

**Study and Reports on the VAT Gap in the EU-28 Member States:
2016 Final Report**

TAXUD/2015/CC/131

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List of Acronyms and Abbreviations

CASE	Center for Social and Economic Research (Warsaw)
CEE	Central and Eastern Europe
COICOP	Classification of Individual Consumption according to Purpose
CPA	Statistical Classification of Products by Activity in accordance with Regulation (EC) No 451/2008 of the European Parliament and of the Council of 23 April 2008 establishing a new statistical classification of products by activity)
EC	European Commission
ESA95	European System of Accounts 1995 in accordance with Council Regulation (EC) No 2223/96 of 25 June 1996 on the European system of national and regional accounts in the Community
ESA10	European System of Accounts 2010 in accordance with Regulation (EU) No 549/2013 of the European Parliament and of the Council of 21 May 2013 on the European system of national and regional accounts in the European Union
EU	European Union
EU-26	Current Member States of the European Union except Croatia and Cyprus
EU-27	Current Member States of the European Union except Croatia
EU-28	Current Member States of the European Union
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
NPISH	Non-Profit Institutions Serving Households
OECD	Organisation for Economic Cooperation and Development
ORS	Own Resource Submissions
o/w	of which
TAXUD	Taxation and Customs Union Directorate-General of the European Commission
UK	United Kingdom
VAT	Value Added Tax
VTTL	VAT Total Tax Liability
VR	VAT Revenue

Executive Summary

This analysis serves as the Final Report for the DG TAXUD Project 2015/CC/131, “Study and Reports on the VAT Gap in the EU-28 Member States”, which is a follow up to the reports published in 2013, 2014, and 2015.

In this report, we present estimates of the VAT Gap and the Policy Gap for the year 2014, as well as revised estimates for the years 2010-2013 due the transmission of Eurostat national accounts from the ESA95 to the ESA10. This update covers Croatia, which was not included in the previous updates. While it was hoped that the update would also cover Cyprus, it has not been possible due to incomplete national accounts data.

The VAT Gap is a measure of VAT compliance and enforcement that provides an estimate of revenue loss due to fraud and evasion, tax avoidance, bankruptcies, financial insolvencies, as well as miscalculations. It is defined as the difference between the amount of VAT collected and the VAT Total Tax Liability (VTTL), which is expressed in the report in both absolute and relative terms. The VTTL is the theoretical tax liability according to tax law, and is estimated using a “top-down” approach.

As the capacity and willingness to pay taxes is affected by economic cycles, the reviving 2014 economic situation in the European Union (EU) has, therefore, provided good conditions for narrowing the VAT Gap in EU Member States. The year 2014 saw numerous changes in tax enforcement and monitoring, such as anti-smuggling measures, electronic reporting functionalities, limits on cash transactions and the extension of lists of goods applicable to the reverse VAT charge mechanism. On the other hand, only three EU Member States implemented significant changes in their VAT regimes.

Positive economic tailwinds, stable VAT regimes, and measures introduced against tax non-compliance led to a decrease in the relative size of the VAT Gap. In nominal terms, in 2014, the VAT Gap in the EU-27 Member States amounted to EUR 159.5 billion. The VTTL accounted for EUR 1,136.3 billion, whereas the revenue was EUR 976.9 billion. Expressed as a percent of VTTL, the VAT Gap reached 14.06 percent. As a result, the overall VAT Gap as a percent of the VTTL marked its first decrease since 2011. The EUR 2.5 billion decline of the VAT Gap in 2014 compared to 2013 was equivalent to the decrease of the ratio of the Gap and the VTTL by approximately 0.69 percentage point (in the EU-26).

The smallest Gaps were observed in Sweden (1.24 percent), Luxembourg (3.80 percent), and Finland (6.92 percent). The largest Gaps were registered in Romania (37.89 percent), Lithuania (36.84 percent), and Malta (35.32 percent). Overall, half of the EU-27 Member States recorded a Gap below 10.4 percent.

Introduction

Tax evasion is estimated to cost public budgets billions of euros a year across the EU. Moreover, it challenges the principle of fair taxation and prevents fair competition between businesses. Tackling tax evasion is therefore one of the Commission's top political priorities, while Member States are also working to tighten their tax systems and recapture the significant revenues lost to tax evaders.

VAT is one of the main sources of revenue for EU Member States. Moreover, a proportion of Member States' VAT revenues are used as own resources for the EU budget. Consequently, tackling VAT fraud and evasion is a critical part of addressing the wider tax evasion problem. Quantifying the scale of the VAT Gap can help in developing well-targeted measures to this end, and in monitoring the effectiveness of these measures.

The VAT Gap, however, refers to more than just fraud and evasion. It also covers the VAT lost due to, for example, insolvencies, bankruptcies, administrative errors, and legal tax optimisation. There is an on-going EU reform process to make the VAT system simpler, more efficient, and more robust. Meanwhile, Member States are called upon to broaden their tax bases and improve their administrations for better tax compliance, as part of their national structural reforms. In this regard, data on certain inefficiencies in the VAT systems and analysis of the VAT policy gap are useful in shaping reform measures at both the EU and the national level.

This report is the third update of the "Study to quantify and analyse the VAT Gap in the EU Member States", which was published in September 2013 (hereafter: the 2013 Report) and originally included VAT Gap estimates for the period 2000-2011.

In this report, we present estimates of the VAT Gap and the Policy Gap for the year 2014, as well as revised estimates for the years 2010-2013 due the transmission of Eurostat national accounts from the ESA95 to the ESA10 (hereafter: the ESA10 transmission). This update covers Croatia, which was not included in the previous updates. While it was hoped that the update would also cover Cyprus, it has not been possible due to incomplete national accounts data.

Chapter I of the report presents the main economic and policy factors that affected Member States during the course of 2014. It also includes a decomposition of the change in VAT revenues into base, effective rate, and tax compliance components. The overall results are presented and briefly described in Chapter II. Chapter III provides detailed results and outlines trends for individual countries with some analytical insights. In Chapter IV, we examine the Policy Gap and the contribution that VAT reduced rates and exemptions have made to this Gap. Annex A contains methodological considerations on the VAT Gap and the Policy Gap and describes the changes underlying this report due to the ESA10 transmission. Annex B provides statistical data and a set of comparative tables.

I. Background: Economic and Policy Context in 2014

a. Economic Conditions in the EU during 2014

Based on numerous studies on the determinants of tax compliance (see Barbone et al., 2013), the capacity and willingness to pay taxes is strongly affected by the economic cycle. The reviving economic situation in 2014 in the EU has therefore provided good conditions for narrowing the VAT Gap in EU Member States.

Succeeding minimal growth in 2013, in 2014, the EU economy began its second year of recovery. The EU-28 economy accelerated to a 1.4 percent pace, whereas the euro zone marked its first year of growth since 2011, experiencing a 0.9 percent hike in GDP volume (see Table 1.1).

At the same time, the economic situation became more balanced with 24 Member States growing, and four Member States, namely Italy, Cyprus, Finland, and Croatia, suffering from a decline in GDP volume. Overall, the fastest growth of GDP was registered in Ireland (5.2 percent), while Cyprus marked the sharpest decline (-2.5 percent) (see Table 1.1).

The change in nominal GDP was positive in all the Member States except Croatia (-0.3 percent) and Cyprus (-3.7 percent). Growth of final consumption amounted to 2.6 percent on average and was slower than nominal GDP growth (3.0 percent). Change in GFCF was highly differentiated across the countries, declining by 20.2 percent in Cyprus and, in contrast, growing by 15.3 percent in Ireland. Overall, seven Member States saw negative GFCF growth, while 21 Member State saw a positive and sometimes sharply increased investment growth (see Table 1.1).

Table 1.1. Real and Nominal Growth in the EU-28 in 2014

Member State	Real GDP Growth (%)	Nominal Growth (%)			
		GDP	Final Consumption	GFCF	Intermediate Consumption
Belgium	1.3	2.0	1.3	7.4	1.5
Bulgaria	1.6	2.0	2.3	1.7	2.9
Czech Republic	2.0	4.5	2.4	4.0	6.3
Denmark	1.3	2.1	1.4	3.0	1.7
Germany	1.6	3.4	2.5	5.0	1.0
Estonia	3.0	5.0	5.2	-2.3	3.2
Ireland	5.2	5.3	3.9	15.3	6.9
Greece	0.7	-1.6	-2.6	-4.9	-2.4
Spain	1.4	1.0	1.1	3.0	0.7
France	0.6	1.2	0.9	-1.2	0.0
Croatia	-0.3	-0.3	-1.2	-4.0	.
Italy	-0.3	0.5	0.4	-3.3	-1.3
Cyprus	-2.5	-3.7	-3.3	-20.2	-8.2
Latvia	2.4	3.6	3.2	1.9	1.8
Lithuania	3.1	4.2	4.4	6.8	3.9
Luxembourg	4.1	5.1	5.6	10.7	13.4
Hungary	3.7	7.0	4.7	13.2	10.9
Malta	3.7	5.7	4.1	10.5	0.9
Netherlands	1.0	1.8	1.1	3.3	-0.2
Austria	0.4	2.0	2.3	1.4	-0.3
Poland	3.2	3.8	2.8	8.9	1.8
Portugal	0.9	1.9	2.0	2.6	-1.5
Romania	2.9	4.7	4.5	2.5	2.8
Slovenia	3.0	3.9	0.5	3.6	2.6
Slovakia	2.5	2.3	3.2	3.1	0.7
Finland	-0.7	0.9	1.8	-2.1	-0.3
Sweden	2.3	3.9	3.3	9.5	4.0
United Kingdom	2.8	4.7	3.9	9.0	4.7
EU-28	1.4	3.0	2.6	3.8	.

Source: Eurostat.

b. VAT Regime Changes

The year 2014 saw numerous changes in tax enforcement and monitoring, such as anti-smuggling measures, electronic reporting functionalities, limits on cash transactions and the extension of lists of goods applicable to the reverse VAT charge mechanism¹.

However, very limited changes were implemented to the VAT rates. During 2014, only three Member States applied changes in their rate structure. An increase in the VAT reduced rates was

¹ Source: IBFD – International VAT Monitor, www.ibfd.org.

implemented in Croatia, whereas France and Cyprus increased both statutory and reduced rates (see Table 1.2).

In 2014, the 21 percent rate remained the median statutory rate across Member States. The lowest standard rate was kept in Luxembourg (15 percent), and the highest was in Hungary (27 percent). The number of non-zero rates applicable in different VAT regimes varied from one (in Denmark) to four (in France and Ireland).

Country	Standard Rate (SR)	Reduced Rate(s) (RR)	Super Reduced Rate	Parking Rate	Changes during 2014	Weighted average rate ²
Belgium	21	6 / 12	-	12	-	9.8
Bulgaria	20	9	-	-	-	14.4
Czech Republic	21	15	-	-	-	12.8
Denmark	25	-	-	-	-	14.7
Germany	19	7	-	-	-	10.5
Estonia	20	9	-	-	-	13.0
Ireland	23	9 / 13.5	4.8	13.5	-	11.2
Greece	23	6.5 / 13	-	-	-	10.6
Spain	21	10	4	-	-	8.6
France	19.6	5.5 / 10	2.1	-	RR 7 to 10	9.8
Croatia	25	5/13	-	-	RR 10 to 13	15.8
Italy	22	10	4	-	-	10.1
Cyprus	19	5 / 9	-	-	RR 8 to 9, SR	10.5
Latvia	20	12	-	-	-	12.6
Lithuania	21	5 / 9	-	-	-	15.5
Luxembourg	15	6 / 12	3	12	-	14.5
Hungary	27	5 / 18	-	-	-	15.9
Malta	18	5 / 7	-	-	-	15.7
Netherlands	21	6	-	-	-	10.1
Austria	20	10	-	12	-	11.3
Poland	23	5 / 8	-	-	-	11.9
Portugal	23	6 / 13	-	13	-	11.4
Romania	24	5 / 9	-	-	-	17.6
Slovenia	22	9.5	-	-	-	12.1
Slovakia	20	10	-	-	-	12.5
Finland	24	10 / 14	-	-	-	12.3
Sweden	25	6 / 12	-	-	-	13.0
United Kingdom	20	5	-	-	-	9.2

Table 1.2. VAT Rate Structure as of 31 December 2014, and Changes during 2014

Source: TAXUD, VAT Rates Applied in the Member States of the European Union: Situation at 1st January 2016.

² Ratio of VTTL and tax base. See methodological considerations in Section d in Annex A.

c. Sources of Change in VAT Revenue

Overall, change in base, which is final consumption and investment by households, NPISH, and government, has increased, on average, by 2.45 percent. In two Member States, Greece and Italy, the base shrank (see Table 1.3).

As can be seen from Table 1.3, changes in effective rate were rather small and, on average, accounted for 0.21 percent growth. Much more volatile across the countries was VAT compliance, denoted as the ratio between one minus the VAT Gap and the VTTL.³ Expressed as a relative change over 2013, VAT compliance increased, on average, by 1.82 percent, with the highest rise in Malta (6.33 percent) and sharpest decline in Romania (5.19 percent) (see Table 1.3 and Figure 1.1).

Respective changes in base, effective rate and tax compliance have led to an increase in VAT revenue, on average, by 4.51 percent.

Box 1. Source of Revisions of VAT Gap Estimates

The estimates for various components of the VTTL and, consequently, of the VAT Gap for the years 2010-2013 have been revised for a number of reasons.

The most important basis for revisions is the transmission of Eurostat national accounts from the ESA95 to the ESA10, which included revisions and updates of the common standards, classifications, and accounting rules for Member States in collecting their statistics. As compared to the ESA95, the ESA10 reflects changes in the methodology, but also revisions thanks to new or revised data sources or improved compilation methods (see Eurostat, 2014). Thus, despite adjusting our methodology to the new accounting standards, the ESA10 transmission required a revision of the estimates (for a description of the methodological changes induced by the ESA10 transmission, see Annex A).

The second reason derives from the need to estimate the VAT liability on the GFCF of exempt sectors, which is only available with a two-year lag. Every additional year of statistical information leads to two years of “backwards” minor revisions for all countries.

