



# Decomposition of Total Primary Energy Supply (TPES): Energy Efficiency Trends in the EU-28 Member States, 1990-2013

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## Objective

To find out how energy efficiency has affected total primary energy supply at the macro level in the EU-28 and the Member States

## Energy efficiency - terminology

Efficiency of a system = output per (unit of) input

Energy efficiency of a system = output per (unit of) energy input

Inverse of energy efficiency = energy input per (unit of) output = energy intensity

Macro level (aggregated):

$$\text{Energy intensity} = \frac{TPES}{GDP} = \frac{TPES}{FEC} \times \frac{FEC}{GDP}$$

TPES = total primary energy supply

FEC = final energy consumption

GDP = gross domestic product

## Chained two-factor decomposition analysis

Master equation: 
$$TPES = \frac{TPES}{FEC} \times \frac{FEC}{GDP} \times \frac{GDP}{POP} \times POP$$

During a selected time period, change in TPES is mathematically divided into effects of change in the drivers during the same time period:

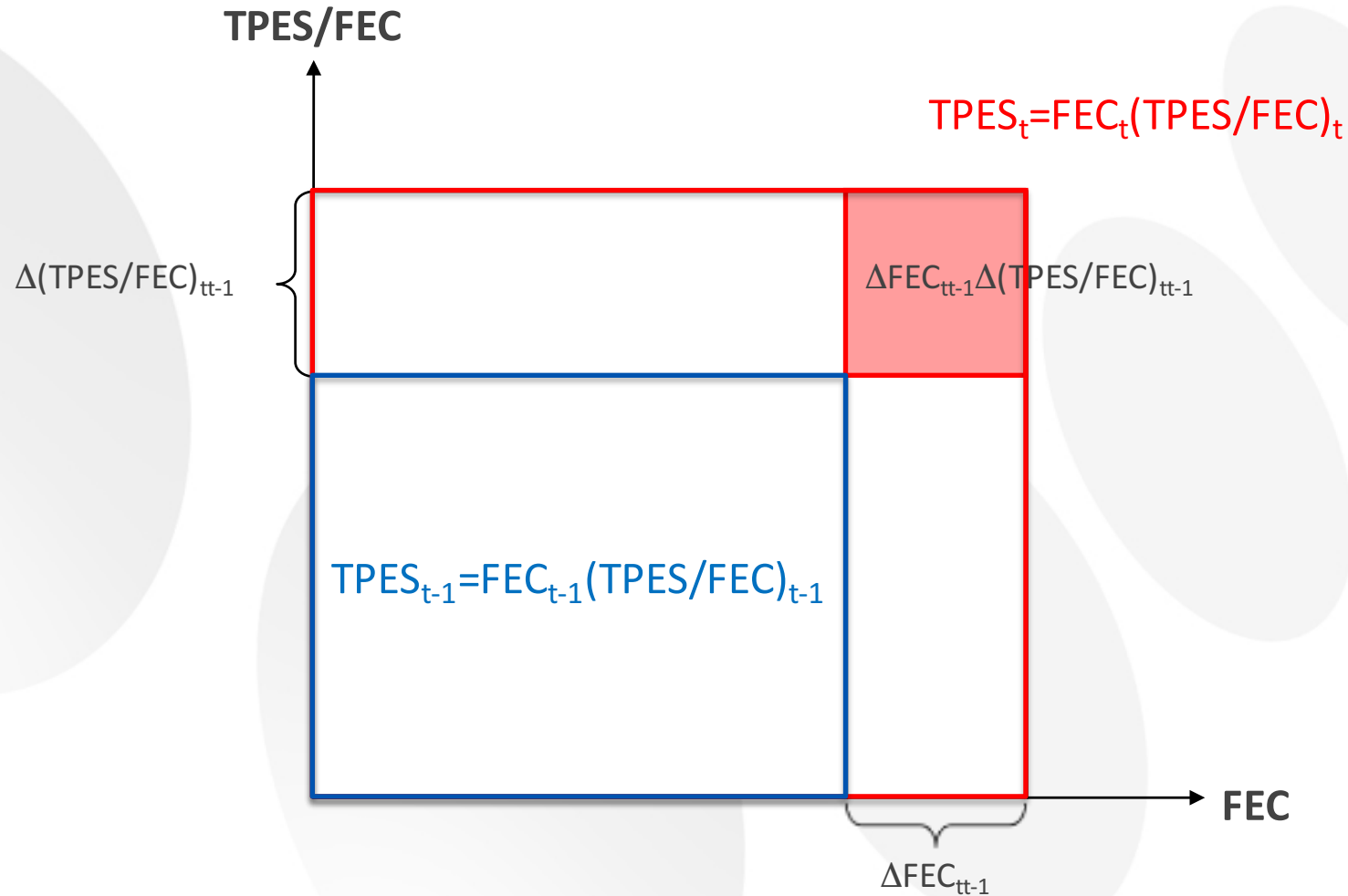
Change in TPES = TPES/FEC-effect + FEC/GDP-effect + GDP/POP-effect + POP-effect

TPES = total primary energy supply

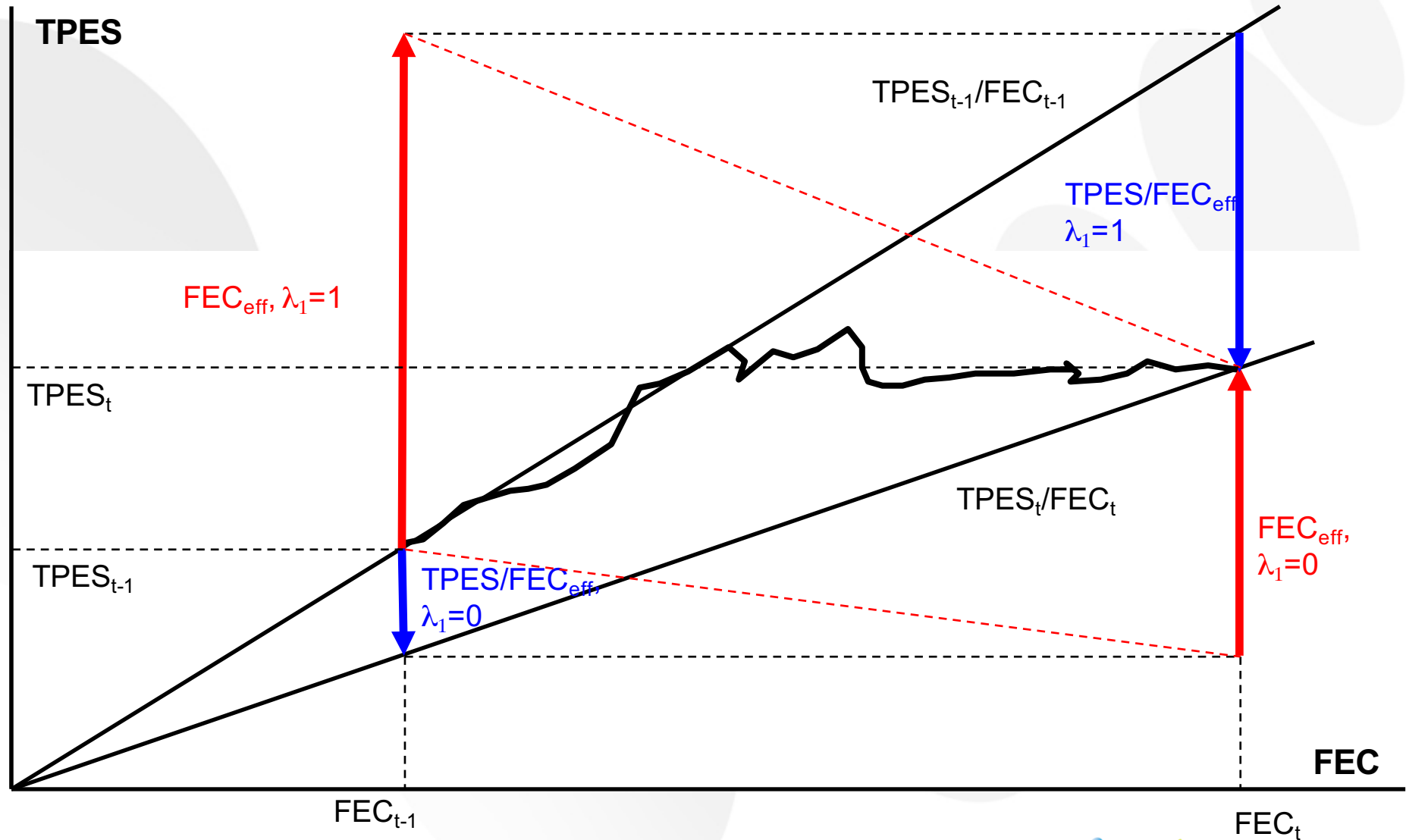
FEC = final energy consumption

GDP = gross domestic product (in constant prices)

