years*. To be filled:

Model\_Years: 2019 – 2022

Flag\_for\_Comparison\_Base\_Year: 2019=1

	A	B	C	D	E
1	Model_Years ▾	Flag_for_Comparison_Base_Year ▾			
2	2019	1			
3	2020				
4	2021				
5	2022				
6					
7					
8					
9					
10					
11					

# Reference-A-Model\_Structure\_V23

Worksheet *Regions*. In this exercise we only use the main region. No action is required.

	A	B	C	D	E
1	Region_Code ▾	Region_Description ▾			
2	M	Main Region			
3					
4					
5					

# Reference-A-Model\_Structure\_V23

Worksheet *Sectors codes (prefilled)*. Contains the sectoral classifications used by the model.

- ▶ “Reporting sector codes” are the sector codes that will be used for the submission of final results (at this stage set equal to the SUT codes).
- ▶ “SUT sector codes” are the sector codes in the supply and use tables used to construct the potential VAT base.
- ▶ “Model sector codes” are the sectors to be used in the model to estimate the VAT gap (at this stage set equal to the SUT codes).
- ▶ “Registry sector codes” are the codes used in the tax registry data that identify the sector of activity of taxpayers (at this stage set equal to the SUT codes).

Reporting_Sector_Code	Reporting_Sector_Description_English	Reporting_Sector_Description_Native	SUT_Sector_Code	SUT_Sector_Description_English	SUT_Sector_Description_Native	Model_Sector_Code	Model_Sector_Description_English	Model_Sector_Description_Native	Registry_Sector_Code	Registry_Sector_Description_English	Registry_Sector_Description_Native
A	Agriculture, forestry		S_01	Agriculture		S_01	Agriculture		A	Agriculture	
B	Fishing		S_02	Fishing		S_02	Fishing		B	Fishing	
C	Mining, quarrying and Manufacturing		S_03	Manufacture of fishery products		S_03	Manufacture of fishery products		C	Manufacture of fishery products	
C	Mining, quarrying and Manufacturing		S_04	Manufacture of other food		S_04	Manufacture of other food		C	Manufacture of other food	

# Reference-A-Model\_Structure\_V23

Worksheet *Commodity codes*. Contains the classifications of commodities used by the model.

- ▶ “SUT commodity code” corresponding to the codes from the supply use tables to be used in the model
- ▶ “Model commodity codes” is used to disaggregate the classification of SUT according to tax policy parameters (exemptions, VAT rates, etc.). See the example of agricultural products that are partly exempt from VAT.

A	B	C	D	E	F
SUT_Commodity_Code	SUT_Commodity_Description_English	SUT_Commodity_Description_Native	Model_Commodity_Code	Model_Commodity_Description_English	Model_Commodity_Description_Native
P_01	Agricultural products		P_01_1	Agricultural products	
P_01	Agricultural products		P_01_2	Agricultural products exempt	
P_02	Fish & aquatic products		P_02	Fish & aquatic products	
P_03	Quarry products		P_03	Quarry products	
P_05	Processed fish		P_05	Processed fish	



# Reference-B- Policy parameters

# Reference-B- Policy parameters

## Worksheet *Parameters*

Check. The File Path is self-setting, while the value for the Model Structure File parameter should be set to be the filename of the Model Structure workbook.

	A	B
1	Parameter	Value
2	Current File Path	C:\Users\PC\Documents\STX_FAD\Tanzania\VAT gap\model_Shan\
3	Model Structure File	A-Model_Structure_v23.xlsx
4		
5		

# Reference-B- Policy parameters

## Worksheet *Policy structure*

This worksheet includes a number of policy structures A, B, and C, and a number of flags, columns D through N, that are used by the model. No action is required

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Policy_Structure_Code	Policy_Rate_Structure_to_Use	Policy_Structure_Description	Current_Structure_Flag	Normative_Structure_Flag	Comprehensive_Structure_Flag	Use_Presumptive_Credits	Use_Withholding_Flag	Use_Reverse_Charge_Flag	Use_ITC_Restrictions_Flag	Use_Restriction_of_CapGoodsCredits_Flag	Use_Thresholds_to_Tradeables_Flag	Use_Adjustment_s_to_Tradeables_Flag	Use_Non-Market_Output_Exclusion_Flag
1	A	Current	current	1			1	1	1	1	1	1	1	1
2	B	Normative	normative		1		0	0	0	0	0	0	1	1
3	C	Comprehensive	comprehensive			1	0	0	0	0	0	0	0	0
4														
5														
6														
7														

# Reference-B- Policy parameters

## Worksheet *Tax rate*

Modify the worksheet to consider a tax system with:

a standard tax rate of 14% for the years 2019-2021 and 15% in 2022;

a lower tax rate of 10% for the entire period.

The model also considers the presence of a zero tax rate and exempt goods and services.

The T flag identifies the trade sector

	A	B	C	D	E	F	G	H
1	Tax_Rate_Code	Region_Code	Tax_Rate_Description	2019	2020	2021	2022	
2	S	M	Standard	14	14	14	15	
3	T	ALL	Trade Sector	T	T	T	T	
4	E	ALL	Exempt	0	0	0	0	
5	Z	ALL	Zero-Rated	0	0	0	0	
6	L1	M	Lower Rate 1	10	10	10	10	
7								
8								
9								



# Reference-B- Policy parameters

Worksheet *Current Rate Structure* is where the rate codes need to be matched to the supplies they apply to.

- ▶ Reduced rate in P\_25;
- ▶ Zero rate Not applicable
- ▶ Exemption in: P\_01\_2, P\_06\_2, P\_10\_2, P\_11\_2, P\_18, P\_19, P\_20\_2, P\_27, P\_29, P\_32, P\_33, P\_35\_2;
- ▶ T code in Trade in P\_21
- ▶ All other commodities have the standard rate

See next slide

# Reference-B- Policy parameters

Model_Commodity _Code	Model_Commodity_Description	Current_Rate _Code - 2020	Current_Rate _Code - 2021	Current_Rate _Code - 2022
P_06_2	Fresh bread	E	E	E
P_07	Beverages and tobacco	S	S	S
P_08	Textiles, clothing, footwear and other leather products	S	S	S
P_09	Wood, paper and printed products	S	S	S
P_10_1	Petroleum products	S	S	S
P_10_2	Services by Taxovia Petroleum Company Limited	E	E	E
P_11_1	Chemicals, rubber and plastic products	S	S	S
P_11_2	Pharmaceutical exempt	E	E	E
P_12	Non-metallic mineral products	S	S	S
P_13	Metal products except machinery and equipment	S	S	S
P_14	Machinery and equipment and parts except transport	S	S	S
P_15	Transport equipment and parts	S	S	S
P_16	Furniture and other products nes	S	S	S
P_17	Repair and installation services except for motor vehicles	S	S	S
P_18	Electricity, gas, steam and air conditioning supply	E	E	E
P_19	Water supply; sewerage, waste management and remediation services	E	E	E
P_20_1	Construction	S	S	S
P_20_2	Services for construction of residential dwellings	E	E	E
P_21	Wholesale and retail trade	T	T	T
P_22	Repair of motor vehicles and motorcycles	S	S	S
P_23	Transportation and storage	S	S	S
P_24	Accommodation services	S	S	S
P_25	Food and bar services	L1	L1	L1
P_26	Information and communication	S	S	S
P_27	Financial and insurance services	E	E	E
P_28	Real estate services	S	S	S
P_29	Owner occupied dwellings	E	E	E
P_30	Professional, scientific and technical services	S	S	S
P_31	Administrative and support services	S	S	S
P_32	Public administration and defence; compulsory social security	E	E	E
P_33	Education	E	E	E
P_35_1	Human health and social work	S	S	S
P_35_2	Hospital	E	E	E
P_36	Arts, entertainment and recreation	S	S	S
P_37	Other services	S	S	S

# Reference-B- Policy parameters

## Worksheet Other Rate Structures

Prefilled, please do not edit.

Column “C” is the normative rate code. It is supposed to reflect the most pragmatic policy structure available, taxing everything that's a marketable good.

Column “D” is for the comprehensive rate code structure, where everything should be subject to the standard rate.

See next slide

# Reference-B- Policy parameters

Model_Commodity_Code	Model_Commodity_Description	Normative_Rate_Code	Comprehensive_Rate_Code
P_01_1	Agricultural products	S	S
P_01_2	Agricultural products exempt	S	S
P_02	Fish & aquatic products	S	S
P_03	Quarry products	S	S
P_05	Processed fish	S	S
P_06_1	Other food products	S	S
P_06_2	Fresh bread	S	S
P_07	Beverages and tobacco	S	S
P_08	Textiles, clothing, footwear and other leather products	S	S
P_09	Wood, paper and printed products	S	S
P_10_1	Petroleum products	S	S
P_10_2	Services by Taxovia Petroleum Company Limited	S	S
P_11_1	Chemicals, rubber and plastic products	S	S
P_11_2	Pharmaceutical exempt	S	S
P_12	Non-metallic mineral products	S	S
P_13	Metal products except machinery and equipment	S	S
P_14	Machinery and equipment and parts except transport	S	S
P_15	Transport equipment and parts	S	S
P_16	Furniture and other products nes	S	S
P_17	Repair and installation services except for motor vehicles	S	S
P_18	Electricity, gas, steam and air conditioning supply	S	S
P_19	Water supply; sewerage, waste management and remediation services	S	S
P_20_1	Construction	S	S
P_20_2	Services for construction of residential dwellings	S	S
P_21	Wholesale and retail trade	S	S
P_22	Repair of motor vehicles and motorcycles	S	S
P_23	Transportation and storage	S	S
P_24	Accommodation services	S	S
P_25	Food and bar services	S	S
P_26	Information and communication	S	S
P_27	Financial and insurance services	E	S
P_28	Real estate services	S	S
P_29	Owner occupied dwellings	E	S
P_30	Professional, scientific and technical services	S	S
P_31	Administrative and support services	S	S
P_32	Public administration and defence; compulsory social security	E	S
P_33	Education	E	S
P_35_1	Human health and social work	E	S
P_35_2	Hospital	S	S
P_36	Arts, entertainment and recreation	S	S
P_37	Other services	S	S

# Reference-B- Policy parameters

## *Worksheet Presumptive Credits*

The tax system does not allow the accounting of presumptive credits, so nothing needs to be changed.