Finally, new sources of information obtained from Member States allowed for a more accurate estimation of the underlying parameters. Hence, substantial revisions were applied to Latvia and Lithuania due to turnover data on micro companies that had fallen behind the VAT payment

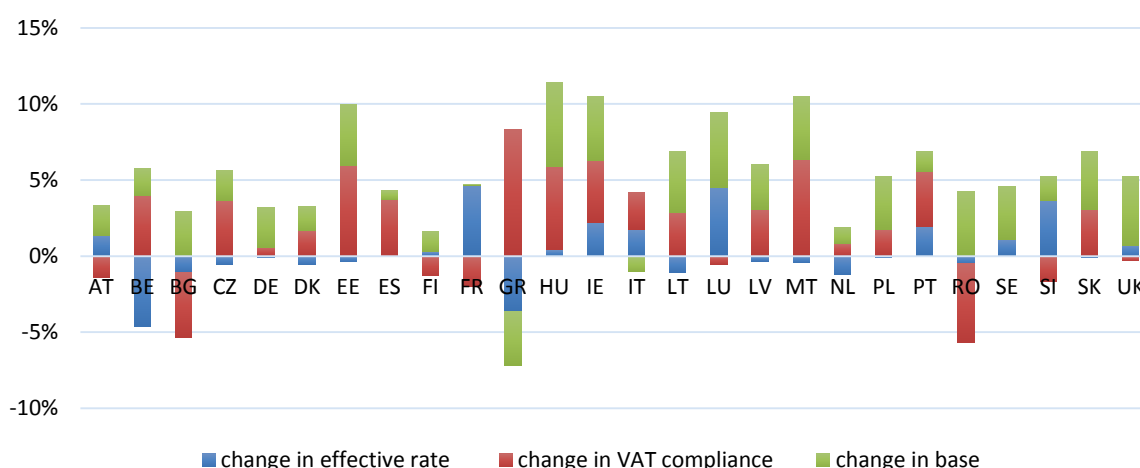
³ See formula explaining VAT revenue decomposition in Section a in Annex A.

Table 1.3. Change in VAT Revenue Components (2014 over 2013)

Member State	Change in Effective Rate (%)	Change in VAT Compliance (%)	Change in Base (%)	Change in Revenue (%)
Belgium	-4.60	3.96	1.82	0.98
Bulgaria	-1.07	-4.29	2.93	-2.54
Czech Republic	-0.54	3.66	2.00	5.15
Denmark	-0.56	1.67	1.57	2.69
Germany	-0.10	0.60	2.58	3.08
Estonia	-0.36	5.97	4.02	9.83
Ireland	2.23	4.04	4.20	10.83
Greece	-3.64	8.31	-3.55	0.66
Spain	-0.04	3.73	0.59	4.30
France	4.67	-1.99	0.07	2.65
Italy	1.75	2.43	-1.01	3.17
Latvia	-0.32	3.06	2.94	5.74
Lithuania	-1.07	2.89	4.01	5.87
Luxembourg	4.54	-0.52	4.88	9.07
Hungary	0.42	5.51	5.51	11.79
Malta	-0.42	6.33	4.19	10.32
Netherlands	-1.21	0.81	1.08	0.67
Austria	1.37	-1.37	1.99	1.97
Poland	-0.09	1.73	3.51	5.20
Portugal	1.95	3.64	1.29	7.02
Romania	-0.50	-5.19	4.24	-1.67
Slovenia	3.67	-1.68	1.59	3.55
Slovakia	-0.07	3.11	3.76	6.92
Finland	0.28	-1.30	1.36	0.32
Sweden	1.10	0.00	3.49	4.62
United Kingdom	0.71	-0.30	4.55	4.97
EU-26	0.21	1.82	2.45	4.51

Source: own calculations.

The Member States that significantly increased their revenue increased tax compliance along with substantially increasing their tax base (see Estonia, Hungary, Ireland, and Malta). Correlation between change in VAT compliance and change in revenue was about 0.58, whereas correlation between change in base and change in revenue amounted to ca. 0.53. The Member States where the effective rate increased significantly, in general, did not experience proportional growth in revenues (see France and Slovenia). An extraordinary case is Greece, where revenues increased despite sharp decreases in base and effective rate (see Figure 1.1).

Figure 1.1. Change in VAT Revenue Components (2014 over 2013)

Source: own calculations.

II. The VAT Gap in 2014

The VAT Gap measured in this report is a conceptually simple indicator of VAT non-compliance, but also includes VAT lost due to, for example, insolvencies, bankruptcies, administrative errors, and legal tax optimisation. The VAT Gap is defined as the difference between the amount of VAT actually collected and the VAT Total Tax Liability (VTTL), which is expressed hereafter in both absolute and relative terms. The VTTL is the theoretical tax liability according to tax law. The VAT Gap is estimated using a “top-down” approach that applies respective VAT rates to six components of VAT revenue (namely final consumption of households; final consumption of government and NPISH; intermediate consumption; GFCF; and other, largely country-specific, adjustments). The formula is described in more detail in Section b in Annex A.

What raises some voices of criticism is the fact that the “top-down” approach used for the estimation is based on national accounts data (see EC, 2016). As national accounts data were not developed for the purpose of monitoring tax liability, some degree of approximation is necessary to calculate the VTTL. Due to the choice of the estimation method, estimates of the VAT Gap require revision whenever underlying data or methodological standards in national accounts data are revised. For this reason, despite the numerous methodological changes applied, the estimates of the VAT Gap in 2014 are not comparable with the results obtained on the ESA95 national accounts (see Box 1 and the methodological considerations in Section c in Annex A).

The individual effects of the transmission of Eurostat national accounts from the ESA95 to the ESA10, and subsequent methodological amendments in the VAT Gap estimation formula, are shown in Table A2 in Section c, Annex A. The table includes revised estimates of the VAT Gap for 2010-2014 and the figures estimated using the ESA95 national accounts.

As shown in Chapter I, an increase in tax compliance accompanied positive economic developments, with relatively stagnant effective rates. In nominal terms, in 2014, the VAT Gap in EU-27 Member States, estimated using the current national accounts figures, amounted to EUR 159.5 billion. The VTTL accounted for EUR 1,136.3 billion, and the revenue was EUR 976.9 billion. Expressed as a percent of the VTTL, the VAT Gap reached 14.06 percent. As a result, the overall

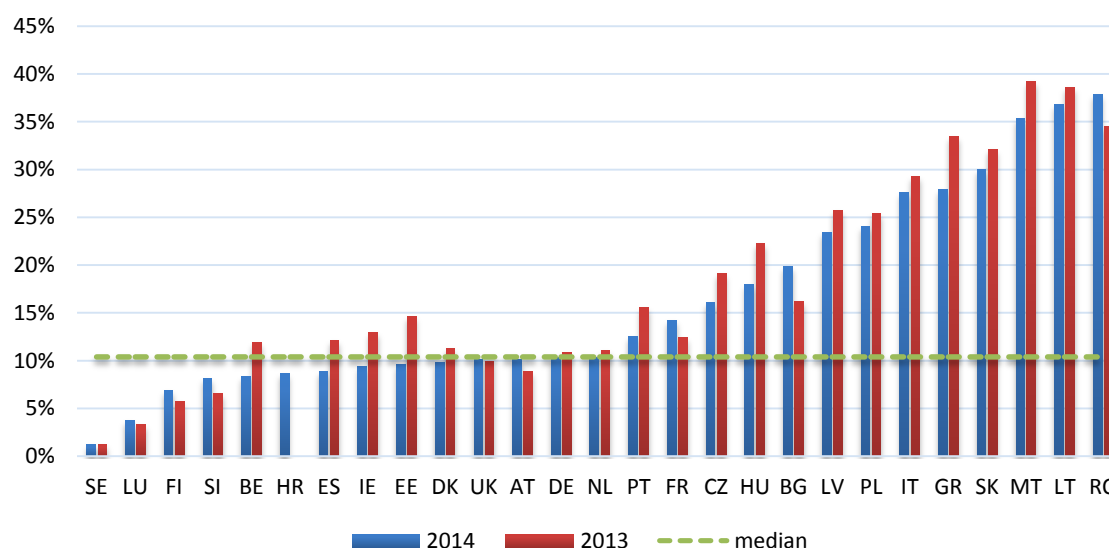
VAT Gap as a percent of the VTTL marked its first decrease since 2011. The EUR 2.5 billion decline of the VAT Gap in 2014 as compared to 2013 was equivalent to the decrease of the ratio of the Gap and the VTTL by approximately 0.69 percentage point (in the EU-26) (see Table 2.1).

In total, out of the 26 Member States with estimates available for 2013 and 2014, eight, namely the UK, Luxembourg, Finland, Austria, Slovenia, France, Romania, and Bulgaria, saw an incline in their share of the VAT Gap (see Figure 2.1 and Figure 2.2).

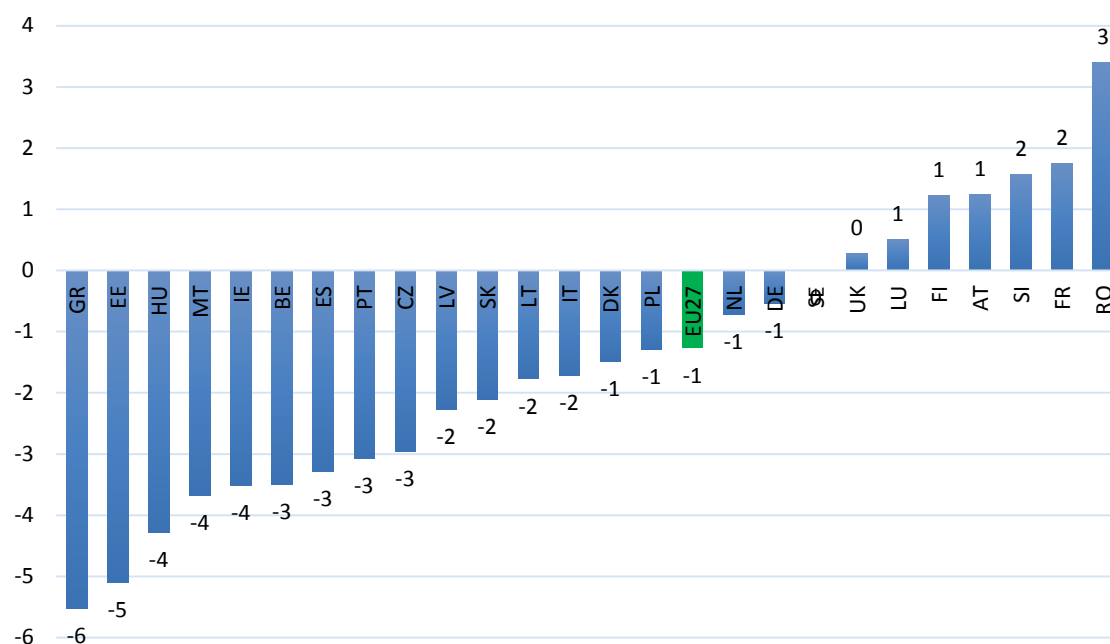
Changes in the rank of the Member States were, in general, not large. Compared to 2013, Estonia experienced the largest change in the EU-wide rank (from 14th to 7th place in 2014).

In 2014, the smallest Gaps were observed in Sweden (1.24 percent), Luxembourg (3.80 percent), and Finland (6.92 percent). The largest Gaps were registered in Romania (37.89 percent), Lithuania (36.84 percent), and Malta (35.32 percent). Overall, half of EU-27 Member States had a Gap below 10.40 percent (see Table 2.1).

Figure 2.1. VAT Gap as a percent of the VTTL in EU-27 Member States, 2014 and 2013

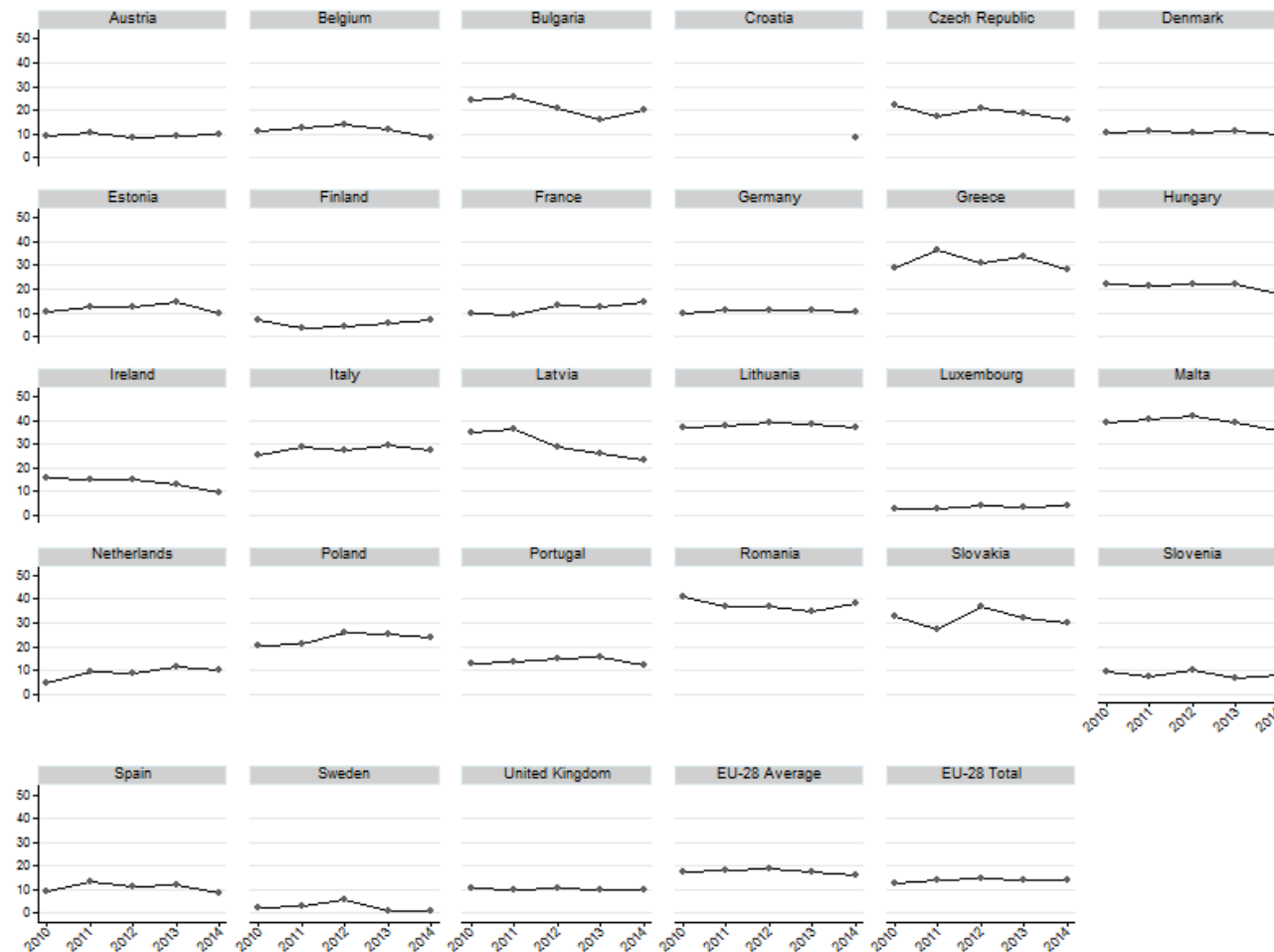


Source: own calculations.

