



EUROMOD extensions: A new Indirect Tax Tool (ITT v3)

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1. Introduction

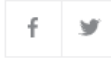
1. Introduction

- Indirect tax reforms: **multiple socio-economic effects**
- Importance for **governments' budgets**
- Redistributive effect: high incidence and **regressive** → inequality enhancing
- Ongoing discussions about **tax shifts** (e.g. from labour to consumption/property)
- Challenges for **inclusive and sustainable growth** (e.g. green taxes/carbon pricing)
- VAT reforms: **spotlight in Great Lockdown** (COVID-19)

VAT cut pushes German inflation into negative territory

By Michael Nienaber

3 MIN READ



BERLIN (Reuters) - German annual consumer prices fell for the first time in more than four years in August due to a VAT cut as part of the government's stimulus push to help Europe's largest economy recover from the coronavirus shock, data showed on Monday.

NEWS

MP calls for VAT reduction on tourism to continue

September 11, 2020

SHARE ON:

Coronavirus: Visitors may not see the thrill of VAT cut

By Kevin Peachey
Personal finance reporter

8 July 2020

Share

Chancellor's Summer Statement



Attractions could, but might not, pass the VAT cut on to ticket prices

A reduction in VAT might not cut the price of a family trip to the rollercoasters, but venues hope it may give their sector less of a rocky ride.

THE IRISH TIMES

Sun, Sep 20, 2020

NEWS

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The Economy > The Budget | Small Business