## *Worksheet Withholding*

Withholding is not applied, so nothing needs to be changed.

## *Worksheet Reverse Charge*

Reverse Charge is not applied, so nothing needs to be changed.

# Reference-B- Policy parameters

## Worksheet *Input Credit Restrictions*

In Taxovia a taxpayer is not allowed to claim an input tax credit on the 50 per cent of the food and bar services. Modify the worksheet accordingly.

Model_Sector_Code	Model_Sector_Description	Model_Commodity_Code	Model_Commodity_Description	ITC_Restriction - 2019	ITC_Restriction - 2020	ITC_Restriction - 2021	ITC_Restriction - 2022
S_01	Agriculture	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_02	Fishing	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_03	Manufacture of fishery products	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_04	Manufacture of other food	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_05	Manufacture of beverages and tobacco	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_06	Manufacturing, other	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_07	Electricity, gas, steam and air conditioning	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_08	Water supply; sewerage, waste management and remediation activities	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_09	Construction	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_10	Wholesale and retail trade; repair of motor vehicles, motorcycles, mopeds and scooters	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_11	Transportation and storage	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_12	Accommodation and food service activities	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_13	Information and communication	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_14	Financial and insurance activities	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_15	Real estate activities	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_16	Owner occupied dwellings	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_17	Professional, scientific and technical activities	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_18	Administrative and support service activities	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_19	Public administration and defence; compulsory social security	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_20	Education	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_21	Human health and social work activities	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_22	Arts, entertainment and recreation	P_25	Food and bar services	0.5	0.5	0.5	0.5
S_23	Other service activities	P_25	Food and bar services	0.5	0.5	0.5	0.5

# Reference-B- Policy parameters

## Worksheet *Credit Restricted Capital Goods*

There is no restriction on credit on capital goods, so there is no need to change anything.

## Worksheet Non-Registrants by Sector

In Taxovia there is an estimation of percent of taxpayers in each sector that are below the registration threshold.

See next slide

# Reference-B- Policy parameters

Model_Sector_Code	Model_Sector_Description	Proportion_of_ Value- Added_by_Non Registrants - 2019	Proportion_of_ Value- Added_by_Non Registrants - 2020	Proportion_of_ Value- Added_by_Non Registrants - 2021	Proportion_of_ Value- Added_by_Non Registrants - 2022	Notes
S_01	#REF!	0.30	0.30	0.30	0.30	
S_02	#REF!	0.40	0.40	0.40	0.40	
S_03	#REF!	0.05	0.05	0.05	0.05	
S_05	#REF!	0.05	0.05	0.05	0.05	
S_06	#REF!	0.05	0.05	0.05	0.05	
S_07	#REF!	0.05	0.05	0.05	0.05	
S_08	#REF!	0.00	0.00	0.00	0.00	
S_09	#REF!	0.25	0.25	0.25	0.25	
S_10	#REF!	0.06	0.06	0.06	0.06	
S_11	#REF!	0.06	0.06	0.06	0.06	
S_12	#REF!	0.03	0.03	0.03	0.03	
S_13	#REF!	0.03	0.03	0.03	0.03	
S_14	#REF!	0.01	0.01	0.01	0.01	
S_15	#REF!	0.00	0.00	0.00	0.00	
S_16	#REF!	0.05	0.05	0.05	0.05	
S_17	#REF!	0.00	0.00	0.00	0.00	
S_18	#REF!	0.07	0.07	0.07	0.07	
S_19	#REF!	0.15	0.15	0.15	0.15	
S_20	#REF!	0.00	0.00	0.00	0.00	
S_21	#REF!	0.00	0.00	0.00	0.00	
S_22	#REF!	0.00	0.00	0.00	0.00	
S_23	#REF!	0.08	0.08	0.08	0.08	



# **Reference-C- Tax\_Base\_Adjustment\_Parameters**

# Reference-C- Tax\_Base\_Adjustment\_Parameters

## Worksheet *Parameters*

Check. The File Path is self-setting, while the value for the Model Structure File parameter should be set to be the filename of the Model Structure workbook.

A	B
Parameter	Value
File Path	C:\Users\PC\Documents\STX_FAD\Tanzania\VAT gap\model_Shan\
Model Structure File	A-Model_Structure_v23.xlsx

# Reference-C- Tax\_Base\_Adjustment\_Parameters

## Worksheet *Trade Parameters - Sector*

Verify that rows and columns are up to date and that the trade flag is correctly placed. No further changes are required.

Model_Sector_Code	Model_Sector_Description	Trade_Sector_Flag	Proportion_of_Imports_by_Trade_Sector - 2019	Proportion_of_Imports_by_Trade_Sector - 2020	Proportion_of_Imports_by_Trade_Sector - 2021	Proportion_of_Imports_by_Trade_Sector - 2022	Net
S_01	Agriculture						
S_02	Fishing						
S_03	Manufacture of fishery products						
S_04	Manufacture of other food						
S_05	Manufacture of beverages and tobacco						
S_06	Manufacturing, other						
S_07	Electricity, gas, steam and air conditioning supply						
S_08	Water supply; sewerage, waste management and remediation activities						
S_09	Construction						
S_10	Wholesale and retail trade; repair of motor vehicles and motorcycles	1					
S_11	Transportation and storage						
S_12	Accommodation and food service activities						
S_13	Information and communication						
S_14	Financial and insurance activities						
S_15	Real estate activities						
S_16	Owner occupied dwellings						
S_17	Professional, scientific and technical activities						
S_18	Administrative and support service activities						
S_19	Public administration and defence; compulsory social security						
S_20	Education						
S_21	Human health and social work activities						
S_22	Arts, entertainment and recreation						
S_23	Other service activities						

# Reference-C- Tax\_Base\_Adjustment\_Parameters

## Worksheet *Trade Parameters - Commodity*

Verify that rows and columns are up to date.

Column C, labeled Not a Tradable for VAT Flag, allows us to correct for the difference in definition of trade used in the SUT and VAT. All non-tradable commodities are marked with 1.

No further adjustments are needed at this stage.

A Model_Commodity_Code	B Model_Commodity_Description	C Not_a_Tradeable_for_VAT_Flag	D Proportion_of_Exports_by_Trade_Sector - 2019	E Proportion_of_Exports_by_Trade_Sector
P_14	Machinery and equipment and parts except transport			
P_15	Transport equipment and parts			
P_16	Furniture and other products nes			
P_17	Repair and installation services except for motor vehicles			
P_18	Electricity, gas, steam and air conditioning supply			
P_19	Water supply; sewerage, waste management and remedia	1		
P_20_1	Construction	1		
P_20_2	Services for construction of residential dwellings	1		
P_21	Wholesale and retail trade			
P_22	Repair of motor vehicles and motorcycles			
P_23	Transportation and storage	1		
P_24	Accommodation services	1		
P_25	Food and bar services	1		
P_26	Information and communication	1		
P_27	Financial and insurance services	1		
P_28	Real estate services	1		
P_29	Owner occupied dwellings	1		
P_30	Professional, scientific and technical services			
P_31	Administrative and support services			
P_32	Public administration and defence; compulsory social security			
P_33	Education			
P_35_1	Human health and social work			
P_35_2	Hospital			
P_36	Arts, entertainment and recreation			
P_37	Other services			

# Reference-C- Tax\_Base\_Adjustment\_Parameters

## Worksheet *Simple Commodity Splits*

This worksheet is used when a commodity is to be disaggregated in the model. Percentages are used to tell the model how to break down the data associated with each commodity.