Figure 2.2. Percentage Point Change in VAT Gap (2014 over 2013)

Source: own calculations.

Figure 2.3. VAT Gap in EU Member States, 2010-2014



Source: own calculations.

Table 2.1. VAT Gap Estimates, 2013-2014 (EUR million)

Country	2013				2014				VAT Gap change (pp)
	Revenues	VTTL	VAT Gap	VAT Gap (%)	Revenues	VTTL	VAT Gap	VAT Gap (%)	
BE	27250	30923	3673	11.88	27518	30037	2519	8.39	-3.49
BG	3898	4653	755	16.23	3799	4739	940	19.83	3.6
CZ	11694	14455	2761	19.10	11602	13835	2233	16.14	-2.96
DK	24321	27409	3088	11.27	24985	27694	2709	9.78	-1.49
DE	197005	221107	24102	10.90	203081	226570	23489	10.37	-0.53
EE	1558	1826	268	14.67	1711	1892	181	9.58	-5.09
IE	10372	11913	1541	12.94	11496	12691	1195	9.42	-3.52
GR	12593	18940	6347	33.51	12676	17602	4926	27.99	-5.52
ES	61126	69589	8463	12.16	63756	69970	6214	8.88	-3.28
FR	144301	164791	20490	12.43	148129	172606	24477	14.18	1.75
HR	-	-	-	-	5368	5878	510	8.67	-
IT	93921	132796	38875	29.27	96897	133752	36855	27.55	-1.72
LV	1690	2275	584	25.69	1787	2334	547	23.42	-2.27
LT	2611	4253	1642	38.61	2764	4377	1612	36.84	-1.77
LU	3415	3532	116	3.29	3725	3872	147	3.80	0.51
HU	9073	11668	2595	22.24	9754	11888	2134	17.95	-4.29
MT	582	958	375	39.20	642	993	351	35.32	-3.88
NL	42424	47731	5307	11.12	42708	47664	4956	10.40	-0.72
AT	24953	27399	2446	8.93	25445	28327	2882	10.17	1.24
PL	27780	37227	9447	25.38	29317	38618	9301	24.08	-1.3
PT	13710	16236	2526	15.56	14672	16766	2093	12.49	-3.07
RO	11913	18186	6272	34.49	11650	18757	7107	37.89	3.4
SI	3045	3260	214	6.57	3154	3433	280	8.14	1.57
SK	4696	6914	2218	32.08	5021	7169	2148	29.97	-2.11
FI	18888	20028	1140	5.69	18948	20357	1409	6.92	1.23
SE	39048	39540	492	1.24	38846	39334	489	1.24	0
UK	142227	157932	15705	9.94	157428	175184	17756	10.14	0.2
Total EU-26⁴	934094	1094837	161442	14.75	971511	1130461	158950	14.06	-0.69
Total EU-27⁵					976879	1136339	159460	14.03	
Median				13.81				10.40	

⁴ EU-28 without Croatia and Cyprus.

⁵ EU-28 without Cyprus.

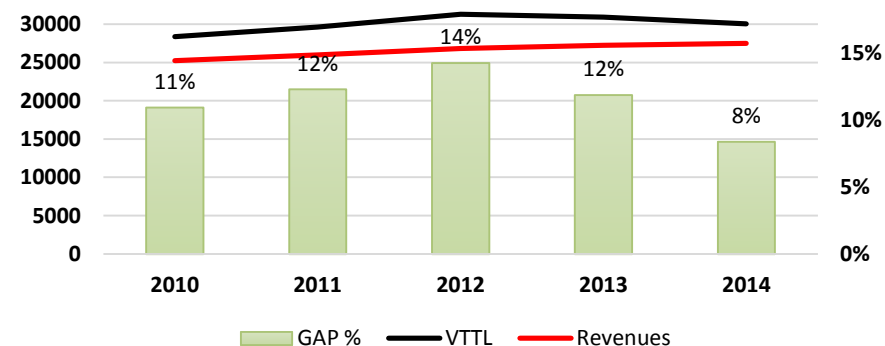
III. Individual Country Results

This Chapter reviews the individual results for each EU-27 Member State, highlights statistical trends and most important changes in the particular VAT systems. The results are presented in following order:

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Table 3.1. Belgium: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Belgium	2010	2011	2012	2013	2014
VTTL	28364	29624	31311	30923	30037
o/w liability on household final consumption	16104	16677	17123	17482	17320
o/w liability on government and NPISH final consumption	1205	1257	1311	1332	1360
o/w liability on intermediate consumption	5769	6092	6352	6533	5904
o/w liability on GFCF	3764	4007	4895	4406	4687
o/w net adjustments	1523	1591	1630	1170	765
VAT revenue	25262	25979	26844	27250	27518
VAT GAP	3102	3645	4467	3673	2519
VAT GAP as a percent of VTTL	11%	12%	14%	12%	8%
VAT GAP change since 2010					- 3pp

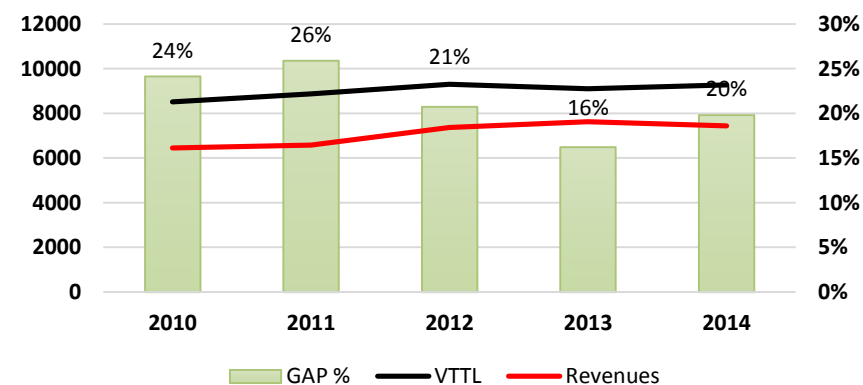


Highlights

- In 2014, Belgium saw a significant (nearly 3.5 percentage points) decrease in VAT Gap. Improvement in VAT compliance was accompanied by declining revenue and a shrinking effective rate (caused by the decrease of the rate on supply of electricity for private consumption).
- Despite a decrease in VTTL, revenue increased roughly by 1 percent.

Table 3.2. Bulgaria: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (BGN million)

Bulgaria	2010	2011	2012	2013	2014
VTTL	8507	8875	9298	9101	9268
o/w liability on household final consumption	6149	6442	6900	6594	6748
o/w liability on government and NPISH final consumption	514	532	548	599	607
o/w liability on intermediate consumption	827	892	828	898	912
o/w liability on GFCF	950	905	935	930	943
o/w net adjustments	66	104	88	79	58
VAT revenue	6452	6575	7371	7624	7430
VAT GAP	2055	2300	1928	1477	1837
VAT GAP as a percent of VTTL	24%	26%	21%	16%	20%
VAT GAP change since 2010					4pp

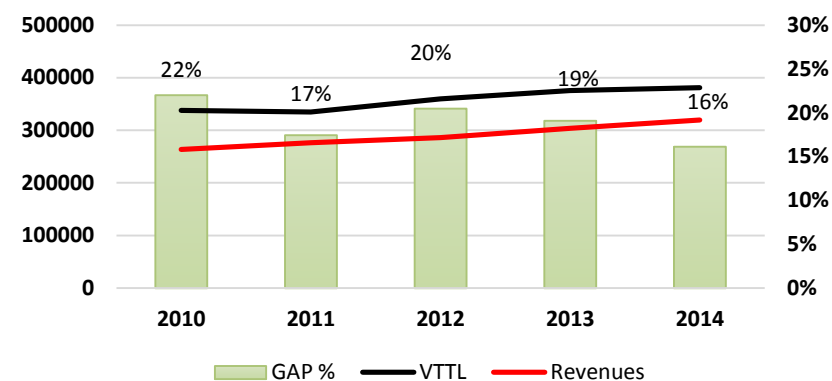


Highlights

- In 2014, Bulgaria's VAT revenue decreased, while the VTTL increased very slightly. As a result, the VAT Gap increased to 20 percent.
- The weakening VAT compliance in 2014 was, however, preceded by two years of a sharp decrease in the Gap.
- No systemic changes were introduced to the VAT system parameters in 2014.

Table 3.3. Czech Republic: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (CZK million)

Czech Republic	2010	2011	2012	2013	2014
VTTL	337811	334986	359861	375553	380972
o/w liability on household final consumption	205594	208936	227767	241470	243916
o/w liability on government and NPISH final consumption	17545	16327	17777	18843	19196
o/w liability on intermediate consumption	68231	70147	69245	72337	72939
o/w liability on GFCF	45335	38706	44831	42916	45464
o/w net adjustments	1106	871	241	-13	-542
VAT revenue	263457	276533	286116	303823	319485
VAT GAP	74354	58453	73745	71730	61487
VAT GAP as a percent of VTTL	22%	17%	20%	19%	16%
VAT GAP change since 2010					-6pp

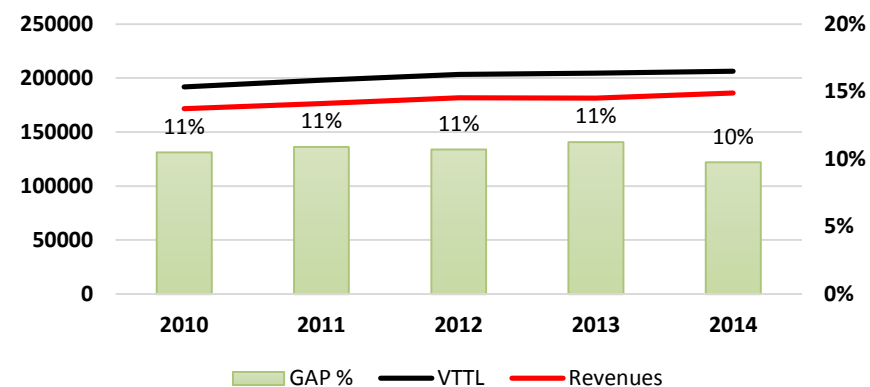


Highlights

- In 2014, the Czech Republic marked a significant reduction in its VAT Gap, reaching 16.1 percent, slightly above the EU average but much lower than the average value in CEE, i.e. Bulgaria (with the VAT Gap of 19.8 percent of the VTTL), Estonia (9.6 percent), Hungary (17.9 percent), Latvia (23.4 percent), Lithuania (36.8 percent), Poland (24.1 percent), Slovakia (30.0 percent) and Slovenia (8.1 percent).
- The increase in VAT compliance coincided with the implementation of measures against fraud. Since 2014, fraudulent companies are publically listed on the tax authorities' websites. Moreover, in 2014, electronic VAT reporting became compulsory.

Table 3.4. Denmark: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (DKK million)

Denmark	2010	2011	2012	2013	2014
VTTL	191732	198049	203431	204412	206456
o/w liability on household final consumption	110450	112972	116409	117558	119144
o/w liability on government and NPISH final consumption	5474	5182	5230	5253	5335
o/w liability on intermediate consumption	49019	50625	53097	52744	53253
o/w liability on GFCF	22507	24531	23656	23709	23802
o/w net adjustments	4282	4738	5039	5148	4923
VAT revenue	171583	176448	181618	181381	186261
VAT GAP	20149	21601	21813	23031	20195
VAT GAP as a percent of VTTL	11%	11%	11%	11%	10%
VAT GAP change since 2010					-1pp

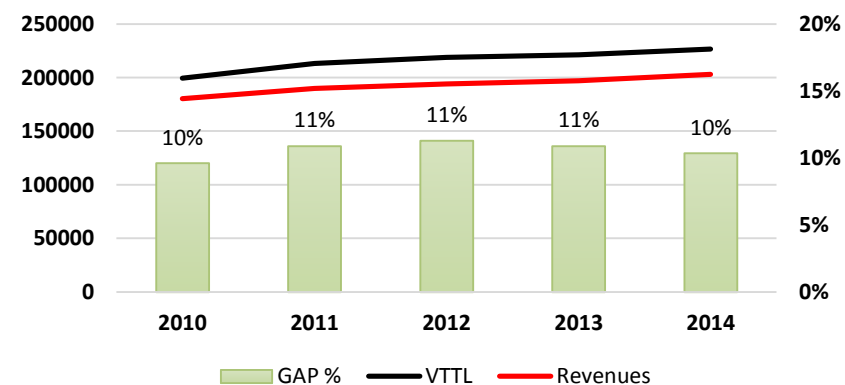


Highlights

- The VAT Gap for Denmark registered a small decline down to 9.8 percent in 2014, while in previous years the Gap remained nearly stagnant.
- Denmark did not implement any significant changes to VAT rates in 2014; however, it extended its VAT reverse charge to domestic supplies of high value goods.