Temporary reduction in VAT rate comes into effect

Reduction sees standard VAT rate falling from 23% to 21% for the next six months

Tue, Sep 1, 2020, 18:25 | Updated: Tue, Sep 1, 2020, 18:51

Charlie Taylor

Figure 1. Government revenues: relative importance of indirect taxation

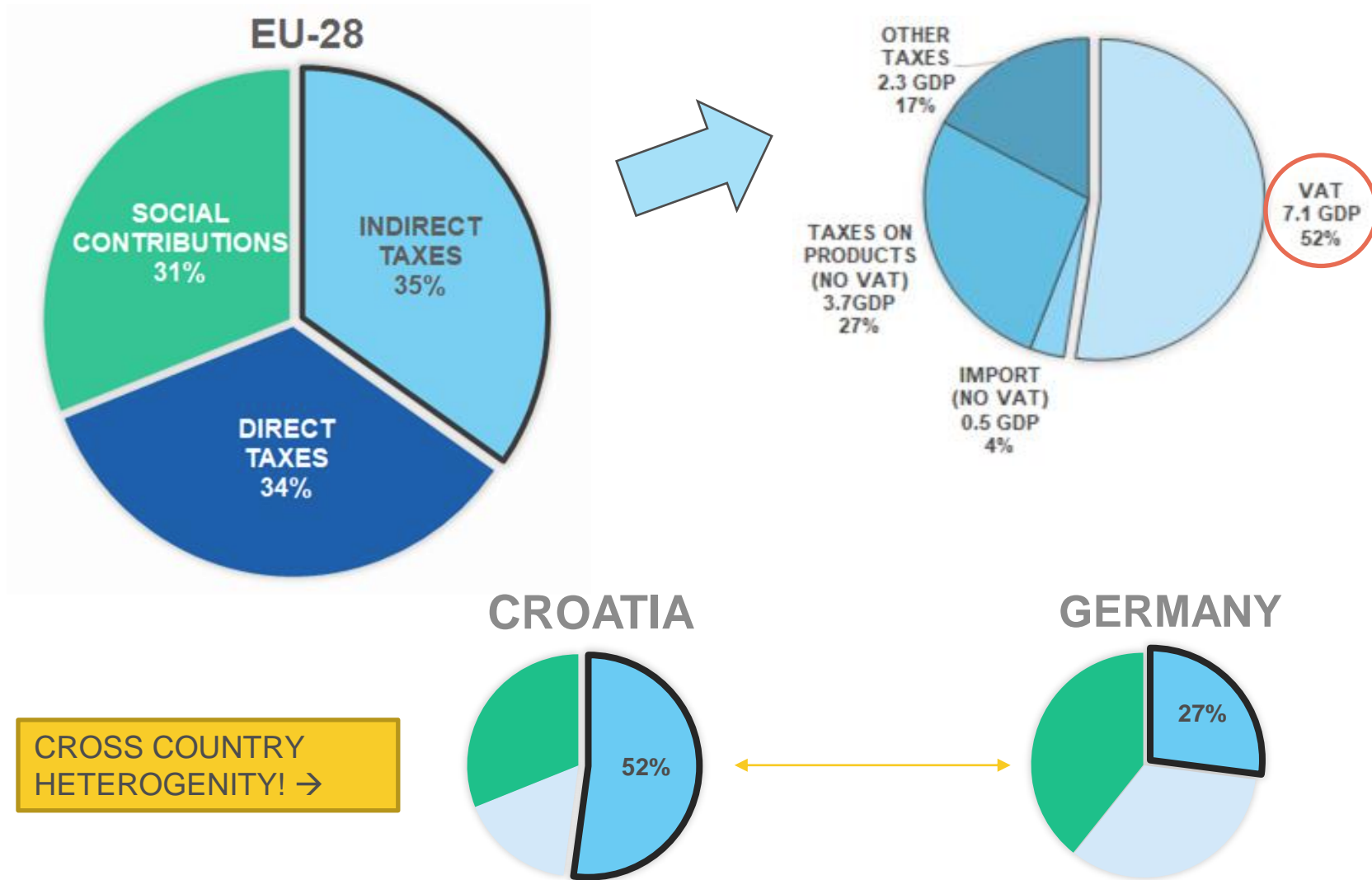
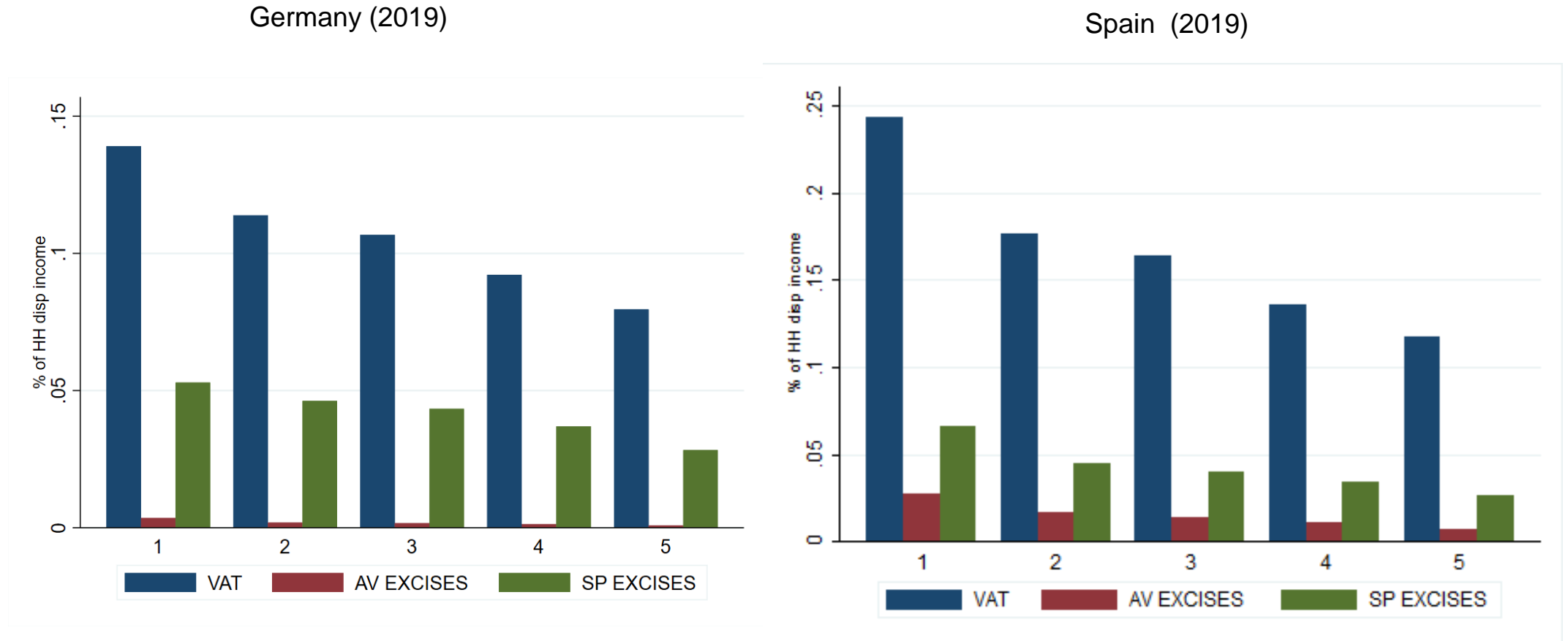