Model_Commodity	Model_Commodity_Description	Simple_Comm odity_Splits 2019	Simple_Comm odity_Splits 2020	Simple_Comm odity_Splits 2021	Simple_Comm odity_Splits 2022	Simple_Comm odity_Splits 2023	Ne
P_01_1	Agricultural products	0.2	0.2	0.2	0.2	0.2	
P_01_2	Agricultural products exempt	0.8	0.8	0.8	0.8	0.8	
P_02	Fish & aquatic products	1	1	1	1	1	
P_03	Quarry products	1	1	1	1	1	
P_05	Processed fish	1	1	1	1	1	
P_06_1	Other food products	0.95	0.95	0.95	0.95	0.95	
P_06_2	Fresh bread	0.05	0.05	0.05	0.05	0.05	
P_07	Beverages and tobacco	1	1	1	1	1	
P_08	Textiles, clothing, footwear and other leather products	1	1	1	1	1	
P_09	Wood, paper and printed products	1	1	1	1	1	
P_10_1	Petroleum products	0.2	0.2	0.2	0.2	0.2	
P_10_2	Services by Taxovia Petroleum Company Limited	0.8	0.8	0.8	0.8	0.8	
P_11_1	Chemicals, rubber and plastic products	0.9	0.9	0.9	0.9	0.9	
P_11_2	Pharmaceutical exempt	0.1	0.1	0.1	0.1	0.1	
P_12	Non-metallic mineral products	1	1	1	1	1	
P_13	Metal products except machinery and equipment	1	1	1	1	1	
P_14	Machinery and equipment and parts except transport	1	1	1	1	1	
P_15	Transport equipment and parts	1	1	1	1	1	
P_16	Furniture and other products nes	1	1	1	1	1	
P_17	Repair and installation services except for motor vehicles	1	1	1	1	1	
P_18	Electricity, gas, steam and air conditioning supply	1	1	1	1	1	
P_19	Water supply; sewerage, waste management and remediation services	1	1	1	1	1	
P_20_1	Construction	0.8	0.8	0.8	0.8	0.8	
P_20_2	Services for construction of residential dwellings	0.2	0.2	0.2	0.2	0.2	
P_21	Wholesale and retail trade	1	1	1	1	1	
P_22	Repair of motor vehicles and motorcycles	1	1	1	1	1	
P_23	Transportation and storage	1	1	1	1	1	
P_24	Accommodation services	1	1	1	1	1	
P_25	Food and bar services	1	1	1	1	1	
P_26	Information and communication	1	1	1	1	1	
P_27	Financial and insurance services	1	1	1	1	1	
P_28	Real estate services	1	1	1	1	1	
P_29	Owner occupied dwellings	1	1	1	1	1	
P_30	Professional, scientific and technical services	1	1	1	1	1	
P_31	Administrative and support services	1	1	1	1	1	
P_32	Public administration and defence; compulsory social security	1	1	1	1	1	
P_33	Education	1	1	1	1	1	
P_35_1	Human health and social work	0.5	0.5	0.5	0.5	0.5	
P_35_2	Hospital	0.5	0.5	0.5	0.5	0.5	
P_36	Arts, entertainment and recreation	1	1	1	1	1	
P_37	Other services	1	1	1	1	1	

# Reference-C- Tax\_Base\_Adjustment\_Parameters

## Worksheet Simple Sector Splits

This worksheet is used when a sector is to be disaggregated in the model. Since no sector has been disaggregated all cells are assigned the value 1.

Model_Sector_Code	Model_Sector_Description	Simple_Sector_Splits - 2019	Simple_Sector_Splits - 2020	Simple_Sector_Splits - 2021	Simple_Sector_Splits - 2022	Notes
S_01	Agriculture	1	1	1	1	
S_02	Fishing	1	1	1	1	
S_03	Manufacture of fishery products	1	1	1	1	
S_05	Manufacture of beverages and tobacco	1	1	1	1	
S_06	Manufacturing, other	1	1	1	1	
S_07	Electricity, gas, steam and air conditioning supply	1	1	1	1	
S_08	Water supply; sewerage, waste management and remediation activities	1	1	1	1	
S_09	Construction	1	1	1	1	
S_10	Wholesale and retail trade; repair of motor vehicles and motorcycles	1	1	1	1	
S_11	Transportation and storage	1	1	1	1	
S_12	Accommodation and food service activities	1	1	1	1	
S_13	Information and communication	1	1	1	1	
S_14	Financial and insurance activities	1	1	1	1	
S_15	Real estate activities	1	1	1	1	
S_16	Owner occupied dwellings	1	1	1	1	
S_17	Professional, scientific and technical activities	1	1	1	1	
S_18	Administrative and support service activities	1	1	1	1	
S_19	Public administration and defence; compulsory social security	1	1	1	1	
S_20	Education	1	1	1	1	
S_21	Human health and social work activities	1	1	1	1	
S_22	Arts, entertainment and recreation	1	1	1	1	
S_23	Other service activities	1	1	1	1	

# Reference-C- Tax\_Base\_Adjustment\_Parameters

## Actions needed to complete Reference C

Check if you have saved the Model Structure workbook and perform a data refresh. The data refresh may take some time.

Check that there are sufficient rows in the Output Splits worksheets. Adding more commodity codes requires adding more rows.

# Actual VAT



# AV diagnostics workbook

Please write the formulas to calculate AV0-AV4 in columns Q to U of the 'AV diagnostic Taxovia' file.

AV	Formulas
AV0 =	Official Net VAT
AV1 =	VAT payments by taxpayers cash + VAT paid on import cash – VAT refunds to taxpayers cash
AV2 =	VAT payments by taxpayers accrued + VAT paid on import accrued – VAT refunds to taxpayers accrued
AV3 =	Net VAT due – Net VAT creditable
AV4 =	VAT payment by taxpayer accrued + VAT paid on imports accrued – Net VAT creditable – excess of credits used as payment, accrued

# AV diagnostics workbook

## AV1, AV2, AV3, AV4 – Taxovia actual VAT revenue

Year	From Payment Database						From Tax Returns Database					AV Measures			
	VAT payments by taxpayers	VAT payments by taxpayers accrued	VAT paid on imports cash	VAT paid on imports accrued	VAT Refunds to taxpayers cash	VAT Refunds to taxpayers accrued	Net VAT due <sup>(1)</sup>	Net VAT creditable <sup>(2)</sup>	Excess credits used as payments accrued	VAT due on import accrued	Official net VAT - AV0	AV1	AV2	AV3	AV4
	1	2	3a	3b	4	5	6	7	8	9		1+3a-4	2+3b-5	6-7	2+3b-7+8
2019	2,100	2,100	900	900	1,174	1,182	3,022	1,200	23	900	1,819	1,826	1,818	1,822	1,823
2020	2,200	2,200	850	850	1,482	1,477	3,078	1,500	15	850	1,580	1,568	1,573	1,578	1,565
2021	2,500	2,500	800	800	1,554	1,555	3,356	1,600	36	800	1,792	1,746	1,745	1,756	1,736
2022	2,000	2,000	810	810	928	924	2,869	980	42	810	1,853	1,882	1,886	1,889	1,872

Notes: (1) Net VAT due: VAT debits minus VAT credits, for taxpayers in a net debit position (Debits>Credits). (2) Net VAT creditable: VAT credits minus VAT debits, for taxpayers in a net credit position (Credits>Debits)

# **AV1, AV2, AV3, AV4 workbook**

The AV measures that will be used in our example should be compiled by year and sector of economic activity.

You need to copy this data and paste it into the worksheet 'Actual measures' of the workbook:

VAT Reference D - Data input

# AV diagnostics workbook

AV1, AV2, AV3, AV4 – Taxovia actual VAT revenue

Year	Registry_Sector_Code	AV1 Net VAT Revenue, cash	AV2 Net VAT Revenue, accrual	AV3 Net VAT Assessed	AV4 Net VAT Accrued
2019	A	(0.1)	(0.1)	(0.1)	(0.1)
2019	B	22.7	22.6	22.6	22.7
2019	C	114.6	114.6	114.3	114.7
2019	E	3.8	3.8	3.8	3.8
2019	F	104.6	104.1	104.5	104.2
2019	G	495.8	493.0	495.0	495.5
2019	H	91.9	91.8	91.8	91.7
2019	I	632.9	629.3	631.8	632.2
2019	J	117.3	117.4	117.0	116.6
2019	K	43.3	43.2	43.1	42.9
2019	L	67.5	67.5	67.3	67.7
2019	M	15.3	15.2	15.3	15.2
2019	N	52.4	52.1	52.2	52.3
2019	Q	3.2	3.2	3.2	3.2
2019	R	55.1	55.0	55.1	55.0
2019	S	5.3	5.3	5.4	5.3
2020	A	(0.1)	(0.1)	(0.1)	(0.1)
2020	B	19.3	19.6	19.5	19.4
2020	C	98.7	99.5	99.4	99.3
2020	E	3.3	3.3	3.3	3.3
2020	F	90.6	90.4	90.5	90.1
2020	G	423.0	427.4	430.6	428.5
2020	H	79.4	80.1	79.8	78.6
2020	I	544.7	543.6	545.3	539.6
2020	J	100.9	101.6	101.5	99.8

# Potential Tax Base

# Adjusting Supply-Use Tables

You will find the SUTs for Taxovia in this Excel file: “SUT2019-2022”

## SUT

Commodity Code	Supply Table												
	Agriculture S01	Fishing S02	Manufacture of fishery products S03	Manufacture of other food S04	Manufacture of beverages and tobacco S05	Manufacturing, other S06	Electricity, gas, steam and air conditioning supply S07	Water supply, sewerage, waste management and remediation activities S08	Construction S09	Wholesale and retail trade, repair of motor vehicles and motorcycles S10	Transport and storage S11	Accommodation and food service activities S12	Information and communication S13
P01	325.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P02	0.0	338.8	394.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P04	0.0	0.0	4279.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P05	0.0	0.0	0.0	196.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P06	0.0	0.0	0.0	0.0	624.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P07	0.0	0.0	0.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P08	0.0	0.0	0.0	0.0	0.0	26.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P09	0.0	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P10	0.0	0.0	0.0	0.0	0.0	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P11	0.0	0.0	0.0	0.0	0.0	266.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P12	0.0	0.0	0.0	0.0	0.0	39.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P13	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P14	0.0	0.0	0.0	0.0	0.0	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P15	0.0	0.0	0.0	0.0	0.0	152.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P16	0.0	0.0	0.0	0.0	0.0	53.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P17	0.0	0.0	0.0	0.0	0.0	0.0	1297.5	0.0	0.0	0.0	0.0	0.0	0.0
P18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	288.3	0.0	0.0	0.0	0.0	0.0
P19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3059.8	0.0	0.0	0.0	0.0
P20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2219.5	0.0	0.0	0.0
P21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	224.1	0.0	0.0	0.0
P22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4042.3	0.0	0.0
P23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3154.2	0.0
P24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1765.3	0.0
P25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1278.5
P26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1) Expansion