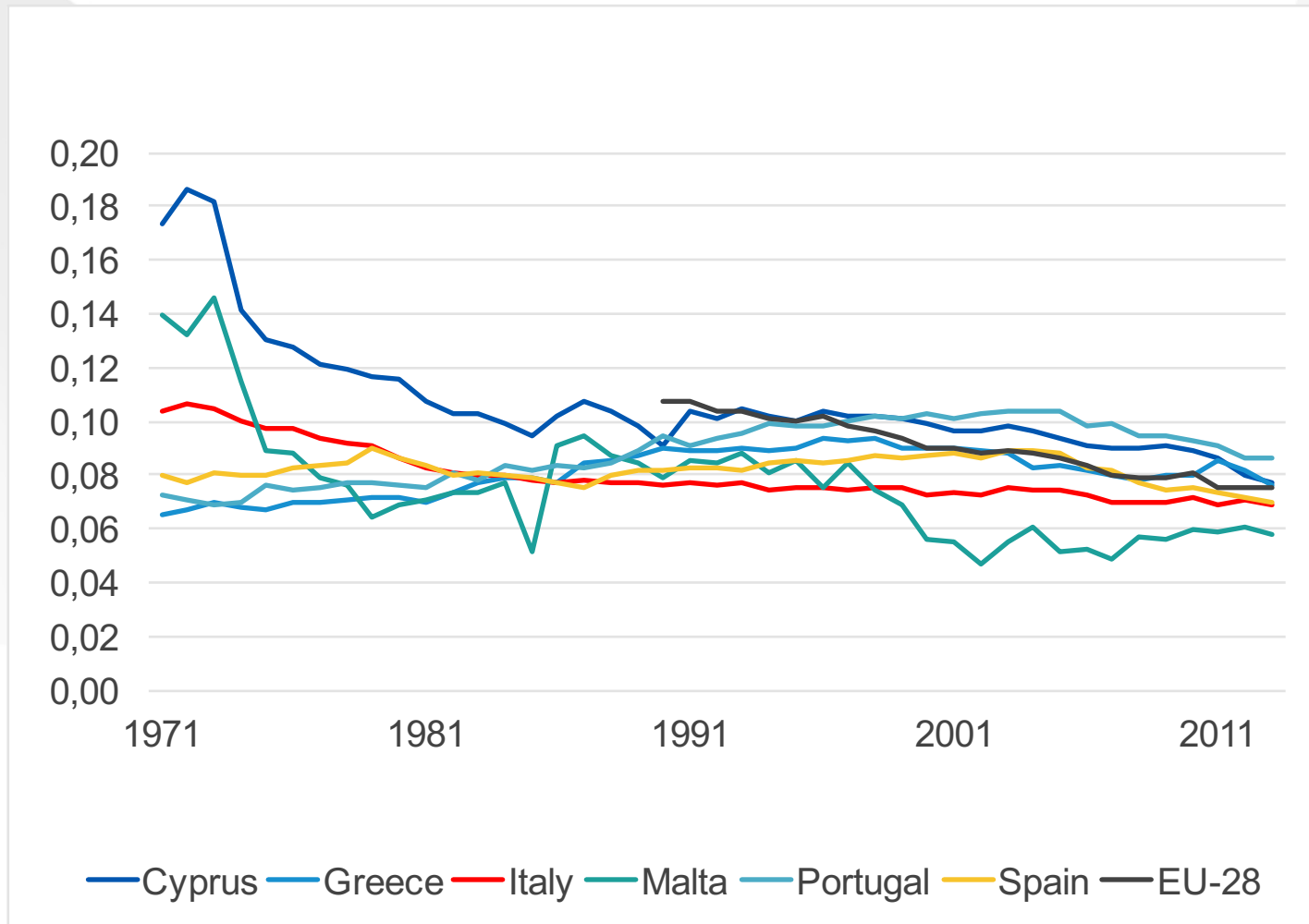
POP = amount of population



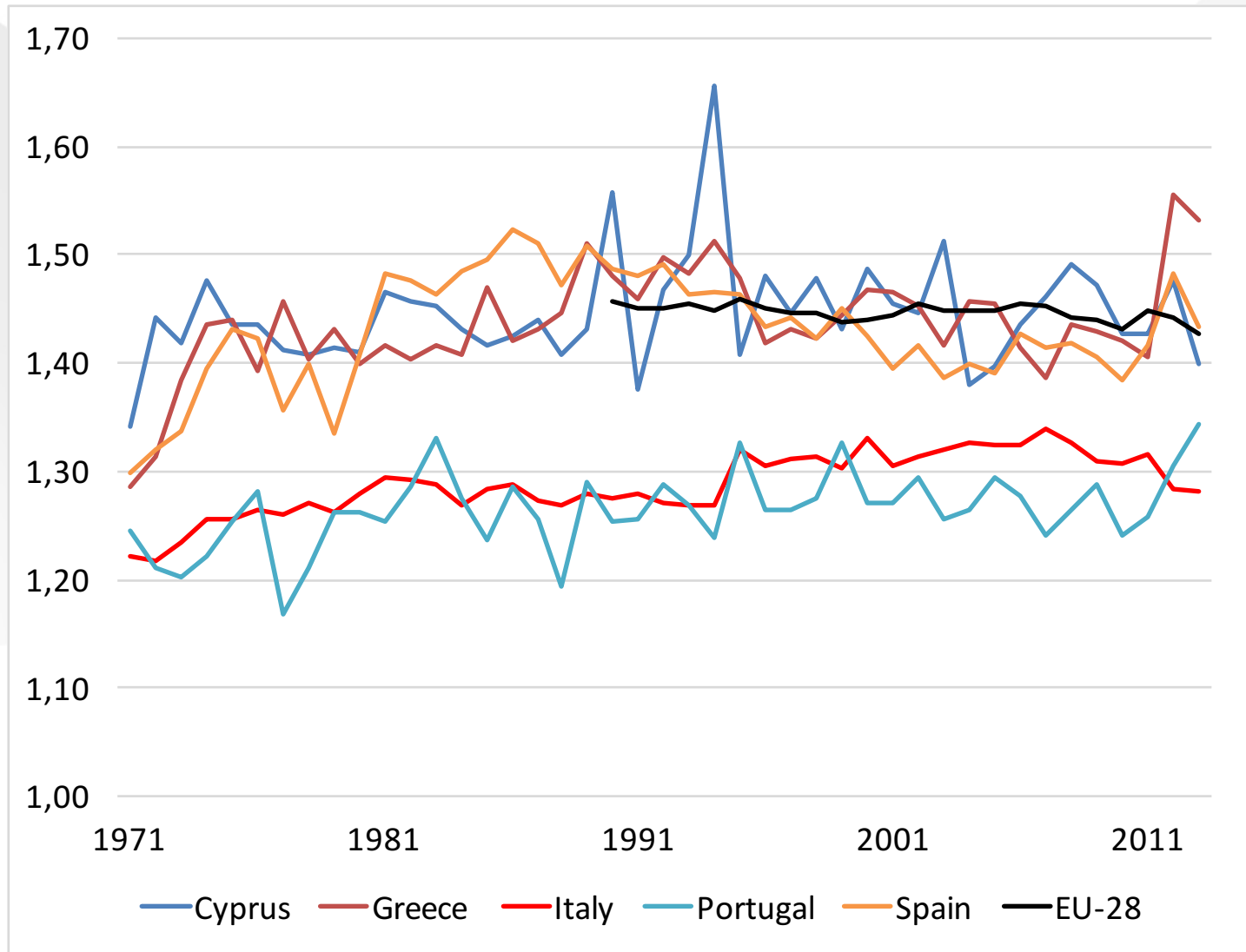
$$TPES = \frac{TPES}{FEC} \times FEC$$



# Trend of FEC/GDP Mtoe/1000 USD<sub>2005</sub>



# Trend of TPES/FEC



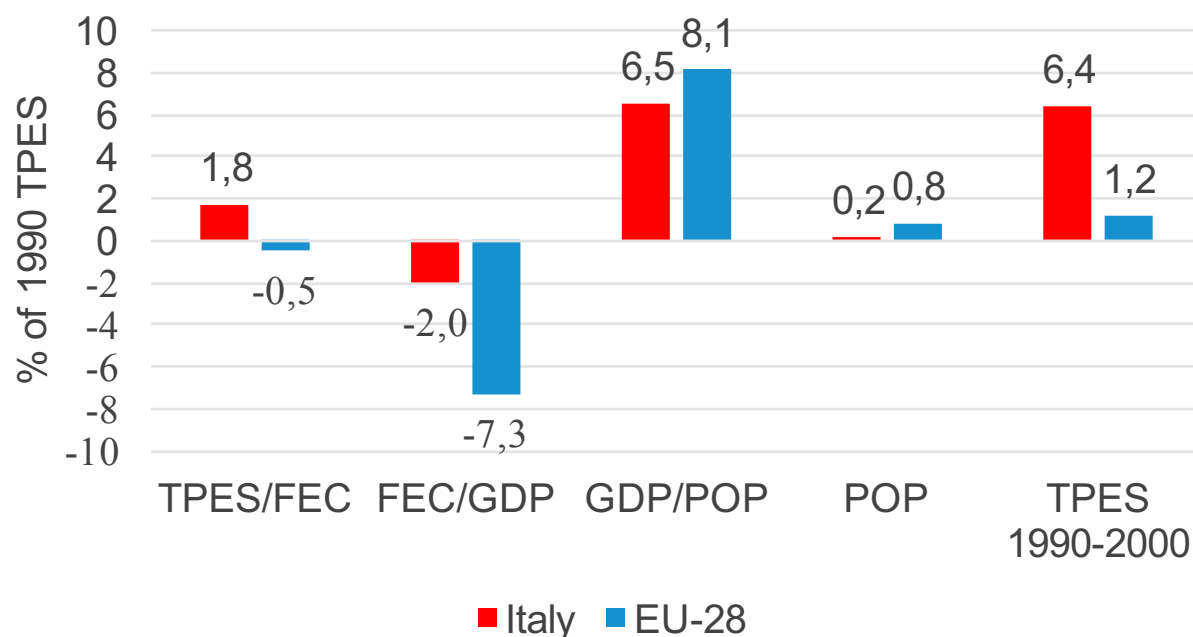


EU-28 Member State	$\Delta$ TPES 1990-2000, % of 1990 TPES	Cumulative TPES/FEC effect, % of 1990 TPES	Statistical info on incremental TPES/FEC effects, % of previous year's TPES					Cumulative FEC/GDP effect, % of 1990 TPES	Statistical info on incremental FEC/GDP effects, % of previous year's TPES					Cumulative GDP/POP effect, % of 1990 TPES	Cumulative POP effect, % of 1990 TPES
			Md	Av.	Stdev	Min	Max		Md	Av.	Stdev	Min	Max		
Austria	6.6	-1.9	-0.4	-0.4	1.3	-2.3	2.3	-4.1	-2.1	-0.8	3.7	-5.0	6.1	10.6	2.0
Belgium	9.7	-3.1	-0.5	-0.7	1.1	-3.1	1.1	1.2	-0.4	0.4	3.3	-4.7	5.6	10.2	1.4
Bulgaria	-12.9	5.4	2.2	1.8	3.6	-4.6	6.4	-15.2	-5.0	-4.7	6.7	-19.5	2.6	-1.2	-1.9
Croatia	-6.0	-2.0	-0.8	-0.5	3.1	-5.2	4.6	2.6	-2.2	1.0	7.8	-8.3	18.3	-3.5	-3.0
Cyprus	19.8	-1.4	2.3	-0.2	8.2	-15.2	10.5	2.4	-1.3	0.9	5.0	-3.5	13.2	10.4	8.4
Czech	-5.8	1.3	0.8	0.5	2.2	-3.7	3.1	-7.9	-2.6	-2.8	2.0	-6.9	-0.3	1.1	-0.3
Denmark	2.5	-0.3	-0.8	0.1	4.4	-5.0	9.0	-7.4	-3.1	-1.8	3.8	-5.8	4.8	8.7	1.5
Estonia	-14.1	1.9	-0.4	0.7	4.4	-6.1	9.7	-12.9	-9.9	-7.3	9.1	-17.3	9.9	-0.7	-2.4
Finland	7.3	1.6	0.1	0.4	3.6	-5.9	5.8	-8.0	-1.8	-1.3	3.9	-7.7	5.4	11.7	2.1
France	8.1	-1.0	-0.2	-0.1	2.1	-2.6	3.7	-5.6	-1.2	-0.7	3.0	-3.4	6.1	11.5	3.1