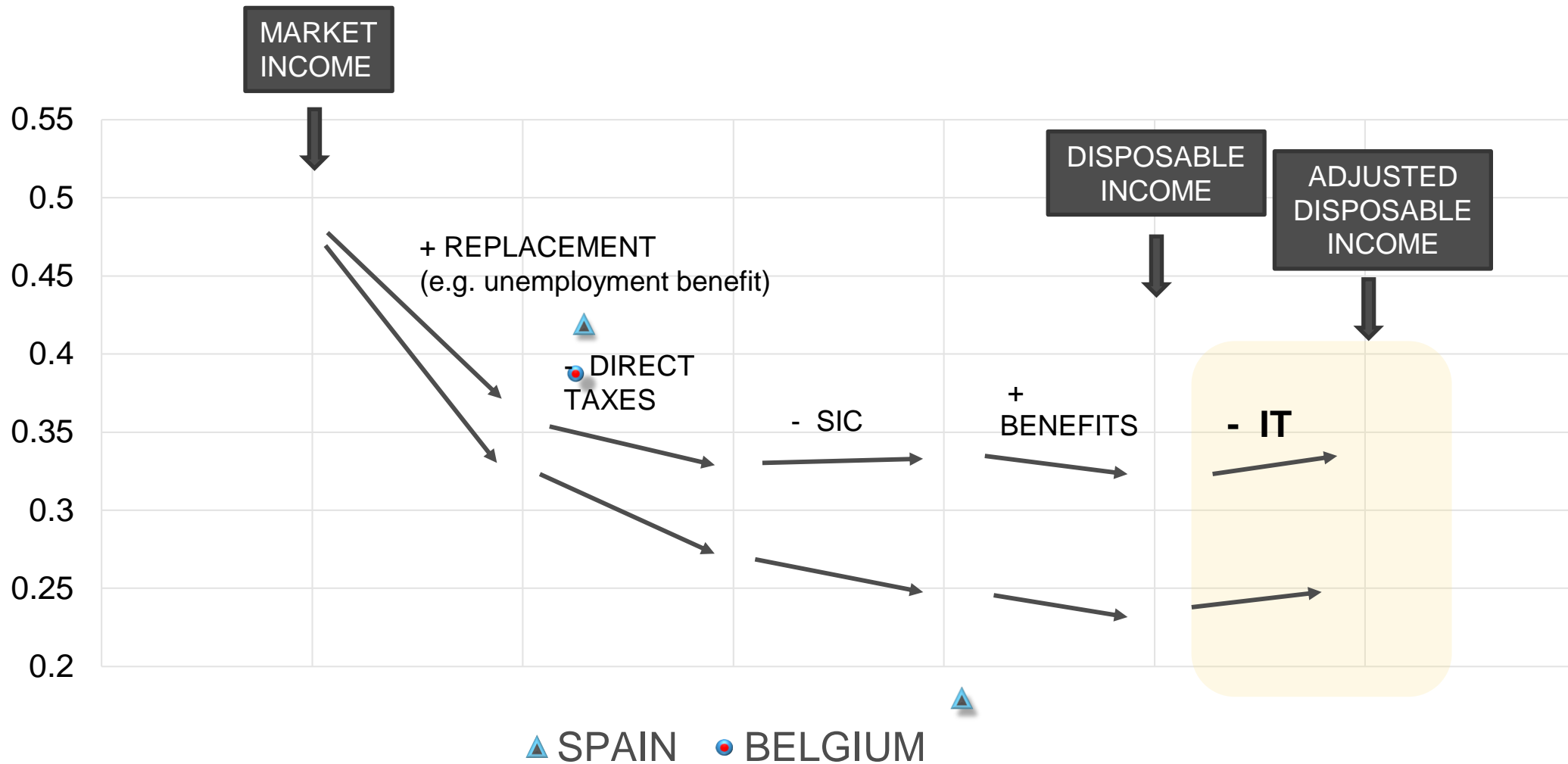
Figure 2. Regressivity: the poorest pay more in relation to their income



Year: 2019

Source: own elaboration based on EUROMOD-ITTv3 datafiles (EU SILC / EU HBS -2010)

Figure 3. Redistribution: Gini index from market to adjusted disposable income



Year: 2019 (HBS 2010-EU SILC 2010 – updated to 2019)
 Source: own elaboration based on EUROMOD-ITV3 datafiles (EU SILC / EU HBS)