2) Rebasing

3) Distribution

## Adjusted SUT

Commodity Code	Supply Table												
	Agriculture S01	Fishing S02	Manufacture of fishery products S03	Manufacture of other food S04	Manufacture of beverages and tobacco S05	Manufacturing, other S06	Electricity, gas, steam and air conditioning supply S07	Water supply, sewerage, waste management and remediation activities S08	Construction S09	Wholesale and retail trade, repair of motor vehicles and motorcycles S10	Transport and storage S11	Accommodation and food service activities S12	Information and communication S13
P01	325.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P02	0.0	338.8	394.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P04	0.0	0.0	4279.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P05	0.0	0.0	0.0	196.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P06	0.0	0.0	0.0	0.0	624.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P07	0.0	0.0	0.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P08	0.0	0.0	0.0	0.0	0.0	26.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P09	0.0	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P10	0.0	0.0	0.0	0.0	0.0	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P11	0.0	0.0	0.0	0.0	0.0	266.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P12	0.0	0.0	0.0	0.0	0.0	39.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P13	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P14	0.0	0.0	0.0	0.0	0.0	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P15	0.0	0.0	0.0	0.0	0.0	152.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P16	0.0	0.0	0.0	0.0	0.0	53.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P17	0.0	0.0	0.0	0.0	0.0	0.0	1297.5	0.0	0.0	0.0	0.0	0.0	0.0
P18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	288.3	0.0	0.0	0.0	0.0	0.0
P19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3059.8	0.0	0.0	0.0	0.0
P20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2219.5	0.0	0.0	0.0
P21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	224.1	0.0	0.0	0.0
P22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4042.3	0.0	0.0
P23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3154.2	0.0
P24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1765.3	0.0
P25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1278.5
P26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

For the purposes of this presentation, we are going to consider that the SUT has already been subjected to expansion, rebasing, and distribution processes (please see the IMF’s on-line course VGAPx for a detailed description about the adjustments to the SUTs).

# Adjusted SUT for estimating potential VAT base

- ❖ We will construct the potential VAT base by using adjusted SUT and GDP series
- ❖ The potential VAT base table that will be populated is a table consisting of 14 columns, of which 4 are dimensions and 10 are variables

Year	Region Code	SUT Sector Code	SUT Commodity Code	Market Output	Non-Market Output	Output for Own Use	Imports	Intermediate Demand	Gross Fixed Capital Formation	Other Capital Formation, Excluded	Other Capital Formation, Included	Exports	Re-Exports
------	-------------	-----------------	--------------------	---------------	-------------------	--------------------	---------	---------------------	-------------------------------	-----------------------------------	-----------------------------------	---------	------------

# Adjusted SUT for estimating potential VAT base

- ❖ We also need to fill the trade margins table in the data inputs workbook of the model. The trade margins table has only three dimensions and one variable, indicated below.

Year	Region Code	SUT Commodity Code	Trade Margins
------	-------------	--------------------	---------------

Trade margins are the differences between the price realised on a good purchased for resale and the price paid to purchase the same good



# Reference-D-Data\_Inputs

# **Adjusted SUT for estimating potential VAT base**

The contents of each unpivoted SUT adjusted must be copied and pasted into the corresponding column of the "Potential VAT Basis" worksheet in "Reference D - Data Input" workbook.

The contents of the "margins" worksheet must be copied and pasted into the "Trade Margins" worksheet in "Reference D - Data Input" workbook.

# Reference-D-Data\_Inputs

Worksheet *Actual VAT Measures*: filled with data from “AV1, AV2, AV3, AV4” workbook;

	A	B	C	D	E	F	G
	Year	Registry_Sector_Code	AV1 Net VAT Revenue, cash	AV2 Net VAT Revenue, accrual	AV3 Net VAT Assessed	AV4 Net VAT Accrued	
2	2019	A	(0.1)	(0.1)	(0.1)	(0.1)	
3	2019	B	22.7	22.6	22.6	22.7	
4	2019	C	114.6	114.6	114.3	114.7	
5	2019	E	3.8	3.8	3.8	3.8	
6	2019	F	104.6	104.1	104.5	104.2	
7	2019	G	495.8	493.0	495.0	495.5	
8	2019	H	91.9	91.8	91.8	91.7	
9	2019	I	632.9	629.3	631.8	632.2	
10	2019	J	117.3	117.4	117.0	116.6	
11	2019	K	43.3	43.2	43.1	42.9	
12	2019	L	67.5	67.5	67.3	67.7	
13	2019	M	15.3	15.2	15.3	15.2	
14	2019	N	52.4	52.1	52.2	52.3	
15	2019	Q	3.2	3.2	3.2	3.2	
16	2019	R	55.1	55.0	55.1	55.0	
17	2019	S	5.3	5.3	5.4	5.3	
18	2020	A	(0.1)	(0.1)	(0.1)	(0.1)	
19	2020	B	19.3	19.6	19.5	19.4	

# Reference-D-Data\_Inputs

Worksheet *Potential VAT Base*: filled with data from the adjusted SUT

Year	Region_Cod	SUT_Sector_Code	SUT_Commodity_Code	Market Output	Non-Market Output	Output for Own Use	Imports	Intermediate Demand	Gross Fixed Capital Formation	Other Capital Formation, Excluded	Other Capital Formation, Included	Exports	Re-Exports
2019	M	S_01	P_01	325.41	-	-	-	12	28	-	-	7	-
2019	M	S_02	P_01	-	-	-	-	-	-	-	-	-	-
2019	M	S_03	P_01	-	-	-	-	1	3	-	-	-	-
2019	M	S_04	P_01	-	-	-	-	18	42	-	-	-	-
2019	M	S_05	P_01	-	-	-	-	5	11	-	-	-	-
2019	M	S_06	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_07	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_08	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_09	P_01	-	-	-	-	3	6	-	-	-	-
2019	M	S_10	P_01	-	-	-	-	134	9	-	-	-	-
2019	M	S_11	P_01	-	-	-	-	2	4	-	-	-	-
2019	M	S_12	P_01	-	-	-	-	115	270	-	-	-	-
2019	M	S_13	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_14	P_01	-	-	-	-	-	-	-	-	-	-
2019	M	S_15	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_16	P_01	-	-	-	-	-	-	-	-	-	-
2019	M	S_17	P_01	-	-	-	-	-	-	-	-	-	-
2019	M	S_18	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_19	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_20	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_21	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_22	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_23	P_01	-	-	-	-	0	0	-	-	-	-
2019	M	S_01	P_02	-	-	-	-	-	-	-	-	-	-
2019	M	S_02	P_02	338.83	-	-	-	-	-	-	-	0	-
2019	M	S_03	P_02	394.68	-	-	-	0	606	-	-	0	-
2019	M	S_04	P_02	-	-	-	-	-	-	-	-	-	-
2019	M	S_05	P_02	-	-	-	-	-	-	-	-	-	-
2019	M	S_06	P_02	-	-	-	-	-	-	-	-	-	-
2019	M	S_07	P_02	-	-	-	-	-	-	-	-	-	-
2019	M	S_08	P_02	-	-	-	-	-	-	-	-	-	-
2019	M	S_09	P_02	-	-	-	-	-	-	-	-	-	-
2019	M	S_10	P_02	-	-	-	-	0	0	-	-	-	-
2019	M	S_11	P_02	-	-	-	-	0	0	-	-	-	-
2019	M	S_12	P_02	-	-	-	-	0	25	-	-	-	-
2019	M	S_13	P_02	-	-	-	-	-	-	-	-	-	-

# Reference-D-Data\_Inputs

Worksheet *Trade Margins*(\*): filled with data from the adjusted SUT

Year	Region_Code	SUT_Commodity_Code	Trade Margins
2019	M	P_01	72
2019	M	P_02	31
2019	M	P_03	1
2019	M	P_05	4
2019	M	P_06	209
2019	M	P_07	287
2019	M	P_08	426
2019	M	P_09	151
2019	M	P_10	409
2019	M	P_11	218
2019	M	P_12	25
2019	M	P_13	58
2019	M	P_14	95
2019	M	P_15	126
2019	M	P_16	99
2019	M	P_17	-
2019	M	P_18	-
2019	M	P_19	-
2019	M	P_20	-
2019	M	P_21	-
2019	M	P_22	-
2019	M	P_23	-
2019	M	P_24	-
2019	M	P_25	-
2019	M	P_26	-
2019	M	P_27	-
2019	M	P_28	-
2019	M	P_29	-

(\*) It is necessary to eliminate the compensatory negative value in the row of the commodity associated to trade activities

# Reference-D-Data\_Inputs

You will find the official macroeconomic statistics for Taxovia in this Excel file:  
 “GDP2019-2022”

GDP Expenditure Approach								
Year	Household Final Consumption	Other Final Consumption	Total Final Consumption	GFCF	Other Capital Formation	Imports	Exports	GDP
2019	17906	3880	21787	5163.0	0.1	20305.7	17587.1	17518
2020	15365	3329	18694	4429.9	0.1	17329.4	14964.0	15200
2021	16804	3648	20452	4854.1	0.1	18901.2	16447.9	16907
2022	18128	3915	22043	5194.1	0.1	20257.0	17704.9	18087

# Reference-D-Data\_Inputs

Worksheet *Other Statistics*: to be filled with data from **official statistics**

Year	GDP	Household Final Consu	Public Final Consumpt	Total Final Consumptic	Official Net VAT
2019	17,518	17,906	3,880	21,787	1,819
2020	15,200	15,365	3,329	18,694	1,580
2021	16,907	16,804	3,648	20,452	1,792
2022	18,087	18,128	3,915	22,043	1,853

# Reference-D-Data\_Inputs

## Worksheet *Scalars*

The scalars worksheet is used to capture the scale of all of our main variables, as they might be provided at different scale levels.