Germany	-1.6	-0.1	-0.3	0.0	0.8	-1.2	1.5	-8.5	-3.4	-2.3	2.8	-6.1	3.0	5.8	1.3
Greece	8.1	-0.2	0.2	-0.1	2.2	-4.2	2.5	-0.2	-0.5	0.0	2.3	-4.1	4.4	6.6	1.8
Hungary	-5.8	1.8	0.7	0.4	2.5	-3.4	4.0	-8.1	-2.7	-2.1	4.5	-9.4	6.3	1.2	-0.6
Ireland	12.9	-1.2	0.0	-0.2	1.5	-3.6	1.8	-12.4	-3.1	-3.4	2.6	-8.4	0.1	23.5	3.1
Italy	6.4	1.8	0.1	0.5	1.6	-1.1	4.2	-2.0	0.2	-0.5	1.8	-4.0	1.4	6.5	0.2
Latvia	-21.4	-1.7	-0.5	-0.5	1.3	-2.7	1.6	-5.2	-8.0	-3.8	10.0	-11.1	18.9	-11.3	-3.2
Lithuania	-27.7	2.9	2.3	0.6	7.0	-10.4	8.5	-16.0	-6.9	-4.7	9.3	-20.3	12.0	-13.2	-1.5
Luxembourg	-0.4	-5.2	-1.2	-1.7	1.4	-3.9	-0.1	-10.2	-2.8	-3.3	3.2	-9.1	1.7	10.5	4.6
Malta	-0.4	-5.7	-4.5	-1.5	11.8	-18.5	18.6	-11.0	-4.5	-3.2	10.2	-20.1	11.2	13.7	2.6
Netherlands	5.2	-1.7	-0.4	-0.4	1.2	-2.0	1.3	-8.5	-1.7	-1.7	3.6	-6.9	5.1	12.3	3.1
Poland	-4.2	-2.6	0.0	-0.9	1.9	-5.0	0.7	-11.9	-6.0	-4.2	6.2	-11.6	7.7	10.1	0.2
Portugal	20.6	0.5	0.0	0.2	3.7	-4.8	7.2	4.5	1.1	0.9	2.1	-3.4	4.0	14.0	1.7
Romania	-15.5	1.7	-0.2	0.5	6.0	-9.6	11.0	-11.3	-4.8	-4.0	6.3	-11.5	8.1	-4.8	-1.0
Slovakia	-6.5	4.7	0.9	1.3	3.6	-4.4	8.7	-13.2	-2.9	-4.0	4.3	-12.4	0.3	1.3	0.6
Slovenia	5.2	-5.0	-1.4	-1.2	2.6	-5.9	3.1	1.4	-1.1	0.6	5.2	-4.9	9.7	8.9	-0.2
Spain	15.7	-2.1	-0.3	-0.4	1.3	-2.1	2.0	3.4	1.5	0.7	1.8	-2.0	3.0	12.7	1.7
Sweden	0.7	-8.0	-0.4	-0.8	4.0	-10.1	4.2	-11.7	-1.6	-1.2	4.1	-5.9	6.8	17.1	3.3
UK	3.1	-0.3	0.0	-0.1	0.8	-1.5	1.1	-6.1	-2.3	-1.5	3.2	-5.0	5.4	8.4	1.1
EU-15	4.3	-0.5	-0.1	-0.1	0.4	-0.5	0.6	-5.3	-1.6	-1.2	1.7	-3.0	1.8	8.7	1.5
EU-28	1.2	-0.5	-0.1	-0.1	0.4	-0.6	0.8	-7.3	-2.6	-1.8	1.8	-3.3	2.0	8.1	0.8