2. Main features of EUROMOD ITT v3

2.1 New features

- Projects with KU Leuven, University of Essex and Praxis

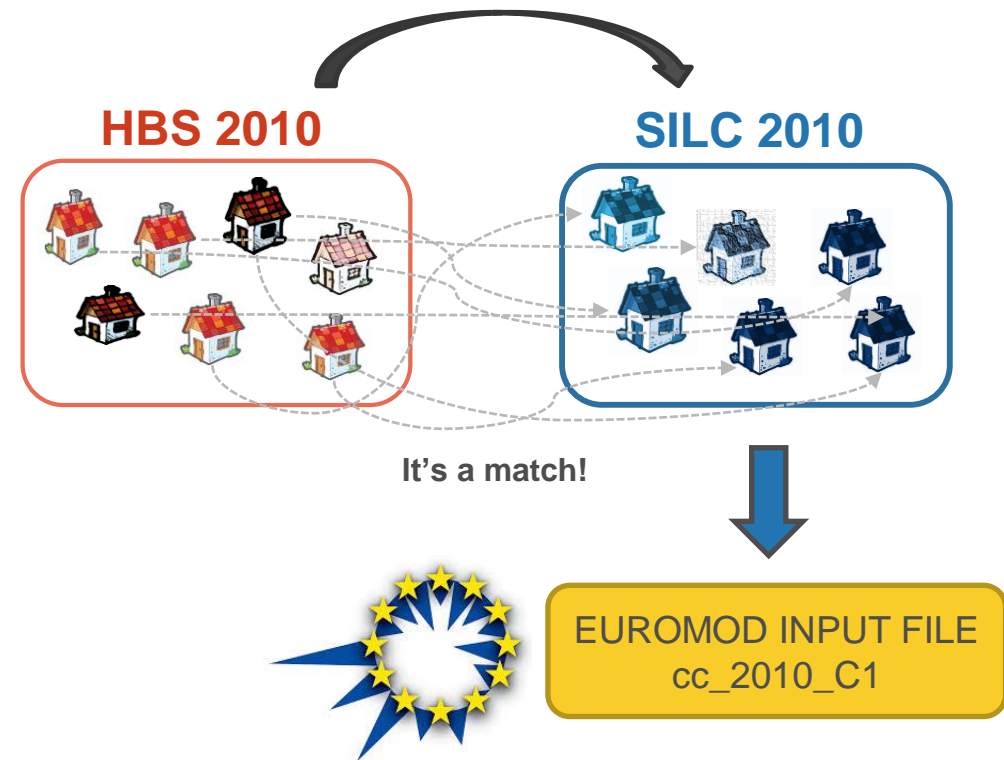
	“Old ITT”	“New ITT” (ITT v3)
Systems	2010/11-2016/17	2010 & 2019
Covered countries	13 countries: Austria, Belgium, Czechia, Estonia, Greece, Finland, Latvia (not used), Romania, UK, Spain, France, Italy, Germany	18 countries: Belgium, Cyprus, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Poland, Portugal, Romania, Slovakia, Slovenia, Spain
Consumption data	National HBS	EU HBS 2010
Imputation	Parametric (Engel curves)	Semi-parametric (regression + matching)
Categories	16 aggregated categories	>200 commodities (COICOP 4digit level!)
EUROMOD	Plug-In (external application)	Integrated in EM SPINE (more flexible)
Assumptions	Constant shares / quantities	Constant shares / quantities

2.2 Imputation

Semi-parametric method, four main steps:

1. Identifies **common variables (X)** in source (EU HBS) and recipient (EU SILC)
2. 2-steps **regression** (for “0s” and “+”)
3. **Matching** based on **fitted consumption** for 20 aggregated categories – Mahalanobis distance
4. Assigns **full consumption basket** from source to recipient HH

Income shares of expenditure from HBS to EU SILC



2.3 Implementation – EM spine

ITT is placed at the end of EM spine in policy “tco_cc”