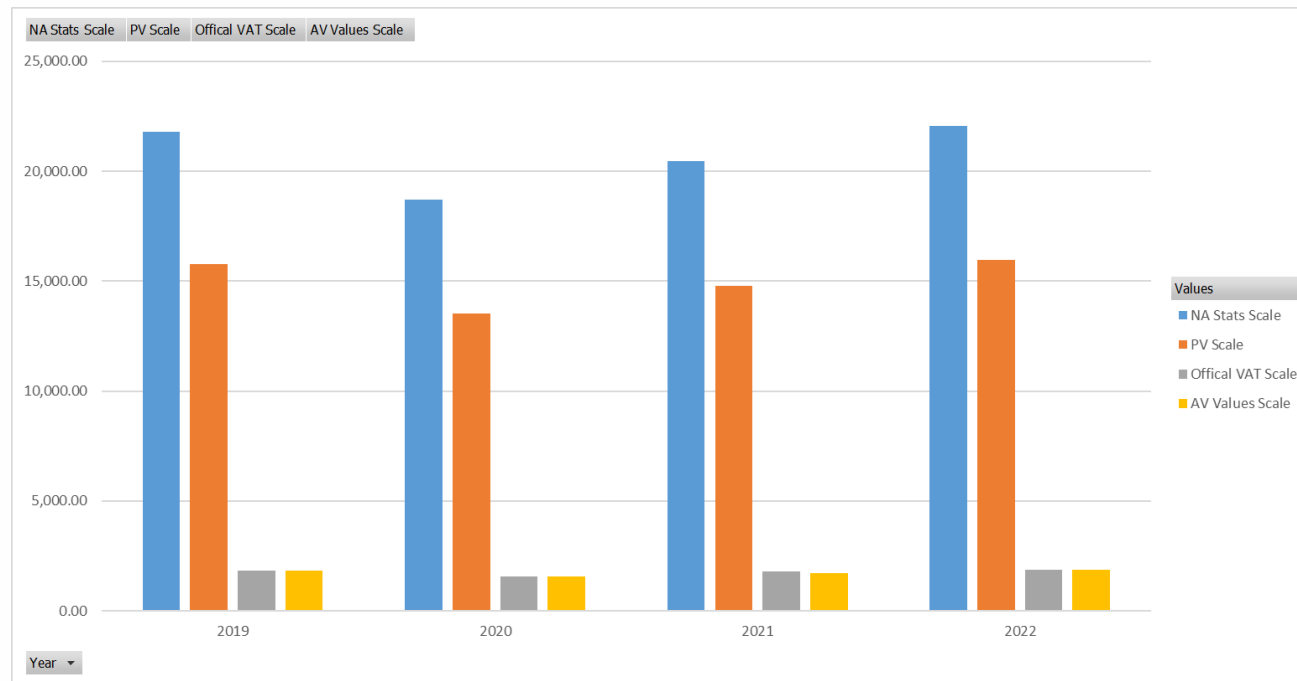
	A	B	
1	<b>Variable</b>	<b>Scale of Data Provided</b>	
2	Potential VAT Base		1
3	Actual VAT		1
4	Official VAT		1
5	National Accounts Statistics		1
6	Model Values		1
7			



# Reference-D-Data\_Inputs

## Worksheet *CheckScales*

Check scales, is used to confirm that the scales included in the scalar worksheet appear to be of the correct magnitude. To check the scales, a data refresh is necessary.



# Reference-E-Potential\_VAT\_Model

# Reference-E-Potential\_VAT\_Model

This is the part of the model that estimates potential VAT by year and by sector.

Steps to run the potential VAT module:

- ✓ Step 1: Save and close any open model workbooks
- ✓ Step 2: Open the potential Workbook E.
- ✓ Step 3: Check the Query parameter worksheets of the workbook.
- ✓ Step 4: Refresh the data in the potential VAT model workbook (\*)
- ✓ Step 5: Save and Close the potential VAT model workbook.

*(\*) Data refresh can take some time depending on the size of the model. You may find a number of error messages appearing. You can usually just dismiss these error messages and it won't stop running the model nor will it affect the results of the model*

# Reference-E-Potential\_VAT\_Model

## Worksheet *Model Results*.

All the components of potential VAT and potential VAT base are stored in this worksheet, calculated according to the policy structure defined in Module B.

## Worksheet *Summary Breakdown of Pot. VAT*.

Shows the components of potential VAT from both the supply and demand sides.

Policy_Structure_Code A					
Row Labels	VAT_on_Imports	VAT_on_Output	VAT_on_Inputs_Creditable	PVO Potential VAT (nominal)	
2019	1,919.75	2,141.21	1,587.74	2,473.22	
2020	1,655.46	1,835.06	1,368.11	2,122.41	
2021	1,812.91	2,008.17	1,497.22	2,323.86	
2022	2,094.46	2,314.24	1,730.55	2,678.15	

Policy_Structure_Code A					
Row Labels	Final_VAT_on_Intermediate_Consumption	Final_VAT_on_Capital_Goods	Final_VAT_on_Final_Consumption	PVO Potential VAT (nominal)	
2019	860.87	279.29	1,333.05	2,473.22	
2020	740.67	239.61	1,142.13	2,122.41	
2021	810.64	261.74	1,251.49	2,323.86	
2022	937.57	302.96	1,437.62	2,678.15	

# Reference-F-VAT\_Gap\_Reports

# Reference-F-VAT\_Gap\_Reports

This module estimates potential the VAT gap.

Steps to run the potential VAT module:

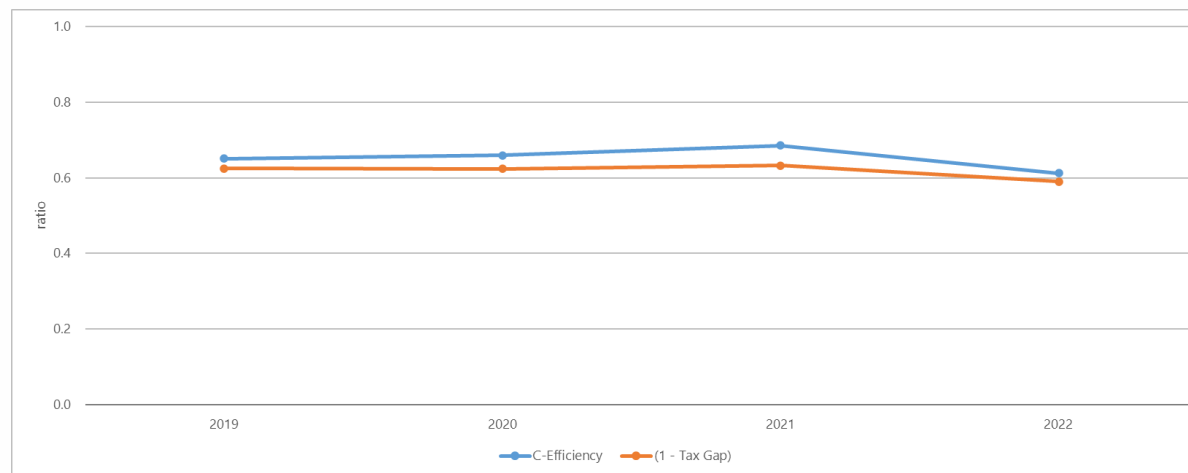
- ✓ Step 1: Save and close any open model workbooks
- ✓ Step 2: Open the potential Workbook F.
- ✓ Step 3: Check the Parameter worksheets of the workbook.
- ✓ Step 4: Refresh the data in the potential VAT model workbook (\*)
- ✓ Step 5: Save and Close the potential VAT model workbook.

*(\*) Data refresh can take some time depending on the size of the model. You may find a number of error messages appearing. You can usually just dismiss these error messages and it won't stop running the model nor will it affect the results of the model*

# Reference-F-VAT\_Gap\_Reports

Worksheet *C-Eff and TG*: Provides a comparison of c-efficiency to the reciprocal of the overall tax gap – in theory these should be identical.