Table 3.5. Germany: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Germany	2010	2011	2012	2013	2014
VTTL	199390	213145	218749	221107	226570
o/w liability on household final consumption	127788	136189	137795	140021	143114
o/w liability on government and NPISH final consumption	5794	5635	5694	5921	5864
o/w liability on intermediate consumption	35251	37727	38640	39723	40560
o/w liability on GFCF	29400	32277	35350	34162	35808
o/w net adjustments	1156	1316	1271	1280	1225
VAT revenue	180213	189910	194034	197005	203081
VAT GAP	19177	23235	24715	24102	23489
VAT GAP as a percent of VTTL	10%	11%	11%	11%	10%
VAT GAP change since 2010					1pp

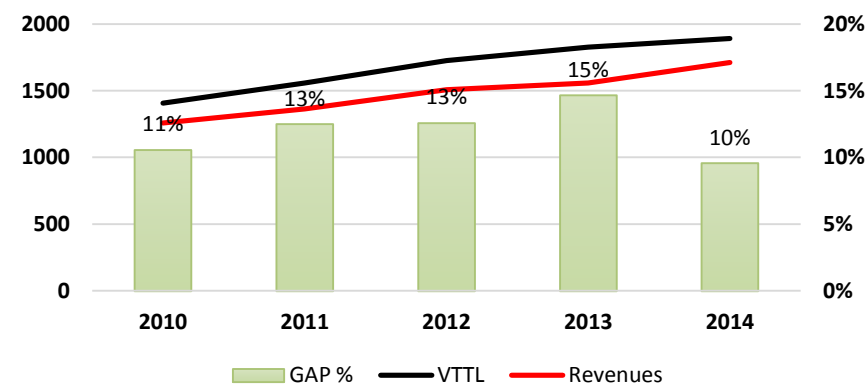


Highlights

- The VAT Gap for Germany declined marginally during 2014, following three years of nearly proportional growth of VTTL and revenues. In 2014, the VAT Gap was slightly below the EU median.
- In 2014, Germany toughened penalties for late returns and unpaid VAT due, and introduced a reverse charge on mobile phones. No substantial changes were made to the rate structure in 2014.

Table 3.6. Estonia: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Estonia	2010	2011	2012	2013	2014
VTTL	1406	1558	1725	1826	1892
o/w liability on household final consumption	1001	1098	1202	1286	1343
o/w liability on government and NPISH final consumption	14	15	16	18	19
o/w liability on intermediate consumption	190	216	225	236	241
o/w liability on GFCF	192	220	272	276	278
o/w net adjustments	8	10	9	10	11
VAT revenue	1257	1363	1508	1558	1711
VAT GAP	149	195	217	268	181
VAT GAP as a percent of VTTL	11%	13%	13%	15%	10%
VAT GAP change since 2010					-1pp

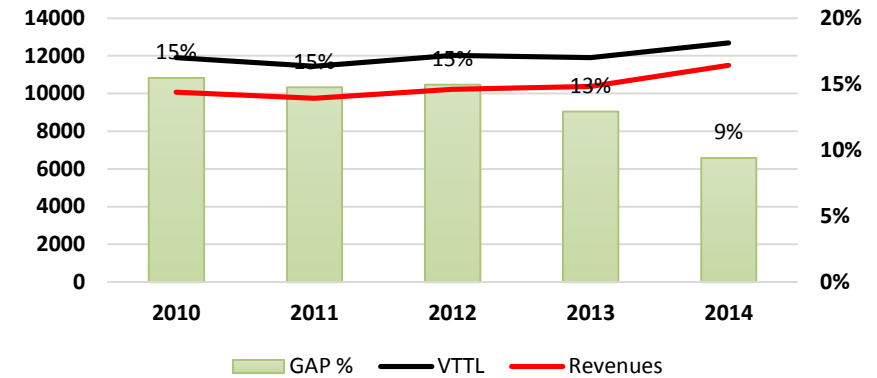


Highlights

- In 2014, Estonia marked one of the most substantial reductions in VAT Gap (by approximately 5 percentage points) across EU Member States. While the VTTL increased at a similar pace as the base, VAT revenues increased by almost 10 percent.
- As of mid-2014, new measures, namely, a single database and a new system for digital invoice collection, targeting tax evasion and fraud were introduced.

Table 3.7a. Ireland: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Ireland	2010	2011	2012	2013	2014
VTTL	11911	11445	12019	11913	12691
o/w liability on household final consumption	6933	6981	7334	7307	7649
o/w liability on government and NPISH final consumption	211	224	232	201	195
o/w liability on intermediate consumption	3053	2775	3214	3117	3395
o/w liability on GFCF	1531	1307	1079	1134	1301
o/w net adjustments	183	158	160	155	150
VAT revenue	10067	9755	10219	10372	11496
VAT GAP	1844	1690	1800	1541	1195
VAT GAP as a percent of VTTL	15%	15%	15%	13%	9%
VAT GAP change since 2010					-6pp



Highlights

- Ireland's VAT gap continued its downward trajectory from 2013, falling by roughly 4 percentage points, down to 9.4 percent.
- Through its Finance Bill, the Irish government introduced in 2014 a number of measures to improve VAT compliance, such as the VAT Fraud Quick Reaction Response Mechanism.

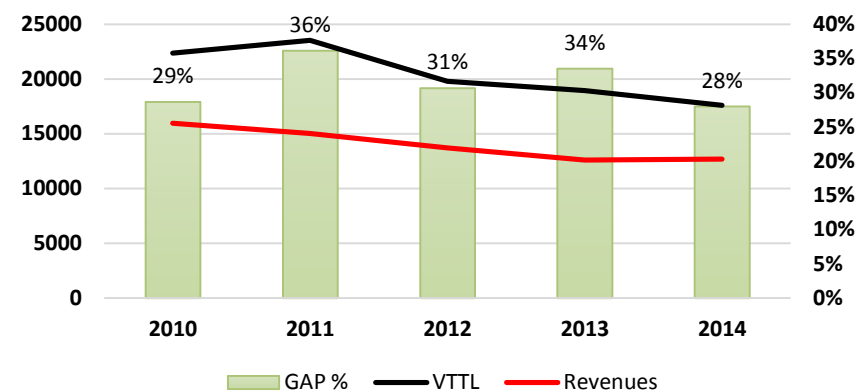
Table 3.7b. Ireland: Alternative Estimates

Ireland	2010	2011	2012	2013	2014
VAT revenue	10103	9753	10166	10326	11159
VAT GAP	1808	1692	1853	1587	1532
VAT GAP as a percent of VTTL	15%	15%	15%	13%	12%

Note: the estimates above are based on adjusted revenues for the changes in outstanding stocks of net reimbursement claims received from the Irish authorities (to better approximate accrued revenues). As taxpayers have decelerated their requests for reimbursements in 2014, the alternative estimate yields a 3 percentage point higher VAT Gap in 2014 and a virtually unchanged estimate for the period 2010-2013.

Table 3.8. Greece: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Greece	2010	2011	2012	2013	2014
VTTL	22370	23522	19781	18940	17602
o/w liability on household final consumption	14940	16602	14424	13886	13087
o/w liability on government and NPISH final consumption	780	834	780	693	484
o/w liability on intermediate consumption	2231	2205	2095	1910	1836
o/w liability on GFCF	4058	3494	2220	2187	1957
o/w net adjustments	361	386	261	265	238
VAT revenue	15958	15021	13713	12593	12676
VAT GAP	6412	8501	6068	6347	4926
VAT GAP as a percent of VTTL	29%	36%	31%	34%	28%
VAT GAP change since 2010					-1pp

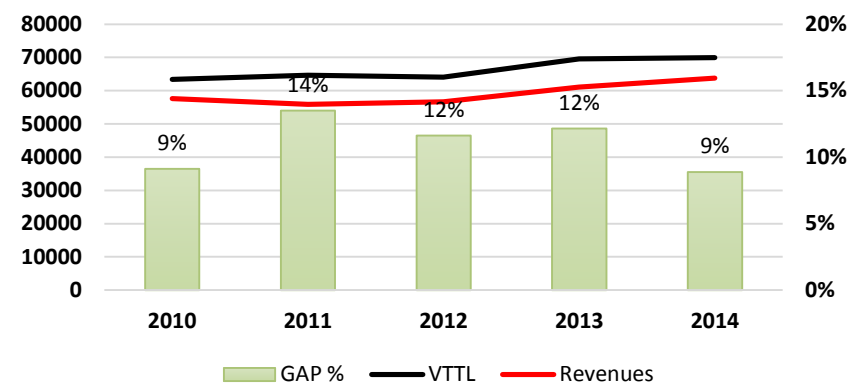


Highlights

- In 2014, Greece marked a considerable reduction in its relatively high VAT Gap. The increase in VAT compliance was accompanied by a significant decrease of the VAT base and effective rate, which led to an over 7 percent decrease in the VTTL.
- No systemic changes to the applicable rates were introduced to the Greek VAT system in 2014.

Table 3.9a. Spain: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Spain	2010	2011	2012	2013	2014
VTTL	63444	64641	64103	69589	69970
o/w liability on household final consumption	43003	44891	47179	51331	51985
o/w liability on government and NPISH final consumption	2294	2454	2419	2547	2531
o/w liability on intermediate consumption	9200	8587	8624	9115	8904
o/w liability on GFCF	8774	8463	5632	6330	6279
o/w net adjustments	173	246	250	267	272
VAT revenue	57649	55904	56652	61126	63756
VAT GAP	5795	8737	7451	8463	6214
VAT GAP as a percent of VTTL	9%	14%	12%	12%	9%
VAT GAP change since 2010					Opp



Highlights

- The VAT Gap in Spain decreased in 2014 by roughly 3 percentage points due to strong revenue performance. As the base increased marginally and the effective rate remained stagnant, growth in revenues was mostly affected by an increase in VAT compliance.
- In 2014, Spain introduced new measures to combat tax non-compliance. Among others, an increase in resources in terms of staff working hours was provided to carry out e-audits more effectively.

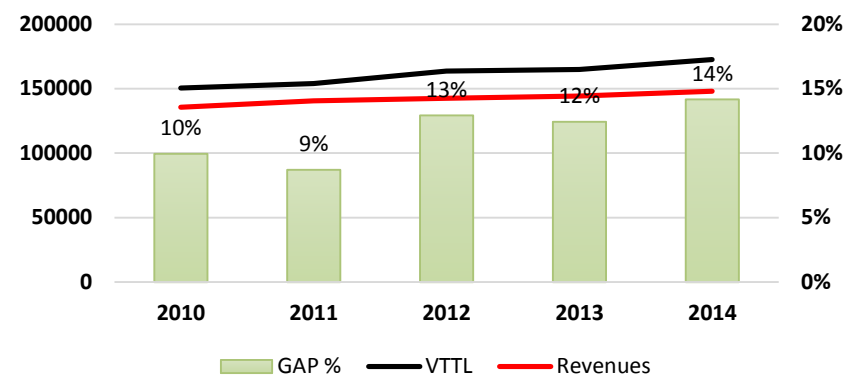
Table 3.9b. Spain: Alternative Estimates

Spain	2010	2011	2012	2013	2014
VAT Gap based on alternative data	6592	7265	5759	5570	3632
VAT Gap based on alternative data, as a percent of VTTL	10%	11%	9%	8%	5%

Note: Adjusting revenues for the continuing reduction in the stock of claims and adjusting the VTTL for the difference between national accounting and tax conventions in the construction sector based on the data received from Spanish tax authorities leads to a downward revision of the VAT Gap for the entire period 2010-2014.

Table 3.10. France: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

France	2010	2011	2012	2013	2014
VTTL	150550	153975	163713	164791	172606
o/w liability on household final consumption	92167	94180	96942	98029	103300
o/w liability on government and NPISH final consumption	1269	1292	1379	1408	1540
o/w liability on intermediate consumption	25165	25915	27089	27248	28301
o/w liability on GFCF	27234	28103	33496	33224	34203
o/w net adjustments	4715	4484	4806	4882	5263
VAT revenue	135578	140552	142527	144301	148129
VAT GAP	14972	13423	21186	20490	24477
VAT GAP as a percent of VTTL	10%	9%	13%	12%	14%
VAT GAP change since 2010					4pp



Highlights

- VAT revenue for France increased somewhat during 2014. The increase in revenue was, however, not proportional to the growth of the VTTL caused by the hike of one of the reduced rates (from 7 to 10 percent).
- Since 2011, the VAT Gap in France has increased by over EUR 11 billion and 5 percentage points of the VTTL.

Table 3.11. Croatia: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2014 (HRK million)

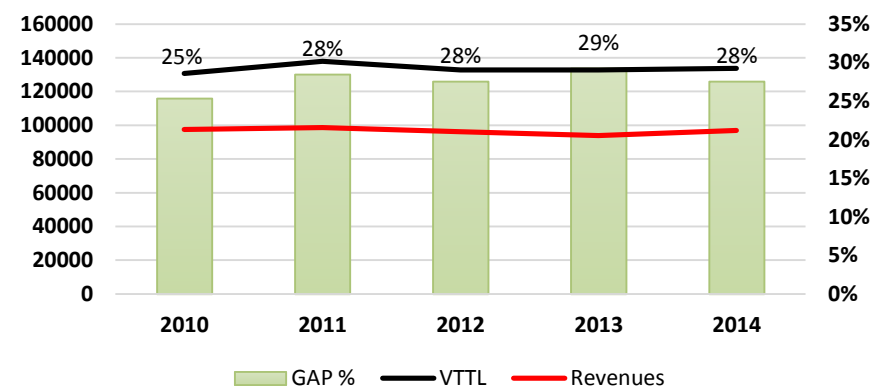
Croatia	2014
VTTL	44873
o/w liability on household final consumption	34701
o/w liability on government and NPISH final consumption	1701
o/w liability on intermediate consumption	4992
o/w liability on GFCF	3907
o/w net adjustments	-428
VAT revenue	40983
VAT GAP	3890
VAT GAP as a percent of VTTL	9%

Highlights

- Thanks to the finalisation of national accounts figures in the ESA10 standard, Croatian estimates were included for the first time in the VAT Gap Report.
- The VAT Gap in Croatia is 8.67 percent, which is more than 5 percentage points below the EU average.

Table 3.12a. Italy: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Italy	2010	2011	2012	2013	2014
VTTL	130761	137939	132748	132796	133752
o/w liability on household final consumption	93263	99199	97324	96981	98766
o/w liability on government and NPISH final consumption	1901	1915	2023	2020	1979
o/w liability on intermediate consumption	16861	17179	16266	16964	16973
o/w liability on GFCF	15173	15035	12770	12744	12384
o/w net adjustments	3563	4611	4366	4087	3650
VAT revenue	97586	98650	96170	93921	96897
VAT GAP	33175	39289	36578	38875	36855
VAT GAP as a percent of VTTL	25%	28%	28%	29%	28%
VAT GAP change since 2010					2pp



Highlights

- The VAT Gap for Italy, despite the decline of the base, has decreased somewhat in 2014, down to 28 percent of the VTTL.
- No systemic changes to the applicable rates were introduced to the Italian VAT system in 2014.
- Italy was one of the Member States that extended the list of goods applicable to reverse VAT charges beginning in 2014 by including domestic supplies of energy and fuels related to the supply of electricity and gas, carbon emission credits, and services related to construction.