# Example of results

EU-28 Member State	ΔTPES 1990-2000, % of 1990 TPES	Cumulative TPES/FEC effect, % of 1990 TPES	Statistical info on incremental TPES/FEC effects, % of previous year's TPES					Cumulative FEC/GDP effect, % of 1990 TPES	Statistical info on incremental FEC/GDP effects, % of previous year's TPES					Cumulative GDP/POP effect, % of 1990 TPES	Cumulative POP effect, % of 1990 TPES
			Md	Av.	Stdev	Min	Max		Md	Av.	Stdev	Min	Max		
Austria	6.6	-1.9	-0.4	-0.4	1.3	-2.3	2.3	-4.1	-2.1	-0.8	3.7	-5.0	6.1	10.6	2.0
Belgium	9.7	-3.1	-0.5	-0.7	1.1	-3.1	1.1	1.2	-0.4	0.4	3.3	-4.7	5.6	10.2	1.4
Bulgaria	-12.9	5.4	2.2	1.8	3.6	-4.6	6.4	-15.2	-5.0	-4.7	6.7	-19.5	2.6	-1.2	-1.9
Croatia	-6.0	-2.0	-0.8	-0.5	3.1	-5.2	4.6	2.6	-2.2	1.0	7.8	-8.3	18.3	-3.5	-3.0
Cyprus	19.8	-1.4	2.3	-0.2	8.2	-15.2	10.5	2.4	-1.3	0.9	5.0	-3.5	13.2	10.4	8.4
Czech	-5.8	1.3												1.1	-0.3
Denmark	2.5	-0.3												8.7	1.5
Estonia	-14.1	1.9												0.7	-2.4
Finland	7.3	1.6												1.7	2.1
France	8.1	-1.0												1.5	3.1
Germany	-1.6	-0.1												5.8	1.3
Greece	8.1	-0.2												5.6	1.8
Hungary	-5.8	1.8												1.2	-0.6
Ireland	12.9	-1.2												3.5	3.1
Italy	6.4	1.8												6.5	0.2
Latvia	-21.4	-1.7												1.3	-3.2
Lithuania	-27.7	2.9												3.2	-1.5
Luxembourg	-0.4	-5.2												0.5	4.6
Malta	-0.4	-5.7												3.7	2.6
Netherlands	5.2	-1.7												2.3	3.1
Poland	-4.2	-2.6												0.1	0.2
Portugal	20.6	0.5												4.0	1.7
Romania	-15.5	1.7												4.8	-1.0
Slovakia	-6.5	4.7												1.3	0.6
Slovenia	5.2	-5.0												8.9	-0.2
Spain	15.7	-2.1												2.7	1.7
Sweden	0.7	-8.0												7.1	3.3
UK	3.1	-0.3												8.4	1.1
EU-15	4.3	-0.5												8.7	1.5
EU-28	1.2	-0.5	-0.1	-0.1	0.4	-0.6	0.8	-7.3	-2.6	-1.8	1.8	-3.3	2.0	8.1	0.8