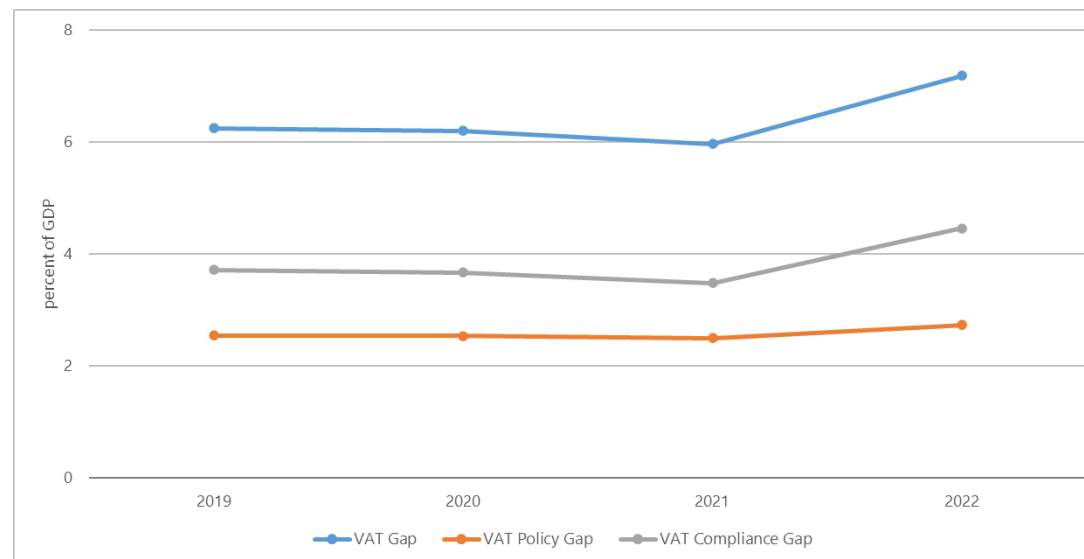
Row Labels	C-Efficiency	(1 - Tax Gap)
2019	0.65	0.62
2020	0.66	0.62
2021	0.69	0.63
2022	0.61	0.59



# Reference-F-VAT\_Gap\_Reports

Worksheet *Tax Gap (TG)*: Presents the sizes of the overall gap, and the policy and compliance gaps, giving an immediate indication of the trends in, and the relative sizes of these gaps.

Row Labels	VAT Gap	VAT Policy Gap	VAT Compliance Gap
2019	6.2	2.5	3.7
2020	6.2	2.5	3.7
2021	6.0	2.5	3.5
2022	7.2	2.7	4.5

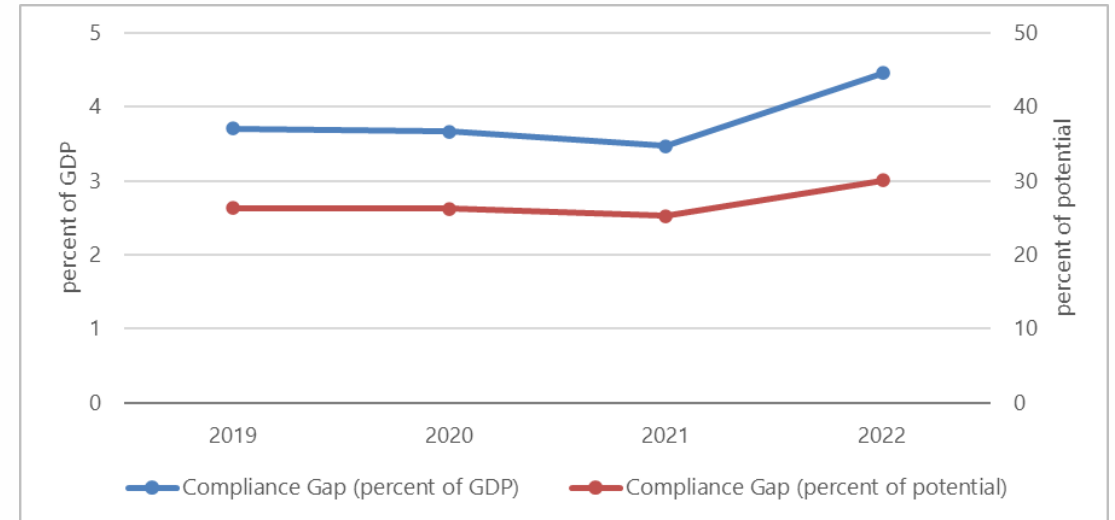




# Reference-F-VAT\_Gap\_Reports

Worksheet *Compliance Gap (CG)*: Presents the sizes of the compliance gap as a percentage of GDP and of the potential VAT.

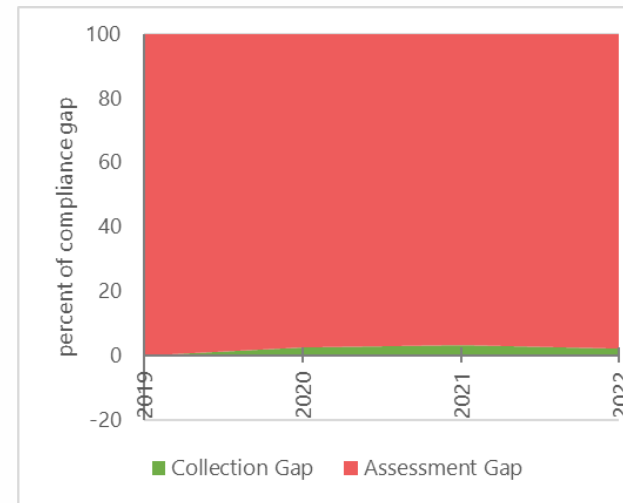
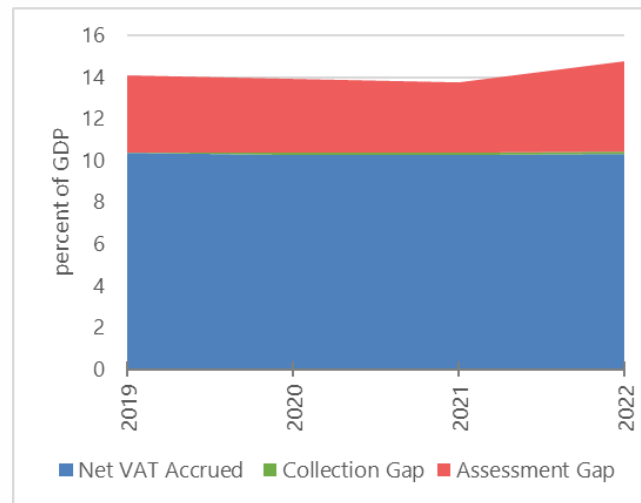
Row Labels	Compliance Gap (percent of GDP)	Compliance Gap (percent of potential)
2019	3.7	26.3
2020	3.7	26.3
2021	3.5	25.3
2022	4.5	30.1



# Reference-F-VAT\_Gap\_Reports

Worksheet *Breakdown of CG*: Presents the compliance gap, broken into its two sub components, compared to actual VAT.

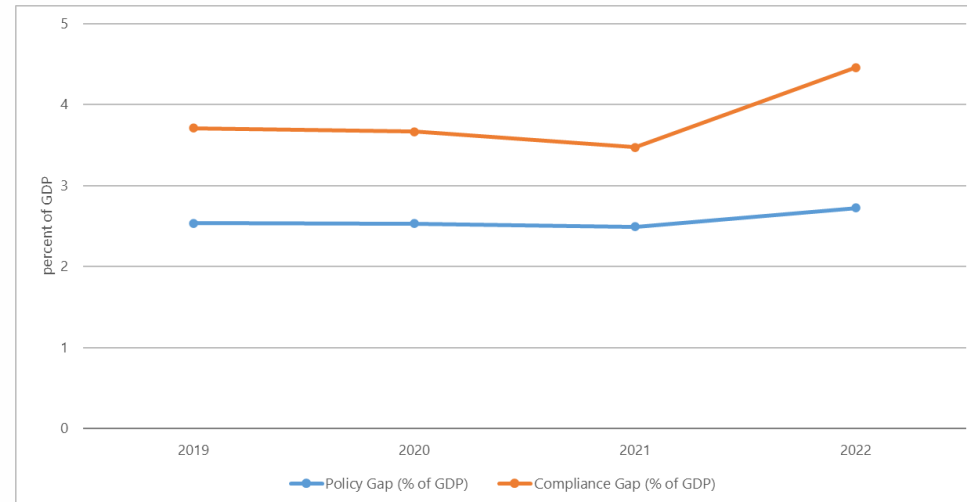
Row Labels	Net VAT Accrued	Collection Gap	Assessment Gap		Row Labels	Collection Gap	Assessment Gap
2019	10.4	0.0	3.7		2019	-0.1	100.1
2020	10.3	0.1	3.6		2020	2.4	97.6
2021	10.3	0.1	3.4		2021	3.3	96.7
2022	10.3	0.1	4.4		2022	2.2	97.8



# Reference-F-VAT\_Gap\_Reports

Worksheet *Policy Gap (PG)*: Presents a comparison between policy gap and compliance gap as a percentage of GDP.