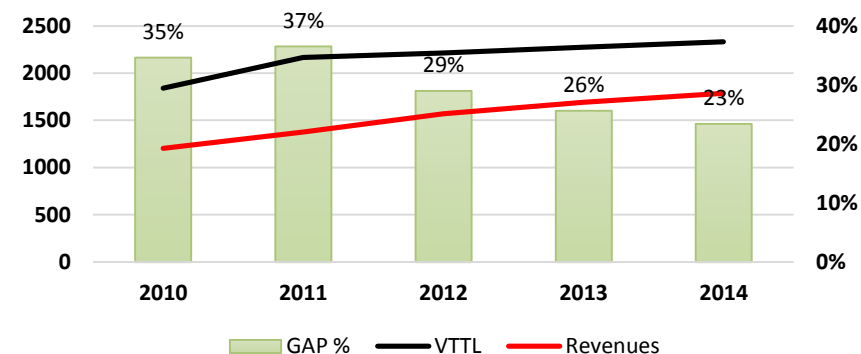
Table 3.12b. Italy: Alternative Estimates

Italy	2010	2011	2012	2013	2014
VAT Gap based on alternative data	34037	40460	40554	43766	41996
VAT Gap based on alternative data, as a percent of VTTL	26%	29%	30%	32%	31%

Note: the estimates above are based on adjusted revenues for the changes in outstanding stocks of net reimbursement claims (to better approximate accrued revenues) and Italy's own estimates of illegal activities, namely illegal drugs and prostitution activities.

Table 3.13. Latvia: VAT Receipts, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Latvia	2010	2011	2012	2013	2014
VTTL	1841	2167	2212	2275	2334
o/w liability on household final consumption	1441	1669	1752	1803	1859
o/w liability on government final consumption	32	45	45	43	44
o/w liability on intermediate consumption	269	325	322	341	348
o/w liability on GFCF	151	196	194	191	198
o/w net adjustments	-52	-67	-100	-103	-115
VAT revenue	1202	1374	1570	1690	1787
VAT GAP	639	792	642	584	547
VAT GAP as a percent of VTTL	35%	37%	29%	26%	23%
VAT GAP change since 2010					-11pp

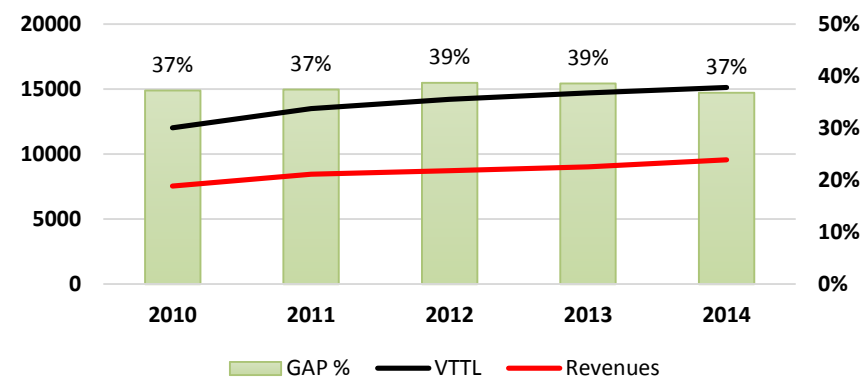


Highlights

- The VAT Gap in Latvia continued its downward trend. In 2014, the Gap fell by 2.3 percentage points thanks to good revenue performance.
- The decline in the VAT Gap was accompanied by the introduction of measures against tax fraud. As of January 2014, a new register of “high risk” entities was created with an obligation for the tax authorities to provide information on such individuals to the commercial register.
- The estimates for Latvia were revised in the 2016 Report due to new official but unpublished information on the turnover of small and micro enterprises obtained from Latvian authorities.

Table 3.14. Lithuania: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (LTL million)

Lithuania	2010	2011	2012	2013	2014
VTTL	12000	13485	14206	14686	15112
o/w liability on household final consumption	9308	10471	11034	11452	11886
o/w liability on government and NPISH final consumption	200	301	278	247	258
o/w liability on intermediate consumption	1414	1426	1573	1612	1664
o/w liability on GFCF	1073	1285	1304	1347	1395
o/w net adjustments	6	2	16	28	-91
VAT revenue	7529	8438	8704	9016	9545
VAT GAP	4471	5047	5502	5670	5567
VAT GAP as a percent of VTTL	37%	37%	39%	39%	37%
VAT GAP change since 2010					Opp

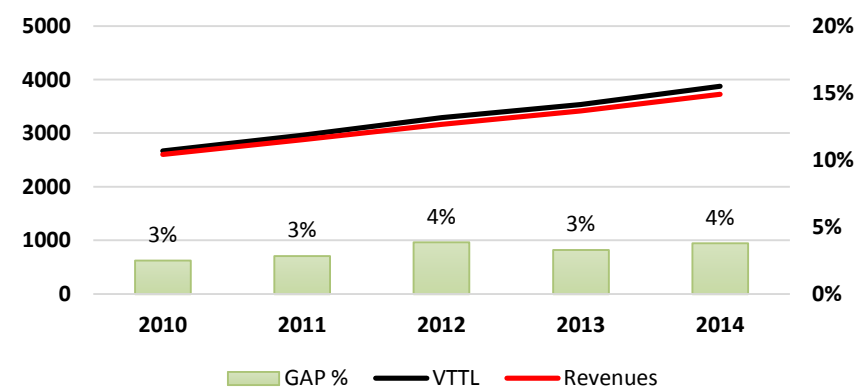


Highlights

- Given the growing economy, the VAT Gap in Lithuania fell by roughly 2 percentage points in 2014, but remained one of the highest in the EU.
 - No changes were made to the VAT regime during 2014.
- The estimates for Lithuania were revised with respect to the 2015 Report due to new official but unpublished information of the turnover of small and micro enterprises obtained from Lithuanian authorities.

Table 3.15. Luxembourg: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Luxembourg	2010	2011	2012	2013	2014
VTTL	2667	2964	3289	3532	3872
o/w liability on household final consumption	985	1072	1108	1113	1180
o/w liability on government and NPISH final consumption	16	17	18	18	31
o/w liability on intermediate consumption	571	601	613	639	798
o/w liability on GFCF	298	305	317	306	339
o/w net adjustments	797	968	1233	1456	1525
VAT revenue	2600	2879	3162	3415	3725
VAT GAP	67	84	128	116	147
VAT GAP as a percent of VTTL	3%	3%	4%	3%	4%
VAT GAP change since 2010					1pp

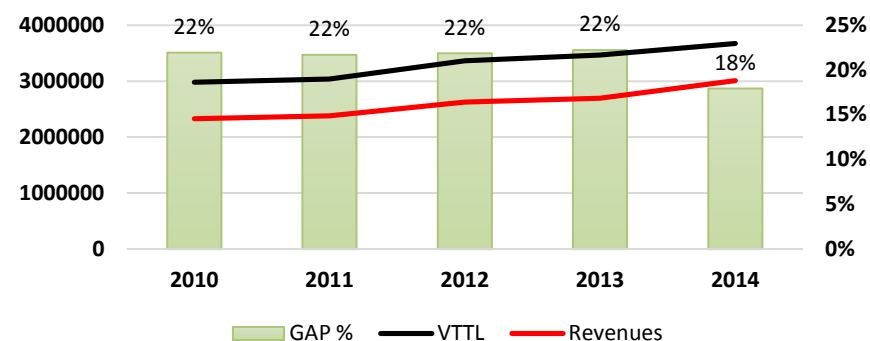


Highlights

- The VAT Gap for Luxembourg held nearly constant at 4 percent of the VTTL.
- As the revenues were slightly less resilient than the VTTL, the Gap fell to 3.8 percent. Luxembourg remained the second lowest share of the VAT Gap in the VTTL in the EU.
- No substantial changes were made to the VAT rates structure during 2014.

Table 3.16. Hungary: VAT Receipts, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (HUF million)

Hungary	2010	2011	2012	2013	2014
VTTL	2978742	3037738	3362863	3463830	3670023
o/w liability on household final consumption	2059198	2160868	2381686	2443899	2513371
o/w liability on government final consumption	117862	122272	116957	120025	131626
o/w liability on intermediate consumption	423178	426710	458430	451940	499702
o/w liability on GFCF	356034	299953	338232	394098	473082
o/w net adjustments	22471	27934	67559	53869	52241
VAT revenue	2325608	2379253	2627571	2693555	3011162
VAT GAP	653134	658485	735292	770275	658861
VAT GAP as a percent of VTTL	22%	22%	22%	22%	18%
VAT GAP change since 2010					-4pp

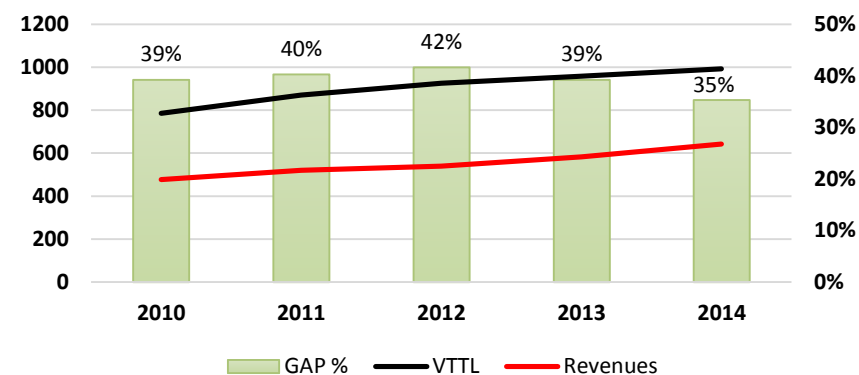


Highlights

- After a period (2010-2013) of a virtually stable VAT Gap, VAT compliance in Hungary in 2014 saw a significant improvement. With the highest standard rate in the EU (27 percent), the VAT Gap in Hungary remains relatively high (ranking 18 out of the 27 analysed Member States).
- In 2014, Hungary introduced numerous measures to fight VAT fraud and evasion. Among others, it extended the use of the VAT reverse charge mechanism, reclassified a number of goods subject to reduced rates, and increased the powers of the VAT inspectors.

Table 3.17. Malta: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Malta	2010	2011	2012	2013	2014
VTTL	785	871	925	958	993
o/w liability on household final consumption	343	364	389	407	422
o/w liability on government and NPISH final consumption	12	13	14	14	16
o/w liability on intermediate consumption	395	456	476	492	503
o/w liability on GFCF	30	37	45	42	50
o/w net adjustments	6	1	1	3	2
VAT revenue	477	520	540	582	642
VAT GAP	308	350	385	375	351
VAT GAP as a percent of VTTL	39%	40%	42%	39%	35%
VAT GAP change since 2010					-4pp

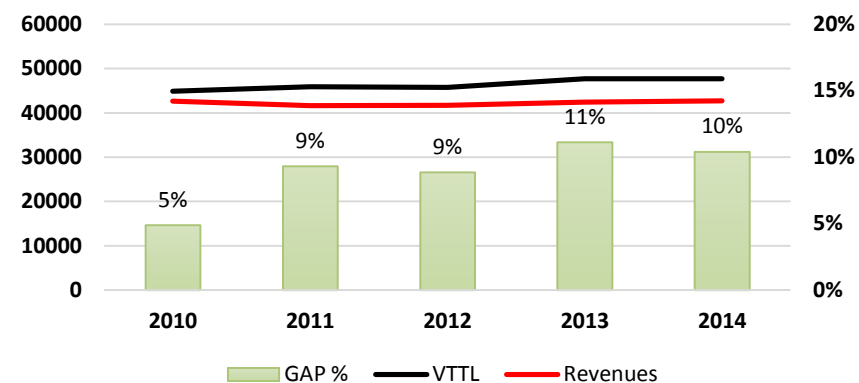


Highlights

- In 2014, Malta continued to improve its VAT compliance. Due to sustained strong revenue performance, the VAT Gap declined to 35.3 percent.
- No substantial changes were made to the VAT rates structure during 2014.

Table 3.18. Netherlands: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Netherlands	2010	2011	2012	2013	2014
VTTL	44847	45883	45754	47731	47664
o/w liability on household final consumption	23826	24285	24745	26245	26149
o/w liability on government and NPISH final consumption	315	329	335	340	342
o/w liability on intermediate consumption	11871	12048	12362	13104	12990
o/w liability on GFCF	8400	8750	7824	7547	7677
o/w net adjustments	434	471	489	494	506
VAT revenue	42654	41610	41699	42424	42708
VAT GAP	2193	4273	4055	5307	4956
VAT GAP as a percent of VTTL	5%	9%	9%	11%	10%
VAT GAP change since 2010					6pp

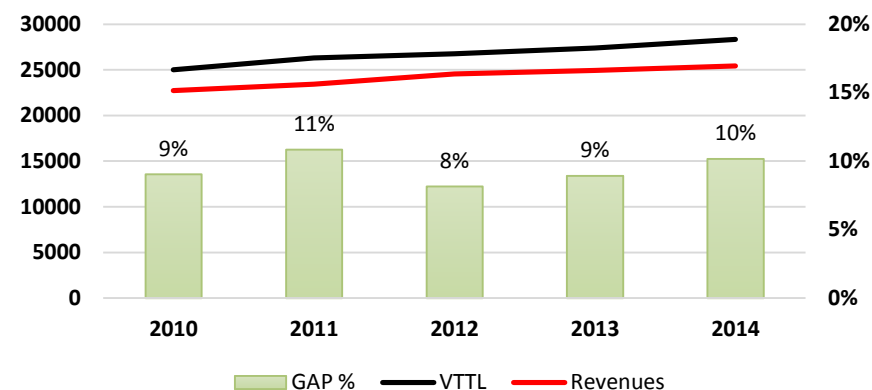


Highlights

- In 2014, the Netherlands recorded somewhat of a decrease in the VAT Gap with the economy and the base nearly stagnant during this period.
- The VAT Gap as a percent of the VTTL amounted to the EU-27 median; however, since 2010, the Gap has more than doubled.
- No substantial changes were made to the VAT rates structure during 2014.