tco_be			TAX: Commodities
fx	DefConst	on	Parameters
fx	DefConst	on	Parameters (calculations)
fx	DefConst	on	Parameters baseline
fx	DefConst	on	Parameters baseline (calculations)
fx	DefConst	on	Parameters vat rates
fx	DefFl	on	Parameter list: il_tco_hbs_q = hbs base year consumer prices
fx	DefFl	on	Parameter list: il_tco_hbs_v = hbs base year ad valorem excises
fx	DefFl	on	Parameter list: il_tco_hbs_t = hbs base year vat
fx	DefFl	on	Parameter list: il_tco_hbs_a = hbs base year specific excises
fx	DefFl	on	Parameter list: il_tco_a = specific excises
fx	DefFl	on	Parameter list: il_tco_v = ad valorem excises
fx	DefFl	on	Parameter list: vat rates
fx	DefConst	on	Total expenditures COICOP aggregates (million euros)
fx	DefFl	on	Commodity list: il_xs = income shares (all commodities)
fx	DefFl	on	Commodity list: il_xs_exc = income shares of excise goods
fx	IIArithOp	on	Producer prices (baseline)
fx	IIArithOp	on	Consumer prices (step 1 - all commodities)
fx	IIArithOp	on	Consumer prices (step 2 - excise goods, overwrites prices step 1)
fx	DefFl	on	Join the xq's in a new income list
fx	DefVar	on	Define new vars
fx	BenCalc	on	Generate hh head var
fx	ArithOp	on	Define disposable income at hh level
fx	IIArithOp	on	Define expenditure levels [CIS]



For example: here is VAT policy by product, linking any product at COICOP-4 disaggregation with its rate of VAT.

2.3 Implementation – Statistic presenter

Table 1 - Budget / totals

in million

	Monthly	Annual
Expenditures	10,945.97	131,351.60
Indirect taxes	1,460.44	17,525.28
VAT	1,254.41	15,052.97
Specific + ad valorem excises	206.03	2,472.32
Aggregate price deflator	11.51	138.12

Table 2 - Budgetary totals per COICOP aggregate category

in million

	Uncorrected expenditures	Uncorrected indirect taxes	Uncorrected VAT	Uncorrected excises	Macro-corrected expenditures	Macro-corrected indirect taxes	Macro-corrected VAT	Macro-corrected excises
01 Food, non-alcoholic beverages	1,703.00	96.98	96.98	0.00	1,938.84	110.41	110.41	0.00
02 Alcoholic beverages	264.66	115.93	45.93	69.99	614.27	269.06	106.61	162.45
03 Tobacco	550.86	93.56	93.56	0.00	699.45	118.79	118.79	0.00
04 Clothing and footwear	1,761.03	190.67	178.57	12.11	3,507.31	379.75	355.64	24.11
05 Home fuels, electricity and water	773.56	134.25	134.25	0.00	968.21	168.04	168.04	0.00
06 Rents	595.49	12.70	12.70	0.00	964.40	20.57	20.57	0.00
07 Household services	1,763.96	410.85	286.93	123.93	1,854.99	432.05	301.73	130.32
08 Health	329.78	55.26	55.26	0.00	366.19	61.36	61.36	0.00
09 Private transport	1,042.22	148.26	148.26	0.00	1,362.17	193.78	193.78	0.00
10 Public transport	44.64	0.00	0.00	0.00	59.51	0.00	0.00	0.00
11 Communication	769.81	89.23	89.23	0.00	844.80	97.93	97.93	0.00
12 Recreation and culture	1,346.94	112.73	112.73	0.00	2,016.58	168.78	168.78	0.00
All	10,945.97	1,460.44	1,254.41	206.03	15,196.72	2,020.53	1,703.64	316.88

2.4 Simulating reforms - behavioural responses

Three types of behavioural responses are implemented:

1. **Constant shares of income.** Savings and consumption both adjust to maintain their share of income.
2. **Constant shares of expenditures.** Savings remain constant, while HH adjust their expenditure to preserve the consumption share of each good.
3. **Constant quantities.** HH maintains its consumption basket invaried. Savings adjust to ensure budget constraint is met.

2.5 Validation

The model is validated on the basis of two main steps:

Consumption

- Simulated consumption Vs HBS (overall very good fit - main exception education expenditure)
- Simulated consumption Vs National Account (as expected, simulated consumption falls short of NA. The average gap is about 30%)

Tax liability

- Simulated liabilities Vs Government revenues (e.g. average coverage for VAT is 58%, broadly in line with HH sector share).

3. Next steps: extensions and applications

Extensions: broadening coverage

- Currently, 10 countries are excluded: AT, BG, EE, LV, LU, MT, NL, HR, SE, UK.
- The reasons for their exclusion span from the unavailability of EU-HBS and/or EU-SILC to missing key variables for the imputations.
- Planning to extend coverage to EU – 27, following similar approach to imputation, but using national HBS.

An example application: Green Deal and Employment

- Collaboration DG EMPL – JRC. The aim is to develop modelling capacity to analyse the social aspects of the EC Green Deal.
- Linking micro (ITT-v3) to macro (GEM-E3).
- Study distributional impacts of policy initiatives under the Green Deal, particularly energy taxation.
- Assess sector and country-specific employment impacts of policy measures.

Thank you!