EU28 and Italy, 1990-2000

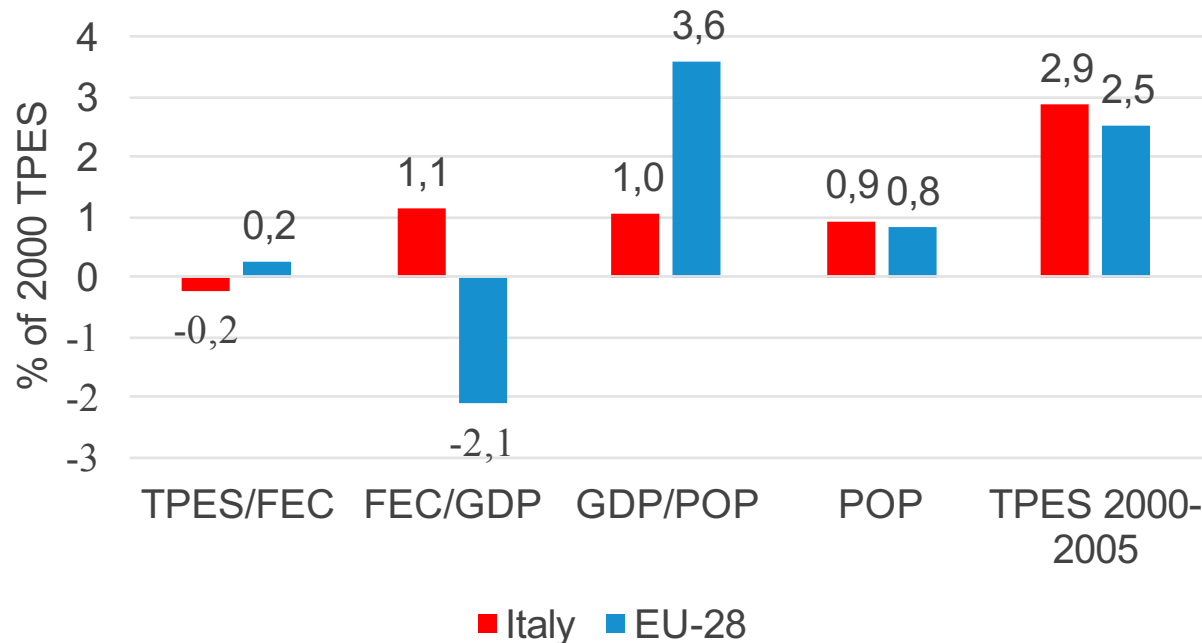


EU-28 Member State	ΔTPES 2000-2005, % of 2000 TPES	Cumulative TPES/FEC effect, % of 2000 TPES	Statistical info on incremental TPES/FEC effects, % of previous year's TPES					Cumulative FEC/GDP effect, % of 2000 TPES	Statistical info on incremental FEC/GDP effects, % of previous year's TPES					Cumulative GDP/POP effect, % of 2000 TPES	Cumulative POP effect, % of 2000 TPES
			Md	Av.	Stdev	Min	Max		Md	Av.	Stdev	Min	Max		
Austria	8.5	0.3	0.2	0.1	0.4	-0.4	0.5	3.8	0.7	1.6	2.9	-1.0	4.8	3.0	1.4
Belgium	0.2	0.0	0.9	0.0	1.6	-2.3	1.4	-4.3	-2.1	-1.7	3.4	-6.4	2.2	3.3	1.1
Bulgaria	3.1	-0.7	0.4	-0.3	3.6	-5.1	4.1	-7.8	-3.7	-3.4	4.3	-8.5	2.3	14.0	-2.5
Croatia	6.6	-1.2	-0.7	-0.4	2.1	-3.6	1.5	-3.2	-2.7	-1.3	2.2	-3.0	2.0	10.9	0.1
Cyprus	1.3	-2.2	-0.6	-1.1	5.0	-8.9	4.7	-2.1	-1.5	-1.2	2.3	-3.2	2.1	3.6	1.9
Czech	3.3	0.7	0.0	0.4	1.8	-1.0	3.5	-4.4	-1.5	-2.4	3.1	-6.9	1.1	7.1	-0.1
Denmark	0.5	-1.3	0.4	-0.6	3.2	-4.3	3.5	-0.8	-1.5	-0.4	2.0	-2.0	1.9	2.0	0.6
Estonia	3.4	-2.3	-2.8	-1.3	4.1	-4.6	5.7	-6.2	-2.6	-3.5	4.7	-9.0	3.0	13.0	-1.0
Finland	3.7	1.5	1.3	0.6	3.2	-4.5	4.0	-6.1	-1.1	-1.8	2.7	-5.8	1.3	7.4	0.9
France	5.3	2.9	0.5	0.8	1.1	-0.2	2.6	-3.6	-1.8	-1.0	2.2	-3.5	1.5	3.3	2.6
Germany	0.1	0.2	0.3	0.1	1.2	-1.5	1.2	-1.3	-1.5	-0.6	1.5	-1.8	1.7	1.1	0.1
Greece	3.6	-0.3	-0.1	-0.2	1.9	-2.5	2.8	-2.3	-1.0	-1.4	2.6	-5.8	1.1	5.7	0.5
Hungary	4.8	-2.5	-1.2	-1.0	0.3	-1.2	-0.5	-2.8	-0.7	-1.1	2.8	-4.4	2.6	10.6	-0.6
Ireland	1.9	-2.5	-0.6	-1.4	3.2	-6.0	2.1	-4.0	-2.3	-2.3	2.6	-6.0	1.1	5.1	3.2
Italy	2.9	-0.2	0.4	-0.1	1.1	-2.0	0.6	1.1	0.3	0.5	1.7	-0.7	3.4	1.0	0.9
Latvia	10.2	-2.4	-1.0	-0.8	1.5	-2.3	1.2	-11.9	-4.9	-3.8	3.3	-7.2	1.3	27.9	-3.5
Lithuania	16.8	0.4	1.5	0.7	7.7	-10.2	11.1	-15.8	-2.8	-3.7	2.0	-7.0	-2.0	36.9	-4.6
Luxembourg	12.9	2.0	0.6	0.9	2.1	-1.3	4.3	3.5	2.3	1.6	4.5	-3.6	6.3	4.2	3.3
Malta	9.4	10.6	5.7	6.1	13.0	-9.0	19.6	-3.0	-1.7	-1.3	15.2	-16.3	18.0	0.0	1.8
Netherlands	3.3	0.7	0.4	0.3	0.8	-0.5	1.4	-0.4	-0.5	-0.1	2.1	-2.6	3.2	1.7	1.2
Poland	1.2	-1.2	-0.1	-0.8	1.5	-3.4	0.5	-2.4	-1.4	-1.5	1.1	-3.1	-0.1	4.8	-0.1
Portugal	3.2	0.8	0.7	0.4	2.0	-2.9	2.2	0.5	0.3	0.2	1.2	-1.3	1.6	1.0	0.9
Romania	2.7	-1.1	0.0	-0.4	3.5	-5.1	4.4	-8.7	-4.3	-4.0	1.9	-5.8	-1.5	14.8	-2.2
Slovakia	3.0	1.7	-0.2	0.7	2.1	-1.1	4.1	-11.2	-3.7	-4.4	3.7	-9.9	0.1	12.5	-0.1
Slovenia	6.3	1.2	0.7	0.5	1.9	-2.6	2.2	-3.6	-1.3	-1.5	2.2	-4.6	0.9	8.5	0.2
Spain	7.2	-1.1	-0.6	-0.5	1.7	-2.1	1.5	0.5	0.3	0.2	1.5	-1.4	2.4	4.0	3.8
Sweden	7.7	9.9	1.3	2.1	3.4	-1.3	6.8	-14.9	-3.4	-3.0	1.5	-4.8	-0.9	11.0	1.8
UK	-0.1	0.6	0.3	0.3	0.9	-0.9	1.5	-6.8	-3.0	-3.2	1.0	-4.6	-2.0	5.1	1.1
EU-15	2.4	0.5	0.2	0.2	0.4	-0.5	0.6	-2.2	-1.5	-0.9	1.4	-2.2	1.0	2.9	1.3
EU-28	2.5	0.2	0.0	0.1	0.4	-0.4	0.7	-2.1	-1.4	-0.9	1.3	-2.3	1.0	3.6	0.8

# Example of results

EU-28 Member State	ΔTPES 2000-2005, % of 2000 TPES	Cumulative TPES/FEC effect, % of 2000 TPES	Statistical info on incremental TPES/FEC effects, % of previous year's TPES					Cumulative FEC/GDP effect, % of 2000 TPES	Statistical info on incremental FEC/GDP effects, % of previous year's TPES					Cumulative GDP/POP effect, % of 2000 TPES	Cumulative POP effect, % of 2000 TPES
			Md	Av.	Stdev	Min	Max		Md	Av.	Stdev	Min	Max		
Austria	8.5	0.3	0.2	0.1	0.4	-0.4	0.5	3.8	0.7	1.6	2.9	-1.0	4.8	3.0	1.4
Belgium	0.2	0.0	0.9	0.0	1.6	-2.3	1.4	-4.3	-2.1	-1.7	3.4	-6.4	2.2	3.3	1.1
Bulgaria	3.1	-0.7	0.4	-0.3	3.6	-5.1	4.1	-7.8	-3.7	-3.4	4.3	-8.5	2.3	14.0	-2.5
Croatia	6.6	-1.2	-0.7	-0.4	2.1	-3.6	1.5	-3.2	-2.7	-1.3	2.2	-3.0	2.0	10.9	0.1
Cyprus	1.3	-2.2	-0.6	-1.1	5.0	-8.9	4.7	-2.1	-1.5	-1.2	2.3	-3.2	2.1	3.6	1.9
Czech	3.3	0.7												7.1	-0.1
Denmark	0.5	-1.3												2.0	0.6
Estonia	3.4	-2.3												3.0	-1.0
Finland	3.7	1.5												7.4	0.9
France	5.3	2.9												3.3	2.6
Germany	0.1	0.2												1.1	0.1
Greece	3.6	-0.3												5.7	0.5
Hungary	4.8	-2.5												0.6	-0.6
Ireland	1.9	-2.5												5.1	3.2
Italy	2.9	-0.2												1.0	0.9
Latvia	10.2	-2.4												7.9	-3.5
Lithuania	16.8	0.4												6.9	-4.6
Luxembourg	12.9	2.0												4.2	3.3
Malta	9.4	10.6												0.0	1.8
Netherlands	3.3	0.7												1.7	1.2
Poland	1.2	-1.2												4.8	-0.1
Portugal	3.2	0.8												1.0	0.9
Romania	2.7	-1.1												4.8	-2.2
Slovakia	3.0	1.7												2.5	-0.1
Slovenia	6.3	1.2												8.5	0.2
Spain	7.2	-1.1												4.0	3.8
Sweden	7.7	9.9												1.0	1.8
UK	-0.1	0.6												5.1	1.1
EU-15	2.4	0.5												2.9	1.3
EU-28	2.5	0.2	0.0	0.1	0.4	-0.4	0.7	-2.1	-1.4	-0.9	1.3	-2.3	1.0	3.6	0.8