Table 3.19. Austria: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Austria	2010	2011	2012	2013	2014
VTTL	24998	26299	26747	27399	28327
o/w liability on household final consumption	16900	17767	18307	18883	19656
o/w liability on government and NPISH final consumption	768	778	794	765	975
o/w liability on intermediate consumption	3645	3738	3873	3995	4018
o/w liability on GFCF	2387	2477	2296	2321	2353
o/w net adjustments	1298	1540	1476	1435	1325
VAT revenue	22735	23447	24563	24953	25445
VAT GAP	2263	2852	2184	2446	2882
VAT GAP as a percent of VTTL	9%	11%	8%	9%	10%
VAT GAP change since 2010					1pp

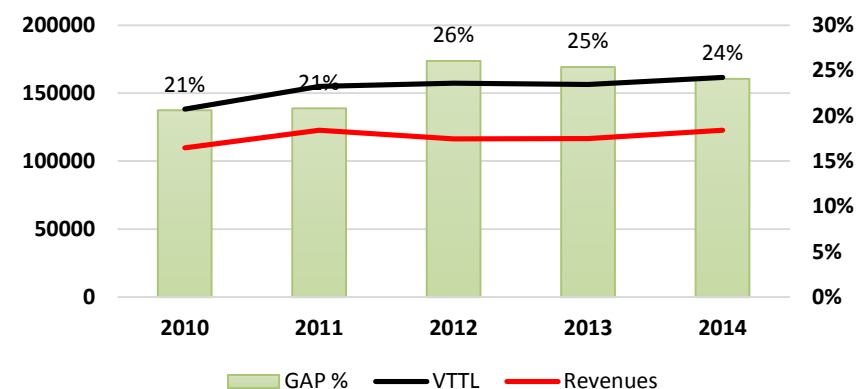


Highlights

- In 2014, the VAT Gap in Austria increased by 1.2 percentage points; however, at 10.1 percent, it remains below the EU median. While the economy was nearly stagnant in real terms, the nominal VTTL increased by almost 3.4 percent, which was followed by VAT revenue growth of roughly 2 percent.
- During 2014, Austria introduced reverse VAT charges on a range of goods, including: the supply of gas and electricity, the supply of precious metals, and sales of laptops, tablets, and games consoles.

Table 3.20. Poland: VAT Receipts, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (PLN million)

Poland	2010	2011	2012	2013	2014
VTTL	138221	154953	157233	156262	161588
o/w liability on household final consumption	90732	102061	107133	106626	109664
o/w liability on government and NPISH final consumption	6508	6726	6991	7161	7525
o/w liability on intermediate consumption	20704	22648	22476	22847	24336
o/w liability on GFCF	17392	19524	16423	15437	17113
o/w net adjustments	2884	3994	4210	4191	2949
VAT revenue	109717	122647	116265	116607	122671
VAT GAP	28504	32306	40968	39655	38917
VAT GAP as a percent of VTTL	21%	21%	26%	25%	24%
VAT GAP change since 2010					3pp

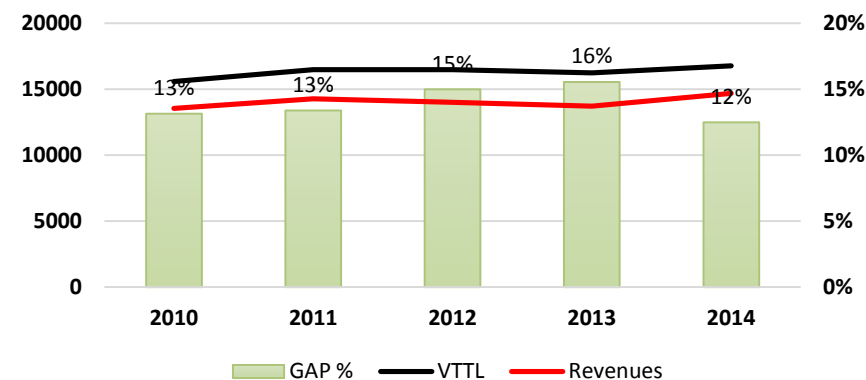


Highlights

- Strong revenue performance contributed to a reduction of the VAT Gap in both relative and absolute terms. Since 2012, the VAT Gap fell by approximately PLN 2 billion and 2 percentage points of the VTTL.
- The decrease in the Gap coincided with the introduction of measures to improve both tax compliance and efficiency. In 2014, among others, the government consolidated organisational functions and introduced a single database of tax identification numbers.
- No substantial changes were made to the VAT regime in 2014.

Table 3.21. Portugal: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Portugal	2010	2011	2012	2013	2014
VTTL	15574	16469	16465	16236	16766
o/w liability on household final consumption	10886	11453	12296	12092	12461
o/w liability on government and NPISH final consumption	267	264	235	219	217
o/w liability on intermediate consumption	2551	2750	2596	2540	2707
o/w liability on GFCF	1485	1665	981	1047	1049
o/w net adjustments	387	338	357	337	331
VAT revenue	13527	14265	13995	13710	14672
VAT GAP	2047	2204	2470	2526	2093
VAT GAP as a percent of VTTL	13%	13%	15%	16%	12%
VAT GAP change since 2010					-1pp

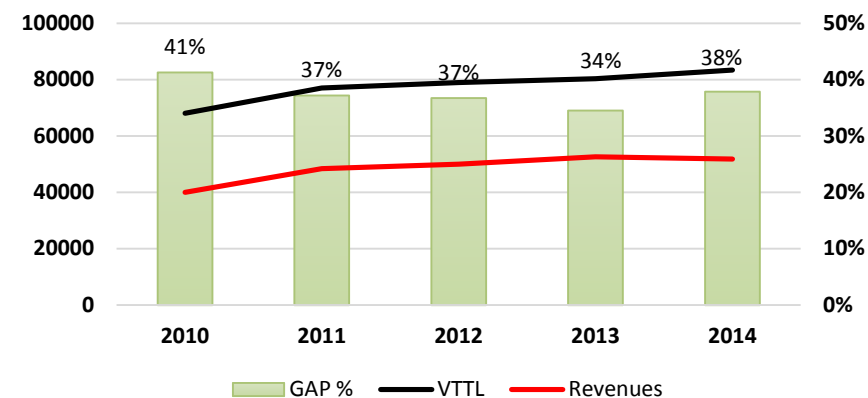


Highlights

- Portugal's VAT gap declined by over 3 percentage points in 2014. As the economy grew at rather slow pace, the increased revenue came from an increased VAT collection capacity.
- No substantial changes were made to the VAT regime in 2014.
- 2012 and 2013 estimates were revised as compared to the 2015 Report to reflect better substantial changes in the application of rates.

Table 3.22. Romania: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (RON million)

Romania	2010	2011	2012	2013	2014
VTTL	68086	76978	78986	80362	83350
o/w liability on household final consumption	40914	46751	48716	50607	53556
o/w liability on government and NPISH final consumption	3374	3827	4079	4155	4257
o/w liability on intermediate consumption	6442	7842	8285	8421	7926
o/w liability on GFCF	15106	15762	15105	14936	15337
o/w net adjustments	2251	2795	2801	2243	2274
VAT revenue	39990	48375	49997	52644	51767
VAT GAP	28096	28603	28989	27718	31583
VAT GAP as a percent of VTTL	41%	37%	37%	34%	38%
VAT GAP change since 2010					-3pp

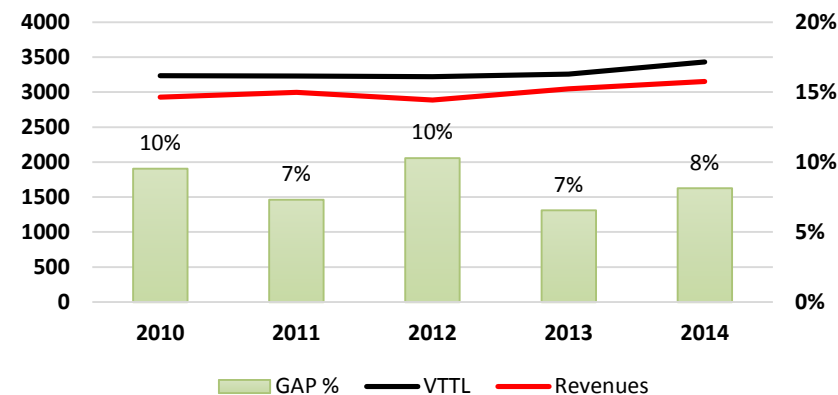


Highlights

- In 2014, the VTTL in Romania increased at a pace compatible with the pace of economic growth. The VAT Gap in Romania recorded a 4 percentage point incline and remained one of the highest in the EU.
- The Gap increased its share despite a good economic environment and the introduction of anti-fraud measures. In 2014, the reverse charge mechanism was introduced by the Romanian government for the supply of energy, for green certificates, and in the wood industry.

Table 3.23. Slovenia: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Slovenia	2010	2011	2012	2013	2014
VTTL	3234	3231	3219	3260	3433
o/w liability on household final consumption	2241	2271	2285	2284	2394
o/w liability on government and NPISH final consumption	43	65	61	63	64
o/w liability on intermediate consumption	467	462	467	478	490
o/w liability on GFCF	376	322	303	335	399
o/w net adjustments	107	111	104	99	86
VAT revenue	2926	2995	2888	3045	3154
VAT GAP	308	236	331	214	280
VAT GAP as a percent of VTTL	10%	7%	10%	7%	8%
VAT GAP change since 2010					-3pp

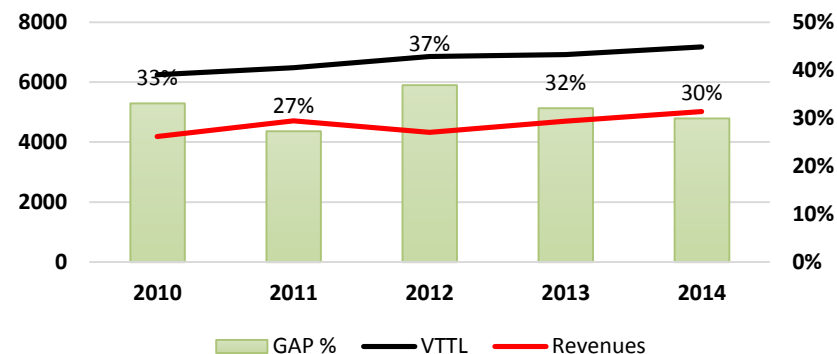


Highlights

- In 2014, a 3.6 percent growth of VAT revenues was triggered by an increase in the base and the effective rate (as of July 2013, the statutory and reduced rates in Slovenia were increased). The growth of revenues was, however, slowed by an increasing VAT non-compliance, which resulted in an approximately 1.5 percentage point growth of the VAT Gap.
- With an 8.1 percent share of the VAT Gap, Slovenia maintains its high position in the ranking of EU Member States with the lowest Gap.

Table 3.24. Slovakia: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Slovakia	2010	2011	2012	2013	2014
VTTL	6247	6476	6854	6914	7169
o/w liability on household final consumption	4600	4799	4959	5105	5289
o/w liability on government final consumption	218	247	237	245	260
o/w liability on intermediate consumption	773	801	892	901	934
o/w liability on GFCF	670	607	745	644	701
o/w net adjustments	-14	22	21	18	-15
VAT revenue	4182	4711	4328	4696	5021
VAT GAP	2065	1765	2526	2218	2148
VAT GAP as a percent of VTTL	33%	27%	37%	32%	30%
VAT GAP change since 2010					-3pp

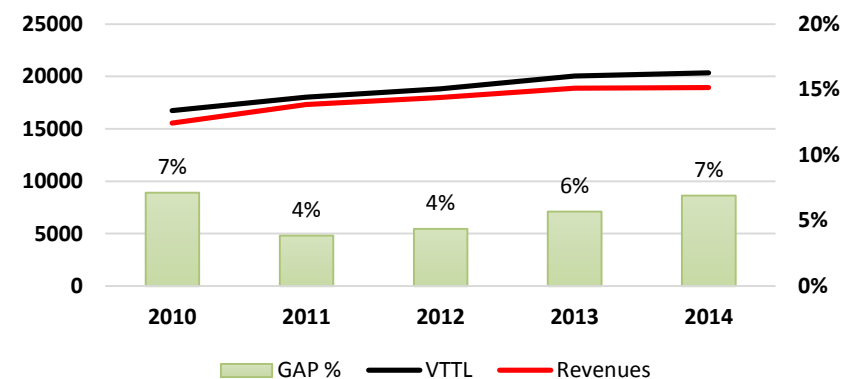


Highlights

- The VAT Gap in Slovakia remained on a downward path in 2014. With a 3.2 percent growth rate of final consumption, the VAT Gap fell by 2 percentage points, down to 29.9 percent.
- No substantial changes were made to the VAT regime; however, measures to improve VAT compliance were introduced in 2014. Among others, Slovakia's 2014 tax reforms included a wider introduction of cash registers. Furthermore, starting from the fourth quarter of 2013, the government launched the VAT receipt lottery.

Table 3.25. Finland: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (EUR million)

Finland	2010	2011	2012	2013	2014
VTTL	16725	18008	18808	20028	20357
o/w liability on household final consumption	9461	10154	10570	11405	11585
o/w liability on government and NPISH final consumption	329	361	377	410	428
o/w liability on intermediate consumption	3684	3909	4097	4374	4531
o/w liability on GFCF	2729	3037	3296	3294	3209
o/w net adjustments	522	548	468	544	603
VAT revenue	15533	17315	17987	18888	18948
VAT GAP	1192	693	821	1140	1409
VAT GAP as a percent of VTTL	7%	4%	4%	6%	7%
VAT GAP change since 2010					Opp

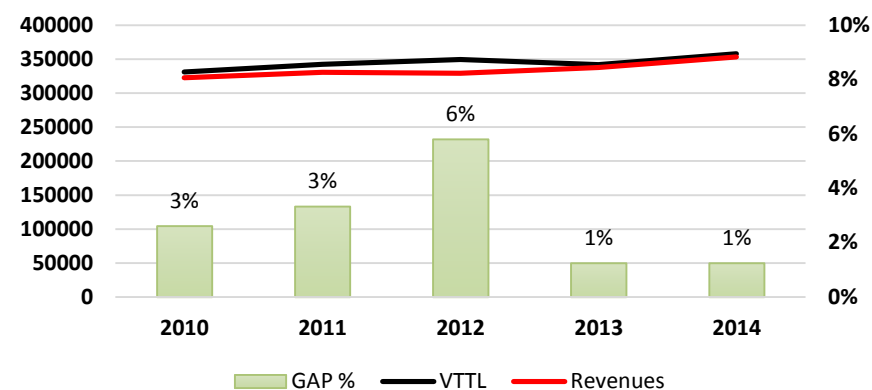


Highlights

- Finland's VAT Gap continued to increase its share in the VTTL. Despite this unfavourable trend, Finland, with its 6.9 percent Gap, remains one of the countries with the best VAT compliance in the EU.
- No systemic changes were introduced to the parameters of the Finnish VAT system in 2014.