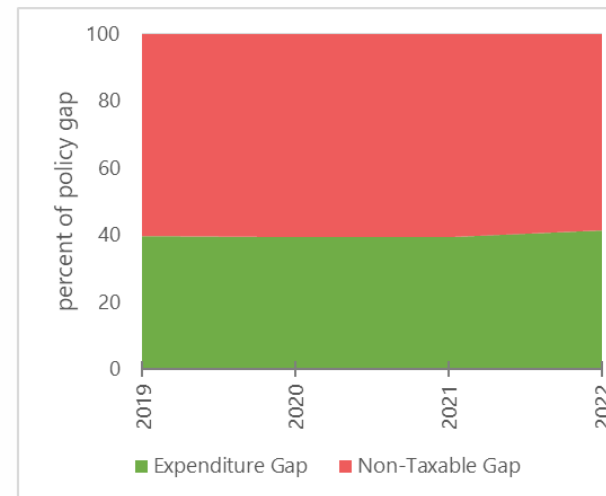
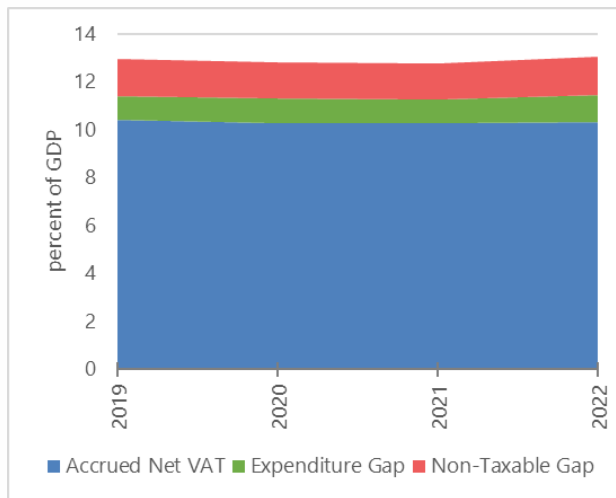
Row Labels	Policy Gap (% of GDP)	Compliance Gap (% of GDP)
2019	2.5	3.7
2020	2.5	3.7
2021	2.5	3.5
2022	2.7	4.5



# Reference-F-VAT\_Gap\_Reports

Worksheet *Breakdown of PG*: Presents the policy gap, broken into its two sub components, compared to actual VAT.

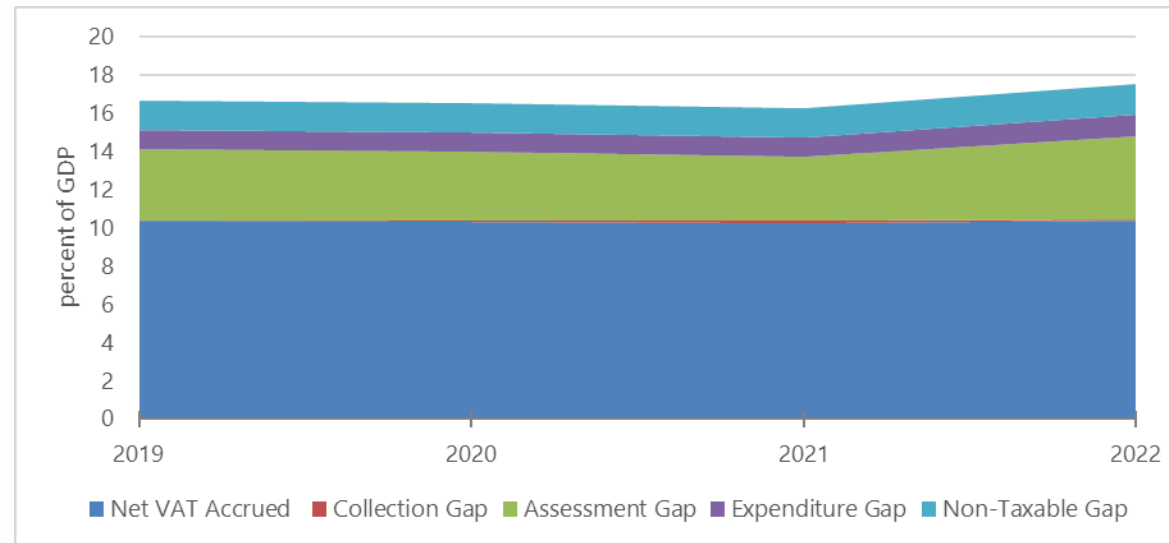
Row Labels	Accrued Net VAT	Expenditure Gap	Non-Taxable Gap		Row Labels	Expenditure Gap	Non-Taxable Gap
2019	10.4	1.0	1.5		2019	39.8	60.2
2020	10.3	1.0	1.5		2020	39.4	60.6
2021	10.3	1.0	1.5		2021	39.4	60.6
2022	10.3	1.1	1.6		2022	41.5	58.5



# Reference-F-VAT\_Gap\_Reports

Worksheet *Breakdown of TG*: Presents the tax gap, broken into its four sub components, compared to actual VAT (using our AV4 measure - Net VAT Accrued).

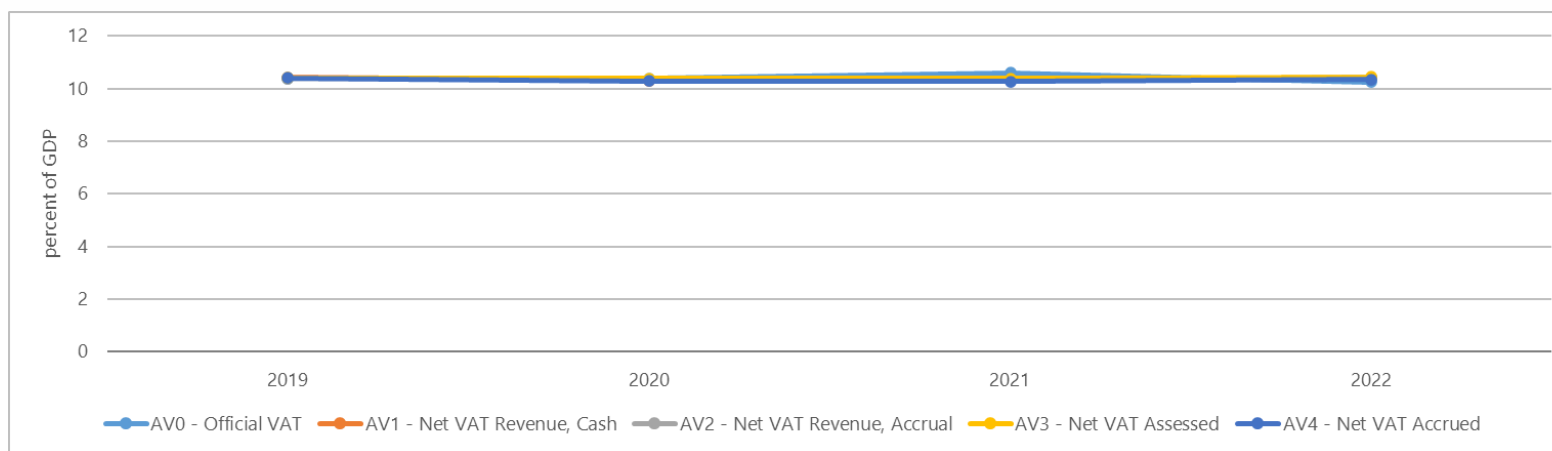
Row Labels	Net VAT Accrued	Collection Gap	Assessment Gap	Expenditure Gap	Non-Taxable Gap
2019	10.4	0.0	3.7	1.0	1.5
2020	10.3	0.1	3.6	1.0	1.5
2021	10.3	0.1	3.4	1.0	1.5
2022	10.3	0.1	4.4	1.1	1.6



# Reference-F-VAT\_Gap\_Reports

Worksheet *Actual VAT (AV)*: Presents a time series representation of AV0, AV1, AV2, AV3, and AV4.

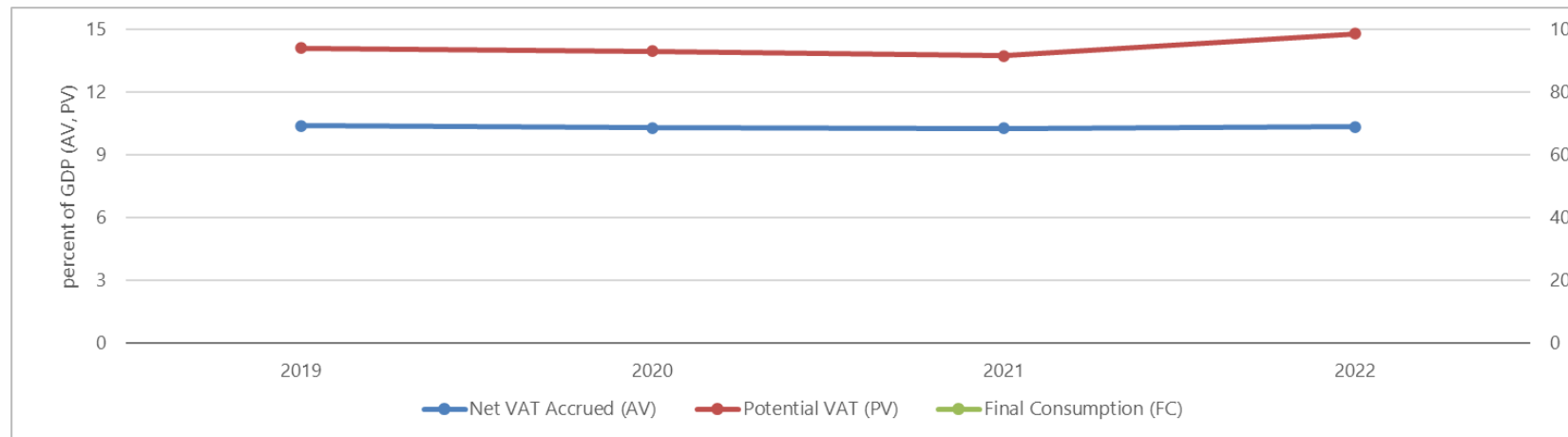
Row Labels	AV0 - Official VAT	AV1 - Net VAT Revenue, Cash	AV2 - Net VAT Revenue, Accrual	AV3 - Net VAT Assessed	AV4 - Net VAT Accrued
2019	10.4	10.4	10.4	10.4	10.4
2020	10.4	10.3	10.3	10.4	10.3
2021	10.6	10.3	10.3	10.4	10.3
2022	10.2	10.4	10.4	10.4	10.3



# Reference-F-VAT\_Gap\_Reports

Worksheet *Potential VAT (PV)*: Presents the potential VAT compared with Net VAT Accrued (AV) and Final Consumption (FC)

Row Labels	Net VAT Accrued (AV)	Potential VAT (PV)	Final Consumption (FC)
2019	10.4	14.1	124.4
2020	10.3	14.0	123.0
2021	10.3	13.7	121.0
2022	10.3	14.8	121.9



# Reference-F-VAT\_Gap\_Reports

Worksheet *AV by Sector*. Presents the breakdown of actual VAT by sector for all years.