EU-28 and Italy, 2000-2005



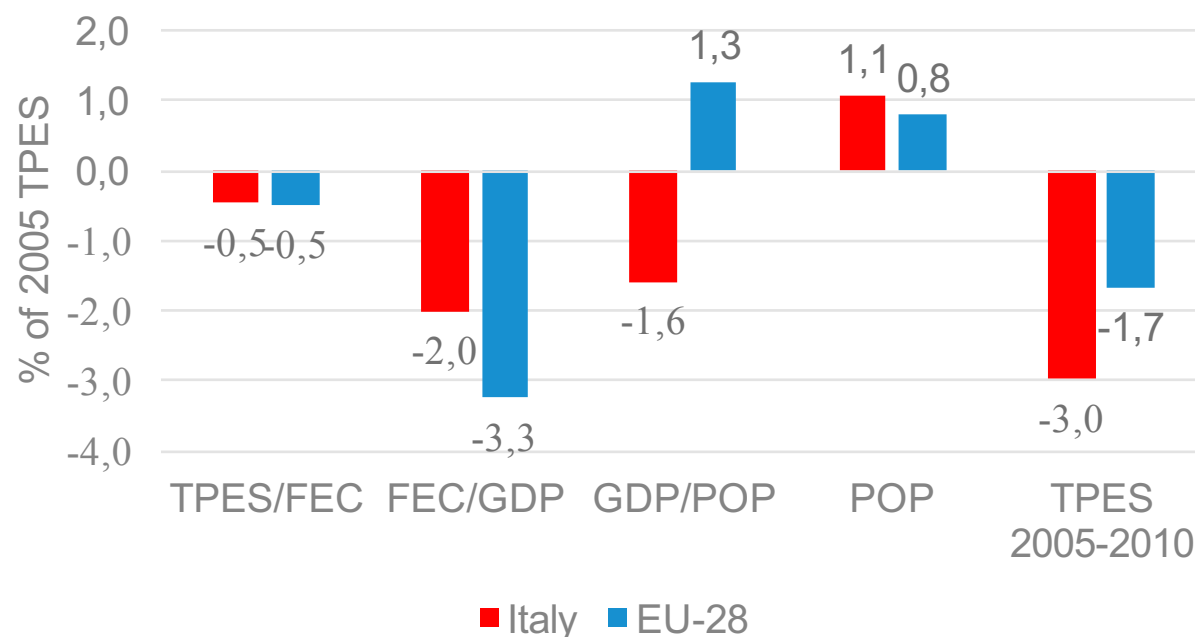
# Example of results

EU-28 Member State	ΔTPES 2005-2010, % of 2005 TPES	Cumulative TPES/FEC effect, % of 2005 TPES	Statistical info on incremental TPES/FEC effects, % of previous year's TPES					Cumulative FEC/GDP effect, % of 2005 TPES	Statistical info on incremental FEC/GDP effects, % of previous year's TPES					Cumulative GDP/POP effect, % of 2005 TPES	Cumulative POP effect, % of 2005 TPES
			Md	Av.	Stdev	Min	Max		Md	Av.	Stdev	Min	Max		
Austria	0.5	-0.3	0.4	-0.1	1.6	-2.7	1.6	-2.1	-0.6	-0.9	3.5	-5.2	3.3	2.2	0.7
Belgium	2.1	-0.4	0.8	-0.2	2.5	-4.3	2.3	-1.0	-3.3	-0.3	5.7	-5.5	6.3	1.4	2.1
Bulgaria	-4.4	0.7	-0.7	0.4	1.8	-1.1	3.3	-11.3	-5.8	-5.2	4.1	-10.2	0.2	8.1	-1.9
Croatia	-1.7	-1.1	-1.0	-0.5	2.8	-4.3	3.2	-1.7	-0.4	-0.8	2.8	-4.0	2.4	1.3	-0.2
Cyprus	3.1	0.6	1.9	0.5	2.5	-3.0	2.8	-1.6	-1.4	-1.0	1.6	-2.8	1.1	0.1	4.0
Czech	-0.5	1.4	1.5	0.8	2.7	-2.6	3.5	-6.6	-2.3	-3.4	3.6	-8.4	-0.1	3.6	1.1
Denmark	1.2	0.8	-0.2	0.5	3.3	-2.7	6.1	0.2	-0.5	0.1	2.4	-2.7	3.9	-0.8	0.9
Estonia	2.4	3.3	0.5	2.3	6.0	-2.8	11.3	-0.4	1.4	-0.3	5.6	-9.5	4.5	0.2	-0.7
Finland	4.2	1.4	-0.3	0.5	2.2	-1.6	3.9	-0.2	0.9	0.1	4.6	-4.8	6.8	1.6	1.4
France	-2.5	0.5	0.2	0.1	0.3	-0.4	0.4	-5.8	-1.6	-1.6	2.1	-3.9	1.1	0.7	2.0
Germany	-1.3	-0.9	-1.1	-0.5	1.3	-1.8	1.0	-3.0	0.5	-1.3	4.7	-9.3	2.3	3.0	-0.4
Greece	-2.8	-0.7	-0.6	-0.5	2.4	-2.9	3.5	-1.7	-1.5	-1.1	1.8	-2.9	1.6	-0.5	0.2
Hungary	-3.4	1.3	0.5	0.5	1.9	-2.1	2.7	-4.5	-1.6	-1.8	3.5	-5.4	2.6	0.2	-0.4
Ireland	-0.3	1.7	1.0	1.0	4.7	-3.7	6.0	-2.3	-1.2	-1.4	4.6	-8.1	4.6	-2.8	3.1
Italy	-3.0	-0.5	-0.1	-0.2	1.0	-1.3	1.2	-2.0	0.0	-1.0	2.5	-3.9	1.8	-1.6	1.1
Latvia	-0.3	-0.5	-0.3	-0.1	1.0	-1.4	1.0	1.9	-0.8	0.7	9.2	-7.6	15.6	2.2	-3.9
Lithuania	-14.7	-14.9	-4.4	-4.4	11.4	-21.9	7.2	-3.3	0.1	-0.8	3.6	-6.2	3.1	8.5	-4.9
Luxembourg	-1.5	-0.1	-0.3	0.0	0.7	-0.8	1.1	-5.5	-1.8	-2.9	4.2	-8.6	1.3	1.2	3.0
Malta	-2.2	-10.2	-5.7	-6.3	12.3	-24.6	9.3	4.3	1.0	2.7	9.2	-7.7	16.4	2.2	1.5
Netherlands	3.1	-0.9	0.5	-0.4	3.3	-5.8	2.7	0.3	-1.1	0.2	5.6	-7.2	6.6	2.8	0.9
Poland	2.8	-1.3	-1.1	-0.8	1.2	-2.3	0.5	-3.4	-2.9	-2.1	3.8	-6.0	4.1	7.2	0.3
Portugal	-4.8	-1.7	-1.3	-0.8	2.5	-3.6	1.8	-4.4	-1.7	-2.1	2.7	-5.2	1.0	1.0	0.3
Romania	-3.9	0.3	0.4	0.2	2.3	-3.2	2.8	-10.4	-4.7	-4.9	3.7	-8.2	0.9	8.4	-2.2
Slovakia	-2.7	-1.5	0.1	-0.6	2.8	-5.4	1.7	-12.3	-3.0	-4.9	4.6	-10.7	0.6	10.8	0.4
Slovenia	-0.3	-0.1	-0.6	-0.1	1.3	-1.3	1.4	-4.2	-2.7	-1.7	4.8	-8.1	3.0	2.9	1.2
Spain	-4.3	-0.1	-0.9	-0.1	1.7	-1.5	2.6	-6.5	-3.7	-3.0	3.2	-6.8	1.4	-0.4	2.7
Sweden	-1.4	-2.2	-0.8	-0.4	3.2	-4.8	3.1	-7.4	-2.8	-1.4	3.4	-5.4	2.9	4.3	3.8
UK	-3.8	-0.7	-1.0	-0.3	1.3	-1.4	1.7	-4.3	-3.1	-2.1	3.4	-5.1	2.8	-0.3	1.5
EU-15	-2.0	-0.5	-0.3	-0.2	0.5	-0.6	0.5	-3.3	-0.9	-1.4	2.8	-4.4	2.5	0.6	1.2
EU-28	-1.7	-0.5	-0.3	-0.2	0.5	-0.6	0.6	-3.3	-1.1	-1.4	2.7	-4.4	2.4	1.3	0.8