Table 3.26. Sweden: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (SEK million)

Sweden	2010	2011	2012	2013	2014
VTTL	331240	342165	349613	342081	357885
o/w liability on household final consumption	181103	183365	186188	180633	186726
o/w liability on government and NPISH final consumption	11611	12080	15418	15822	16499
o/w liability on intermediate consumption	81578	85071	84623	84327	88421
o/w liability on GFCF	50515	54675	55764	56055	60657
o/w net adjustments	6433	6975	7620	5244	5582
VAT revenue	322603	330770	329311	337823	353439
VAT GAP	8637	11395	20302	4258	4446
VAT GAP as a percent of VTTL	3%	3%	6%	1%	1%
VAT GAP change since 2010					-1pp

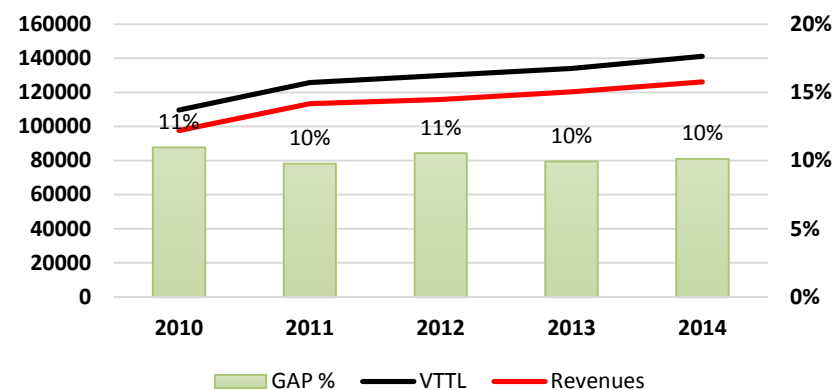


Highlights

- Sweden recorded the lowest VAT Gap of EU-27 Member States in 2014, and was virtually stagnant as compared to 2013.
- The estimated VTTL rose exactly at the pace of revenue. The increase in the VTTL was caused primarily by an increase in the base triggered by investment growth.
- No substantial changes were made to the VAT regime in Sweden throughout 2014.

Table 3.27. United Kingdom: VAT Revenue, VTTL, Composition of VTTL, and VAT Gap, 2010-2014 (GBP million)

United Kingdom	2010	2011	2012	2013	2014
VTTL	109556	125696	129907	134125	141219
o/w liability on household final consumption	71450	82413	85246	88676	93785
o/w liability on government and NPISH final consumption	924	1123	1149	1191	1233
o/w liability on intermediate consumption	27740	31848	31024	31534	33395
o/w liability on GFCF	8128	8578	10267	9636	10640
o/w net adjustments	1314	1735	2220	3087	2165
VAT revenue	97525	113414	116199	120788	126906
VAT GAP	12031	12282	13708	13337	14313
VAT GAP as a percent of VTTL	11%	10%	11%	10%	10%
VAT GAP change since 2010					Opp



Highlights

- The VAT Gap in the UK saw a slight increase in 2014, up to 10.1 percent. Over the course of the entire period (2010-2014), the share of the VAT Gap as a percent of the VTTL remained relatively stable.
- No substantial changes were made to the VAT regime in the UK throughout 2014.

IV. Policy Gap Measures

In this chapter, we present an update of the series of estimates of the Policy Gap and its components for the EU-27.

As discussed in Barbone et al. (2013), the Policy Gap captures the effects of applying multiple rates and exemptions on the theoretical revenue that could be levied in a given VAT system. In other words, the Policy Gap is an indicator of the additional VAT revenue that a Member State could theoretically, i.e. in case of perfect tax compliance, generate if it applied a uniform VAT rate on all goods and services. Due to the idealistic assumption of perfect tax compliance, the practical interpretation of the Policy Gap draws criticism. Nonetheless, the assumption of perfect VAT collectability is indispensable, as interdependencies between tax compliance and rate structure are not straightforward. Furthermore, the example of the 1 percent VAT Gap in Sweden shows that the assumption of perfect tax compliance is not as idealistic as it may seem.

The Policy Gap could be further decomposed into different components of revenue loss, as we show in Section c in Annex A. Such elements are, for instance, the Rate Gap and the Exemption Gap, which capture the loss in VAT liability due to the application of reduced rates, and the loss in liability due to the implementation of exemptions.

Moreover, following Barbone et al. (2013), the Policy Gap and its components could be further adjusted to address the issue of the extent to which the loss of theoretical revenue depends on the decision of policymakers. Measures that exclude liability from the final consumption of “imputed rents” (the notional value of home occupancy by homeowners), financial services, and the provision of public goods and services, as charging them with VAT is impractical or beyond the control of national authorities are named the “Actionable Gaps”.

Results for 2014

The estimates of the Policy Gap, the Rate Gap, the Exemption Gap, the Actionable Policy Gap, and Actionable Exemption Gap for the EU-28 Member States are presented in Table 4.1.

Table 4.1. indicates that the most flat systems in terms of the rates applied are in Denmark, Slovakia, Estonia, and Bulgaria. The additional revenue that could be theoretically generated if no zero rate, parking rate, or reduced rates were applied would bring, in each of the cases, less than 3 percent of the notional ideal revenue. On the contrary, several countries, namely Ireland, Italy, and Poland, could theoretically increase their revenue by more than 15 percent if no reduced rates were applied.

In theory, exemptions could be considered as main source of revenue loss for most Member States. The vast share of this revenue loss is, however, generated by imputed rents, financial services, and public goods.⁶ The Actionable Policy Gap that combines loss from applying exemptions and reduced rates that is under control of national authorities varies from 4.17 percent in Malta up to 28.46 percent in Poland, and, on average, is about 14.85 percent.

⁶ Negative *Financial Services Gaps* for some Member States mean that more revenue was levied by taxing their intermediate input than would be generated if the output was taxed. Such a situation is possible in the case of large investments or losses for a given year, but may also indicate inconsistencies in national accounts figures.

Table 4.1. Policy Gap, Rate Gap, Exemption Gap, and Actionable Gaps

	A	B	C	D	E	F	G	H
	Policy Gap (%)	Rate Gap (%)	Exemption Gap (%)	o/w Imputed Rents (%)	o/w Public Services (%)	o/w Financial Services (%)	Actionable Exemption Gap (C - D - E - F) (%)	Actionable Policy Gap (G + B) (%)
AT	45.28	10.39	34.88	6.87	21.61	2.45	3.96	14.35
BE	53.68	12.40	41.28	7.95	25.90	3.93	3.50	15.90
BG	28.52	2.84	25.67	9.75	10.09	1.24	4.60	7.44
CZ	37.98	5.82	32.16	8.57	15.87	2.69	5.03	10.85
DE	44.79	7.15	37.64	6.56	21.07	2.77	7.24	14.39
DK	41.81	0.91	40.91	6.76	27.57	5.31	1.27	2.18
EE	35.05	2.53	32.52	7.31	14.87	2.18	8.15	10.68
ES	59.00	14.51	44.49	9.98	17.99	2.39	14.13	28.64
FI	50.05	9.07	40.98	8.73	23.13	2.13	6.98	16.05
FR	51.81	9.97	41.84	8.99	22.04	2.51	8.30	18.27
GR	54.12	13.90	40.22	8.80	16.83	2.41	12.18	26.08
HR	35.87	4.09	31.78	7.93	14.52	1.52	7.82	11.90
HU	41.89	3.34	38.55	7.31	16.86	3.13	11.25	14.59
IE	51.83	17.08	34.75	8.60	23.94	1.62	0.59	17.67
IT	54.76	15.56	39.20	10.55	18.99	1.83	7.83	23.39
LT	25.52	4.04	21.48	4.40	13.09	1.33	2.66	6.71
LU	41.44	14.60	26.84	10.04	27.00	-11.14	0.94	15.54
LV	36.90	3.26	33.64	8.88	14.32	0.29	10.14	13.40
MT	12.41	12.72	-0.31	4.73	15.26	-11.75	-8.55	4.17
NL	51.89	12.15	39.75	5.94	26.28	6.22	1.31	13.45
PL	49.06	15.86	33.20	3.67	13.97	2.96	12.60	28.46
PT	50.85	11.07	39.78	8.51	20.56	3.16	7.55	18.62
RO	28.08	2.88	25.20	10.16	8.86	0.14	6.04	8.92
SE	48.23	8.29	39.95	5.71	27.11	3.67	3.45	11.74
SI	45.91	11.30	34.61	6.87	15.95	2.41	9.37	20.68
SK	37.13	1.65	35.48	6.20	15.70	3.11	10.47	12.12
UK	53.78	3.29	50.49	10.31	20.61	4.28	15.28	18.57
EU27	43.80	5.32	38.48	7.44	18.39	3.12	9.53	14.85

Annex A. Methodological Considerations

The VAT Gap estimation methodology closely follows that which was developed for the “Study to quantify and analyse the VAT Gap in the EU-27 Member States” (for a detailed methodological description, see Barbone et al. 2013, Annex A), and its subsequent updates in 2012 and 2013 (Barbone et al. 2014 and Barbone et al. 2015). Due to a methodological change in the underlying national accounts data, i.e. the ESA10 transmission, the procedure for estimating the VAT Gap was adjusted in accordance with the new definition of national accounts.

a. Decomposition of VAT Revenue

As VAT Revenue (VR) is the difference between the VTTL and the VAT Gap ($VR = VTTL - VAT\ Gap$), and the VTTL is a product of the effective rate and the base ($VTTL = effective\ rate \times base$), VAT revenue could be decomposed using the following formula:

$$VR = VTTL \times VAT\ compliance = effective\ rate \times base \times \left(1 - \frac{VAT\ Gap}{VTTL}\right)$$

Thus, the year-over-year relative change in revenue is denoted as:

$$\frac{\Delta VR}{VR} = \frac{\Delta(effective\ rate)}{effective\ rate} \times \frac{\Delta base}{base} \times \frac{\Delta \left(1 - \frac{VAT\ Gap}{VTTL}\right)}{\left(1 - \frac{VAT\ Gap}{VTTL}\right)}$$

where $\frac{\Delta(effective\ rate)}{effective\ rate}$ denotes change in effective rate, $\frac{\Delta base}{base}$ denotes change in base, and $\frac{\Delta \left(1 - \frac{VAT\ Gap}{VTTL}\right)}{\left(1 - \frac{VAT\ Gap}{VTTL}\right)}$ denotes change in VAT compliance.

b. Data Sources and Estimation Method

The “top-down” method that is utilised for VAT Gap estimation relies on national accounts figures. These figures are used to estimate the VAT liability generated by different sub-aggregates of the total economy. The VTTL is estimated as the sum of the liability from six main components: household, government, and NPISH final consumption; intermediate consumption; GFCF; and other, largely country-specific, adjustments.

In the “top-down” approach, VTTL is estimated using the following formula:

$$\begin{aligned}
 VTTL = & \sum_{i=1}^N (rate_i \times Value_i) \\
 & + \sum_{i=1}^N (rate_i \times propex_i \times IC\ Value_i) \\
 & + \sum_{i=1}^N (rate_i \times propex_i \times GFCF\ Value_i) + net\ adjustments
 \end{aligned}$$

Where:

Rate is the weighted average tax rate i.e. the effective rate,

Value is the final consumption value,

IC Value is the value of intermediate consumption,

Propex is the percentage of output in a given sector that is exempt from VAT,

GFCF Value is the value of gross fixed capital formation, and

index *i* denotes sectors of the economy.

To summarise, VTTL is a product of the VAT rates and the propexes multiplied by the theoretical values of consumption and investment (plus country specific net adjustments).

For the purpose of VAT Gap estimation, roughly 10,000 parameters are estimated for each year, including the weighted average rates for each 2-digit CPA (i.e. $rate_i$ in the VTTL formula presented above) group of products and services and the percentage of output in a given sector that is exempt from VAT for each type of consumption (i.e. $propex_i$ in the VTTL formula presented above). For instance, for *Education services* (CPA no. 85) in Croatia, like for any other country and group of products and services, we estimated weighted average rates in household, government and NPISH final consumption, as well as the percentage of output that is exempt from VAT. The main source of information is national accounts data and Own Resource Submissions (ORS), i.e. VAT statements provided by the Member States to the European Commission. In a number of specific cases where the ORS information was insufficient, additional data provided by the Member States was used. As these data are not official Eurostat publications, we decline responsibility for inaccuracies related to their quality.

A complete description of data and sources is shown in Table A1.

Table A1. Data Sources

	DESCRIPTION	PURPOSE	SOURCE	COMMENT
1	Household expenditure by CPA/COICOP category.	Estimation of effective rates for household final consumption for each 2-digit CPA category.	ORS / HBS ⁷	...
2	The intermediate consumption of industries for which VAT on inputs cannot be deducted, pro-rata coefficients, alternatively share of exempt output.	Estimation of propexes.	ORS / assumptions common for all EU Member States	...
3	Investment (gross fixed capital formation) of exempt sectors.	Estimation of VAT liability from investment.	ORS / Eurostat	Values forecasted two years ahead of available time series.
4	Government expenditure by CPA/COICOP category.	Estimation of effective rates for government final consumption for each 2-digit CPA category of products and services.	ORS	...
5	NPISH expenditure by CPA/COICOP category.	Estimation of effective rates for NPISH final consumption for each 2-digit CPA category of products and services.	ORS	...
6	VTTL adjustment due to small business exemption, business expenditure on cars and fuel, and other country-specific adjustments.	Estimation of net adjustments.	ORS	In general, adjustments forecasted two years ahead of available time series.
7	Final household consumption, government final consumption, NPISH final consumption, and intermediate consumption.	Estimation of VTTL.	Eurostat	As national accounts figures do not always correspond to the tax base, two corrections to the base are applied: (1) adjustments for the self-supply of food and agricultural products and (2) adjustments for the intermediate consumption of construction work

⁷ Household Budget Survey, Eurostat.