AV4% Net VAT /		Year				
Reporting_Se	Reporting_Sector_Description_English	2019	2020	2021	2022	
A	Agriculture, forestry	0.0	0.0	0.0	0.0	
B	Fishing	0.1	0.1	0.1	0.1	
C	Mining, quarrying and Manufacturing	0.7	0.7	0.7	0.7	
D	Electricity, gas, steam and air conditioning supply	0.0	0.0	0.0	0.0	
F	Construction	0.6	0.6	0.6	0.6	
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	2.8	2.8	2.8	2.8	
H	Transportation and storage	0.5	0.5	0.5	0.5	
I	Accommodation and food service activities	3.6	3.6	3.6	3.6	
J	Information and communication	0.7	0.7	0.7	0.7	
K	Financial and insurance activities	0.2	0.2	0.2	0.2	
LA	Real estate activities	0.4	0.4	0.4	0.4	
M	Professional, scientific and technical activities	0.1	0.1	0.1	0.1	
N	Administrative and support service activities	0.3	0.3	0.3	0.3	
O	Public administration and defence; compulsory social security	0.0	0.0	0.0	0.0	
R	Arts	0.3	0.3	0.3	0.3	
S	Others services	0.0	0.0	0.0	0.0	
<b>Grand Total</b>		<b>10.4</b>	<b>10.3</b>	<b>10.3</b>	<b>10.3</b>	



# Reference-F-VAT\_Gap\_Reports

Worksheet *PV by Sector*. Presents the breakdown of potential VAT by sector for all years.

PV1% Potential		Year			
Reporting_Sc	Reporting_Sector_Description_English	2019	2020	2021	2022
A	Agriculture, forestry	0.1	0.1	0.1	0.1
B	Fishing	0.2	0.2	0.2	0.2
C	Mining, quarrying and Manufacturing	0.2	0.2	0.2	0.3
D	Electricity, gas, steam and air conditioning supply	0.2	0.2	0.2	0.2
E	Water supply; sewerage, waste management and remediation activities	0.1	0.1	0.1	0.2
F	Construction	1.5	1.5	1.5	1.6
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	3.4	3.4	3.4	3.6
H	Transportation and storage	1.9	1.9	1.9	2.0
I	Accommodation and food service activities	2.8	2.8	2.8	2.9
J	Information and communication	0.9	0.9	0.9	1.0
K	Financial and insurance activities	0.3	0.3	0.3	0.3
LA	Real estate activities	0.8	0.8	0.8	0.9
LB	Owner occupied dwellings	0.0	0.0	0.0	0.0
M	Professional, scientific and technical activities	-0.1	-0.1	-0.1	-0.1
N	Administrative and support service activities	0.4	0.4	0.4	0.5
O	Public administration and defence; compulsory social security	0.5	0.5	0.5	0.5
P	Education	0.0	0.0	0.0	0.0
Q	Human health and social work activities	0.2	0.2	0.2	0.2
R	Arts	0.3	0.3	0.3	0.3
S	Others services	0.1	0.1	0.1	0.1
<b>Grand Total</b>		<b>14.1</b>	<b>14.0</b>	<b>13.7</b>	<b>14.8</b>

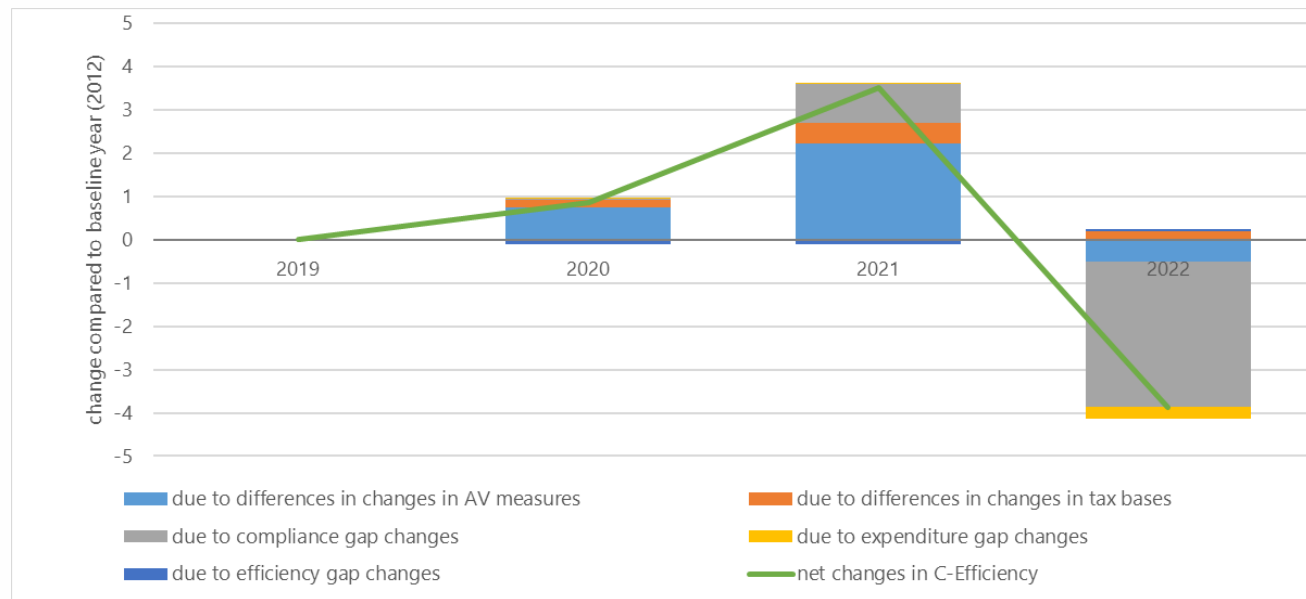
# Reference-F-VAT\_Gap\_Reports

Worksheet *CG by Sector*. Presents the breakdown of the compliance gap by sector for all years

Compliance G		Year ▾			
Reporting_ ▾	Reporting_Sector_Description_English ▾	2019	2020	2021	2022
⊖ A	Agriculture, forestry	0.1	0.1	0.1	0.1
⊖ B	Fishing	0.0	0.0	0.0	0.0
⊖ C	Mining, quarrying and Manufacturing	-0.4	-0.4	-0.4	-0.4
⊖ D	Electricity, gas, steam and air conditioning supply	0.2	0.2	0.2	0.2
⊖ E	Water supply; sewerage, waste management and remediation activities	0.1	0.1	0.1	0.2
⊖ F	Construction	0.9	0.9	0.9	1.0
⊖ G	Wholesale and retail trade; repair of motor vehicles and motorcycles	0.6	0.6	0.6	0.8
⊖ H	Transportation and storage	1.4	1.4	1.3	1.5
⊖ I	Accommodation and food service activities	-0.8	-0.7	-0.8	-0.7
⊖ J	Information and communication	0.2	0.2	0.2	0.3
⊖ K	Financial and insurance activities	0.0	0.0	0.0	0.1
⊖ LA	Real estate activities	0.4	0.4	0.4	0.5
⊖ LB	Owner occupied dwellings	0.0	0.0	0.0	0.0
⊖ M	Professional, scientific and technical activities	-0.2	-0.2	-0.2	-0.2
⊖ N	Administrative and support service activities	0.2	0.1	0.1	0.2
⊖ O	Public administration and defence; compulsory social security	0.5	0.5	0.5	0.5
⊖ P	Education	0.0	0.0	0.0	0.0
⊖ Q	Human health and social work activities	0.2	0.2	0.2	0.2
⊖ R	Arts	0.0	0.0	0.0	0.0
⊖ S	Others services	0.1	0.1	0.1	0.1
<b>Grand Total</b>		<b>3.71</b>	<b>3.67</b>	<b>3.47</b>	<b>4.46</b>

# Reference-F-VAT\_Gap\_Reports

Worksheet *Breakdown of C-Eff*: Provides a look at how changes in c-efficiency have been driven by the various components of the gap, and also identifying impacts driven by differences in the variables used to measure the tax gap and c-efficiency



# Reference-F-VAT\_Gap\_Reports

Worksheet *Reference Values Used*: Provides a summary of some of the key aggregate statistics that were imported into the analysis.

Row Labels	NA01 GDP	NA02 Final Consumption	AV0 Official VAT
2019	17,518	21,787	1,819.24
2020	15,200	18,694	1,579.98
2021	16,907	20,452	1,792.11
2022	18,087	22,043	1,853.26

**Thank you!**