# Example of results

EU-28 Member State	ΔTPES 2005-2010, % of 2005 TPES	Cumulative TPES/FEC effect, % of 2005 TPES	Statistical info on incremental TPES/FEC effects, % of previous year's TPES					Cumulative FEC/GDP effect, % of 2005 TPES	Statistical info on incremental FEC/GDP effects, % of previous year's TPES					Cumulative GDP/POP effect, % of 2005 TPES	Cumulative POP effect, % of 2005 TPES
			Md	Av.	Stdev	Min	Max		Md	Av.	Stdev	Min	Max		
Austria	0.5	-0.3	0.4	-0.1	1.6	-2.7	1.6	-2.1	-0.6	-0.9	3.5	-5.2	3.3	2.2	0.7
Belgium	2.1	-0.4	0.8	-0.2	2.5	-4.3	2.3	-1.0	-3.3	-0.3	5.7	-5.5	6.3	1.4	2.1
Bulgaria	-4.4	0.7	-0.7	0.4	1.8	-1.1	3.3	-11.3	-5.8	-5.2	4.1	-10.2	0.2	8.1	-1.9
Croatia	-1.7	-1.1	-1.0	-0.5	2.8	-4.3	3.2	-1.7	-0.4	-0.8	2.8	-4.0	2.4	1.3	-0.2
Cyprus	3.1	0.6	1.9	0.5	2.5	-3.0	2.8	-1.6	-1.4	-1.0	1.6	-2.8	1.1	0.1	4.0
Czech	-0.5	1.4												3.6	1.1
Denmark	1.2	0.8												0.8	0.9
Estonia	2.4	3.3												0.2	-0.7
Finland	4.2	1.4												1.6	1.4
France	-2.5	0.5												0.7	2.0
Germany	-1.3	-0.9												3.0	-0.4
Greece	-2.8	-0.7												0.5	0.2
Hungary	-3.4	1.3												0.2	-0.4
Ireland	-0.3	1.7												2.8	3.1
Italy	-3.0	-0.5												1.6	1.1
Latvia	-0.3	-0.5												2.2	-3.9
Lithuania	-14.7	-14.9												8.5	-4.9
Luxembourg	-1.5	-0.1												1.2	3.0
Malta	-2.2	-10.2												2.2	1.5
Netherlands	3.1	-0.9												2.8	0.9
Poland	2.8	-1.3												7.2	0.3
Portugal	-4.8	-1.7												1.0	0.3
Romania	-3.9	0.3												8.4	-2.2
Slovakia	-2.7	-1.5												0.8	0.4
Slovenia	-0.3	-0.1												2.9	1.2
Spain	-4.3	-0.1												0.4	2.7
Sweden	-1.4	-2.2												4.3	3.8
UK	-3.8	-0.7												0.3	1.5
EU-15	-2.0	-0.5	0.3	0.2	0.5	0.0	0.5	0.0	0.5	-1.7	2.0	-7.7	2.5	0.6	1.2
EU-28	-1.7	-0.5	-0.3	-0.2	0.5	-0.6	0.6	-3.3	-1.1	-1.4	2.7	-4.4	2.4	1.3	0.8

EU-28 and Italy, 2005-2010

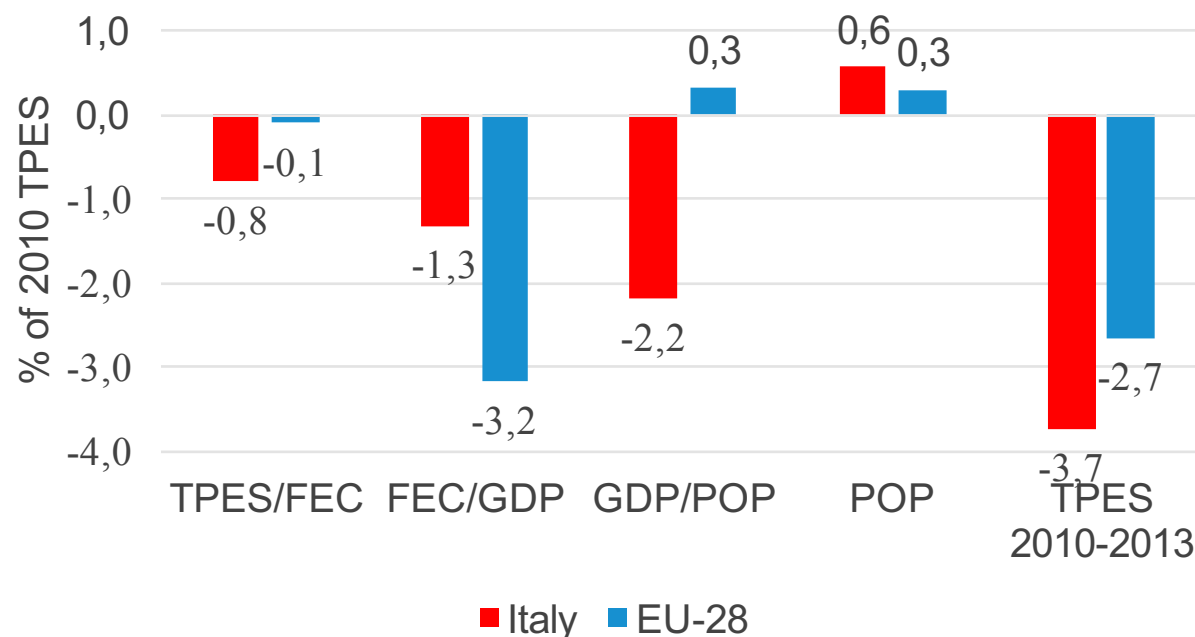


EU-28 Member State	$\Delta$ TPES 2010-2013, % of 2010 TPES	Cumulative TPES/FEC effect, % of 2010 TPES	Statistical info on incremental TPES/FEC effects, % of previous year's TPES					Cumulative FEC/GDP effect, % of 2010 TPES	Statistical info on incremental FEC/GDP effects, % of previous year's TPES					Cumulative GDP/POP effect, % of 2010 TPES	Cumulative POP effect, % of 2010 TPES
			Md	Av.	Stdev	Min	Max		Md	Av.	Stdev	Min	Max		
Austria	-1.3	-0.8	-0.8	-0.6	1.1	-1.5	0.6	-2.5	0.0	-1.7	4.3	-6.6	1.5	1.3	0.7
Belgium	-4.6	-2.1	-0.9	-1.2	1.1	-2.5	-0.3	-3.6	-3.2	-1.9	5.6	-6.8	4.2	0.0	1.2
Bulgaria	-2.2	-2.1	-3.2	-1.6	3.3	-3.9	2.2	-1.5	-1.1	-1.2	4.6	-5.8	3.4	2.2	-0.7
Croatia	-4.6	-0.4	-0.7	-0.3	0.9	-1.0	0.8	-2.7	-1.9	-2.0	1.4	-3.3	-0.6	0.2	-1.7
Cyprus	-7.0	-0.5	0.1	-0.6	4.2	-5.1	3.3	-4.3	-3.3	-4.5	2.1	-6.8	-3.2	-4.1	1.9
Czech	-2.2	-0.6	-0.1	-0.5	1.2	-1.8	0.4	-1.8	-0.1	-1.5	3.4	-5.4	0.9	0.2	0.0
Denmark	-4.3	-0.5	0.0	-0.3	2.5	-2.9	2.0	-3.8	-3.1	-3.2	2.5	-5.8	-0.8	-0.4	0.4
Estonia	2.5	2.0	3.3	2.3	5.8	-4.0	7.5	-3.7	-2.4	-4.1	6.3	-11.1	1.1	4.5	-0.2
Finland	-5.7	-1.9	-1.0	-1.1	3.1	-4.3	1.9	-3.8	-0.4	-2.1	5.4	-8.2	2.2	-0.9	0.8
France	-2.5	-0.4	-1.4	-0.2	3.1	-2.6	3.3	-4.1	1.5	-1.7	6.4	-9.1	2.5	1.0	1.1
Germany	-1.2	-0.4	-0.3	-0.4	0.1	-0.4	-0.3	-2.4	0.3	-1.9	5.4	-8.0	2.1	1.5	0.2
Greece	-5.0	2.4	-1.0	2.5	6.4	-1.3	10.0	-1.1	-3.9	-1.2	7.3	-6.8	7.0	-6.1	-0.3
Hungary	-6.6	-1.8	-0.6	-1.2	3.9	-5.4	2.3	-5.7	-3.9	-3.6	3.2	-6.6	-0.2	1.5	-0.6
Ireland	-3.5	0.3	0.3	0.3	1.4	-1.2	1.7	-4.6	-1.4	-4.3	6.4	-11.5	0.2	0.6	0.3
Italy	-3.7	-0.8	-0.1	-0.6	1.7	-2.5	0.7	-1.3	-1.9	-1.0	2.6	-3.1	1.9	-2.2	0.6
Latvia	-2.0	1.2	-0.1	0.7	1.5	-0.1	2.5	-10.8	-8.1	-6.5	4.8	-10.4	-1.1	10.0	-2.4
Lithuania	-0.7	-3.3	-1.1	-1.9	2.5	-4.6	0.1	-4.9	-1.6	-2.7	5.7	-8.8	2.4	10.3	-2.7
Luxembourg	-2.3	-1.0	-0.9	-0.8	0.9	-1.6	0.1	-3.1	-2.6	-2.6	0.8	-3.5	-1.9	-1.2	2.9
Malta	-3.5	-4.4	0.0	-4.3	8.3	-13.9	1.1	-0.8	-1.3	-0.7	4.4	-4.8	4.0	1.7	0.0
Netherlands	-3.6	-1.2	-0.6	-0.9	1.5	-2.5	0.5	-2.1	1.7	-1.3	7.0	-9.3	3.7	-0.8	0.5
Poland	-0.9	0.8	1.4	0.9	3.2	-2.5	3.8	-4.3	-3.1	-4.5	2.9	-7.8	-2.5	2.6	0.0
Portugal	-3.6	3.7	2.8	2.6	1.0	1.5	3.5	-3.8	-2.4	-2.6	2.1	-4.8	-0.6	-3.1	-0.5
Romania	-4.3	-3.5	-3.5	-2.4	2.3	-4.1	0.2	-3.6	-0.3	-2.6	5.4	-8.8	1.3	3.4	-0.6
Slovakia	-1.8	1.0	1.4	0.6	2.7	-2.4	2.8	-5.6	-6.8	-3.6	6.8	-8.3	4.2	3.0	-0.2
Slovenia	-2.6	-0.2	-0.5	-0.1	1.8	-1.8	1.8	-1.0	-0.8	-0.7	1.3	-2.0	0.7	-1.6	0.2
Spain	-4.2	1.7	2.1	1.2	4.1	-3.3	4.7	-4.0	-2.7	-2.8	0.3	-3.1	-2.5	-1.9	0.0
Sweden	-3.6	4.6	0.9	1.4	1.7	0.1	3.3	-12.1	-3.1	-3.7	4.1	-8.0	0.1	1.4	2.5
UK	-2.4	0.2	0.6	0.1	1.5	-1.6	1.4	-4.2	-1.1	-3.3	6.2	-10.2	1.5	0.7	0.9
EU-15	-2.8	-0.1	-0.2	-0.1	1.0	-1.0	1.0	-3.2	0.0	-2.2	4.2	-7.0	0.5	0.0	0.5
EU-28	-2.7	-0.1	-0.4	-0.1	1.1	-1.0	1.2	-3.2	-0.3	-2.2	3.8	-6.6	0.2	0.3	0.3

# Example of results

EU-28 Member State	ΔTPES 2010-2013, % of 2010 TPES	Cumulative TPES/FEC effect, % of 2010 TPES	Statistical info on incremental TPES/FEC effects, % of previous year's TPES					Cumulative FEC/GDP effect, % of 2010 TPES	Statistical info on incremental FEC/GDP effects, % of previous year's TPES					Cumulative GDP/POP effect, % of 2010 TPES	Cumulative POP effect, % of 2010 TPES
			Md	Av.	Stdev	Min	Max		Md	Av.	Stdev	Min	Max		
Austria	-1.3	-0.8	-0.8	-0.6	1.1	-1.5	0.6	-2.5	0.0	-1.7	4.3	-6.6	1.5	1.3	0.7
Belgium	-4.6	-2.1	-0.9	-1.2	1.1	-2.5	-0.3	-3.6	-3.2	-1.9	5.6	-6.8	4.2	0.0	1.2
Bulgaria	-2.2	-2.1	-3.2	-1.6	3.3	-3.9	2.2	-1.5	-1.1	-1.2	4.6	-5.8	3.4	2.2	-0.7
Croatia	-4.6	-0.4	-0.7	-0.3	0.9	-1.0	0.8	-2.7	-1.9	-2.0	1.4	-3.3	-0.6	0.2	-1.7
Cyprus	-7.0	-0.5	0.1	-0.6	4.2	-5.1	3.3	-4.3	-3.3	-4.5	2.1	-6.8	-3.2	-4.1	1.9
Czech	-2.2	-0.6												0.2	0.0
Denmark	-4.3	-0.5												0.4	0.4
Estonia	2.5	2.0												4.5	-0.2
Finland	-5.7	-1.9												0.9	0.8
France	-2.5	-0.4												1.0	1.1
Germany	-1.2	-0.4												1.5	0.2
Greece	-5.0	2.4												6.1	-0.3
Hungary	-6.6	-1.8												1.5	-0.6
Ireland	-3.5	0.3												0.6	0.3
Italy	-3.7	-0.8												2.2	0.6
Latvia	-2.0	1.2												0.0	-2.4
Lithuania	-0.7	-3.3												0.3	-2.7
Luxembourg	-2.3	-1.0												1.2	2.9
Malta	-3.5	-4.4												1.7	0.0
Netherlands	-3.6	-1.2												0.8	0.5
Poland	-0.9	0.8												2.6	0.0
Portugal	-3.6	3.7												3.1	-0.5
Romania	-4.3	-3.5												3.4	-0.6
Slovakia	-1.8	1.0												3.0	-0.2
Slovenia	-2.6	-0.2												1.6	0.2
Spain	-4.2	1.7												1.9	0.0
Sweden	-3.6	4.6												1.4	2.5
UK	-2.4	0.2												0.7	0.9
EU-15	-2.8	-0.1	-0.2	-0.1	1.0	-1.0	1.0	-3.2	0.0	-2.2	4.2	-7.0	0.3	0.0	0.5
EU-28	-2.7	-0.1	-0.4	-0.1	1.1	-1.0	1.2	-3.2	-0.3	-2.2	3.8	-6.6	0.2	0.3	0.3

EU-28 and Italy, 2010-2013





# Conclusions

Chained two-factor decomposition analysis is an useful tool in identifying the effects of drivers contributing to change of TPES

Decreasing energy intensity is an important driver of change in TPES. In many EU-28 Member States, TPES has started to decrease in the recent years

Changing TPES/FEC ratio is not an important driver

GDP/POP and POP usually increase TPES.