				<p>due to the treatment of construction activities abroad.</p> <p>If use tables are not available for a particular year or available use tables include confidential values, use tables are imputed using the RAS method.</p>
8	VAT revenue.	VAT revenue.	Eurostat	...

c. VAT Gap Methodological Changes due to the ESA10 Transmission

The transmission of Eurostat national accounts from the ESA95 to the ESA10 included revisions and updates of the common standards, classifications, and accounting rules for Member States in preparing their statistics. As compared to the ESA95, the ESA10 reflects changes in methodology, but also revisions thanks to, for example, new or revised data sources or improved compilation methods (see Eurostat, 2014).

Methodological changes introduced in the ESA10 affect components of both the liability and revenue sides of VAT Gap estimation. In accordance with Eurostat (2014), the following changes applied in the ESA10 may affect final consumption, intermediate consumption, or GFCF (i.e. the aggregates that are used for VAT Gap estimation):

1. Recognition of research and development (R&D) as capital formation.
2. Amendment to valuation of output for own final use for market producers.
3. Change in treatment of non-life insurance, its output, claims due to catastrophes, and reinsurance.
4. Recognition of weapon systems as capital assets.
5. Inclusion of decommissioning costs for large capital assets.
6. Change in classification of government, public, and private sectors.
7. New criteria for tools to be recognised as capital expenditure
8. Change in the allocation of central banks' output.
9. Recognition of land improvements as a separate asset.
10. New treatment of construction activities abroad.
11. Amendment to the allocation of Financial Intermediation Services Indirectly Measured (FISIM) between financial intermediaries.

The abovementioned sources of methodological changes in the ESA10 national accounts can be divided into four distinct groups: (1) amendments that do not affect our estimates or their impact on VAT Gap estimates is negligible, (2) changes that improve the accuracy of the estimates, (3) changes that require modification of parameter values, and (4) changes that include other special adjustments of the estimation method.

Regarding the first type of methodological changes in the ESA10, these amendments affect the non-taxable components of the base and thus do not have any impact on our estimates of VTTL. More specifically, these methodological changes relate to the reporting of final consumption products or services categories that are exempt from VAT, as well as concern changes to the

definition of the intermediate use of non-exempt industries. Furthermore, all amendments to the recognition of GFCF do not affect our results as this liability component is estimated based on tax administration data that account only for investments that give rise to a tax obligation.

In contrast to these, certain amendments to the ESA10 definitions must be reflected in parameter values. If the taxable base in the ESA10 changes due to new standards, then the parameters (e.g. rates and propexes) must be estimated in accordance with the new definition. Consistency of the base and parameters with accounting standards ensures the accuracy of VAT Gap estimates. An example of a change that requires a recalibration of the parameters is the adjustment of the valuation of output for own final use for market producers. In this case, the increased value of own-consumption consistent with the ESA10 definition is adjusted by an increase in the corresponding coefficients.

The ESA10 also changed the classifications of the government, public, and private sectors. Due to the modification of the classification criteria of “non-market activity”, the amendment increased the number of units conferred to the government sector and raised the government final consumption expenditure. As a result, the new, wider definition of government consumption better reflects the VAT base.

Additionally, two changes introduced in the ESA10 require special adjustments. As one of the changes, the ESA10 extended the borderline for R&D assets. Now, an R&D expenditure is recorded as GFCF, and not as a current expenditure. The revised treatment of R&D in the ESA10 national accounts is the reason we use a new method to estimate liability from consumption and investment in R&D. Furthermore, we adjust the base according to the new treatment of the intermediate consumption of the construction sector (see Box A1).

Moreover, along with the ESA10 transmission, several EU Member States included illegal drugs and prostitution activity in GDP and household final consumption figures. In line with this change, the household final consumption of basic pharmaceutical products and pharmaceutical preparations and other personal services that include illegal drugs and prostitution was adjusted to reflect the taxable base. The adjustment was estimated with the use of detailed Eurostat household final consumption figures. Due to this adjustment, VAT Gap estimates do not include the abovementioned black market activities.

Box A1. Special Adjustments: R&D and the Construction Sector

To estimate VAT liability on R&D income, we distinguish the following: own-account business R&D, the supply of R&D to governmental and EU institutions by academic and non-academic organisations and the intermediate consumption of R&D services by other sectors (purchased business R&D). As own-account and purchased business R&D is recognised as capital formation, to account for this liability, we directly use the tax administration of investment VAT liability of the non-financial sector. The supply of R&D to governmental and EU institutions by academic and non-academic organisations, which is, in general, VAT exempt, is partially recorded as government and NPISH final consumption and partially as the capital formation of government and NPISH. Non-exempt R&D includes management; IT consultancy; business process advice; the collection, recording, collation, analysis, and interpretation of statistics; market research; opinion polling; and writing computer software. Such transactions are included in the intermediate consumption of particular sectors. Bearing in mind the above, we estimate the share of R&D output with non-deductible input using the ratio of the

intermediate consumption of R&D services and the sum of its final and intermediate use.

Another adjustment resulting from the ESA10 transmission affects the intermediate consumption of the construction industry. The intermediate consumption of construction works in the ESA10 is recorded in the country of origin; however, the works generally occur in the destination. Hence, we adjust the taxable intermediate consumption of construction works accordingly.

All in all, because of the methodological changes in the underlying data also reflected in the estimation methodology, for the year 2014, the VAT Gap for the EU-26 Member States (EU-28 excluding Cyprus and Croatia) compared with the preceding 2015 Report has been revised by approximately EUR 5 billion downwards. In percentage terms, the VAT Gap estimated using the ESA10 national accounts is approximately 0.5 percentage point lower as compared to the 2015 Report (see Box 1 in Chapter II for a description of 2016 revisions). The individual effects of the transmission of Eurostat national accounts from the ESA95 to the ESA10, and subsequent methodological amendments in the VAT Gap estimation formula, are shown in Table A2 below.

Table A2. ESA10 VAT Gap estimates compared with the ESA95 estimates (EUR million)

	ESA95 – 2015 Report				ESA10 – 2016 Report				
	2010	2011	2012	2013	2010	2011	2012	2013	2014
Austria	2945	3392	3066	3217	2263	2852	2184	2446	2882
Belgium	3243	3236	3376	3186	3102	3645	4467	3673	2519
Bulgaria	930	1072	869	785	1050	1176	986	755	940
Croatia	.	.	.	.	.	.	.	.	510
Czech Republic	3571	2876	3506	3375	2941	2377	2932	2761	2233
Denmark	2067	2234	2267	2489	2706	2899	2930	3088	2709
Estonia	156	187	232	315	149	195	217	268	181
Finland	1158	640	537	812	1192	693	821	1140	1409
France	12161	10566	14834	14096	14972	13423	21186	20490	24477
Germany	1907	22335	2295	24873	19177	23235	24715	24102	23489
Greece	6927	916	6883	6497	6412	8501	6068	6347	4926
Hungary	266	255	2879	293	2371	2357	2542	2595	2134
Ireland	1256	1521	1289	1225	1844	1690	1800	1541	1195
Italy	3923	45775	45163	47516	33175	39289	36578	38875	36855
Latvia	649	821	808	720	639	792	642	584	547
Lithuania	1358	1404	145	158	1295	1462	1594	1642	1612
Luxembourg	73	115	176	187	67	84	128	116	147
Malta	186	216	241	210	308	350	385	375	351
Netherlands	201	1749	1899	1852	2193	4273	4055	5307	4956
Poland	6051	6837	9391	10131	7135	7840	9790	9447	9301
Portugal	1865	2094	1335	1358	2047	2204	2470	2526	2093
Romania	7803	8251	8422	8296	6670	6748	6501	6272	7107
Slovakia	2334	2133	2726	2513	2065	1765	2526	2218	2148
Slovenia	356	283	291	186	308	236	331	214	280
Spain	8147	11773	1161	12094	5795	8737	7451	8463	6214
Sweden	1082	1492	1928	1776	906	1262	2333	492	489
United Kingdom	15135	14731	16752	15431	14025	14152	16905	15705	17756

Source: own calculations.

d. Derivation of the Policy Gap

In this section of Annex, we define the concepts used in Chapter IV and discuss some of the methodological considerations.

We begin with the **Notional Ideal Revenue** that, by definition, should indicate an upper limit of VAT revenue (i.e. the revenue levied at a uniform rate in the environment of perfect tax compliance). As shown in Figure A1, ideal revenue is larger than VTTL and subsequently larger than VAT collection. However, due to the existence of exemptions, it does not capture the entire VTTL and tax collection. If no exemptions were applied, neither intermediate consumption nor the GFCF of business sector would be the base for computing VTTL.

The problem arises when deciding whether investment by the non-business sector should be a part of the VAT base. According to the OECD (2014), notional ideal revenue is defined as the standard rate of VAT times the aggregate net final consumption. Multiplying the standard rate and final consumption would yield, however, lower liability than in the case where a country applied no exemptions, no reduced rates, and was able to enforce all tax payments. In real life, VTTL is comprised partially from VAT liability from investment made by households, government, and NPISH. In the case of the non-inclusion of this investment to the base, VTTL would be partially extended beyond the ideal revenue despite “no exemptions” present in the system (see Figure A1 (c)).

Policy makers can see the upper limit of VAT revenue by considering all final use categories of households, non-profit, and government sectors. Thus, in this report, Notional Ideal Revenue is defined as the standard rate of VAT times the aggregate net final and net GFCF of the household, non-profit, and government sectors, as recorded in the national accounts (interdependence among the various concepts presented is shown in Figure A1).⁸

The **Policy Gap** is defined as one minus the ratio of the “legal” tax liability (i.e. the chunk of the Notional Ideal Revenue that, in the counterfactual case of perfect tax compliance, is not collected due to the presence of exemptions and reduced rates). The Policy Gap is denoted by the following formula:

$$\text{Policy Gap} = (\text{Notional Ideal Revenue} - \text{VTTL}) / \text{Notional Ideal Revenue}$$

The Policy Gap could be further decomposed to account for the loss of revenue. Such components are the **Rate Gap** and the **Exemption Gap**, which capture the loss in VAT liability due to the application of reduced rates and the loss in liability due to the implementation of exemptions.

The Rate Gap is defined as the difference between the VTTL and what would be obtained in a counterfactual situation, in which the standard rate, instead of the reduced, parking, and zero

⁸ National accounts for most countries report final consumption on a gross (i.e. VAT-inclusive) basis. Of the EU-28, only Lithuania reports pre-VAT values in the use tables. For other countries, net consumption is estimated on the basis of the gross consumption recorded in the use tables, from which VAT revenues are subtracted.

rates, is applied to final consumption. Thus, the Rate Gap captures the loss in revenue that a particular country incurs by adopting multiple VAT rates instead of a single standard rate (Barbone et al., 2015).

The Exemption Gap is defined as the difference between the VTTL and what would be obtained in a counterfactual situation, in which the standard rate is applied to exempt products and services, and no restriction of the right to deduct applies.⁹ Thus, the Exemption Gap captures the amount of revenue that might be lost because of exempted goods and services. Note that the Exemption Gap is composed of the loss in the VAT on the value added of exempt sectors, minus the VAT on their inputs, minus the VAT on GFCF inputs for these sectors. Thus, in principle, the Exemption Gap might be positive or negative (if the particular sector had negative value added, or if it had large GFCF expenditures relative to final consumption) (Barbone et al., 2015).

In algebraic terms, we have the following:

Definitions:

$T_i^{*,E} = \frac{VTTL_i^{*,E}}{C_i}$ – effective rate for group i of products in the case where the standard rate instead of the zero rate, parking rate, or reduced rate is applied (for final consumption and the GFCF of non-business activities).

$VTTL_i^{*,E}$ – liability from final consumption GFCF of non-business activities of group i of products, in the case of the standard rate instead of the zero rate, parking rate, or reduced rate is applied. Actual liability from intermediate consumption and GFCF of business activities is assumed.

$T_i^{*,R} = \frac{VTTL_i^{*,R}}{C_i}$ – effective rate for group i of products in the event where exempt products within the group are taxed at the standard rate.

$VTTL_i^{*,R}$ – liability from **final consumption** of group i when exempt products within the group are taxed at the standard rate. Actual liability from final consumption GFCF of non-business activities is assumed.

τ_s – statutory rate.

$i \in (1; 65)$ – sectors of the economy.

Policy Gap:

$$1 - P = \left(\frac{\sum_{i=1}^N T_i C_i}{\tau_s \sum_{i=1}^N C_i} \right) \left(\frac{\sum_{i=1}^N T_i^* C_i}{\sum_{i=1}^N T_i C_i} \right) = \left(\frac{\sum_{i=1}^N T_i^* C_i}{\tau_s \sum_{i=1}^N C_i} \right)$$

⁹ The additive decomposition of the Policy Gap into the Exemption and Rate Gap presented in this report differs from that in Keen (2013). Keen (2013) defines the Rate Gap as the loss from applying reduced and zero rates to the final consumption liability, measured as a percentage of the Notional Ideal Revenue. The Exemption Gap measures unrecovered VAT accumulated in the production process as a percentage, on the contrary, of final consumption liability. Due to these definitions, the Policy Gap can be split multiplicatively into gaps attributable to reduced rates and exemptions. Since the numerator of the “[1 - Rate Gap]” and denominator of the “[1 - Exemption Gap]” are equal, multiplication of these two components yields – VAT revenue as a percentage Notional Ideal Revenue, which equals “[1 - Policy Gap]” (Barbone et al., 2015).

Exemption Gap:

$$1 - P_E = \left(\frac{\sum_{i=1}^N T_i C_i}{\tau_s \sum_{i=1}^N C_i} \right) \left(\frac{\sum_{i=1}^N T_i^{*,E} C_i}{\sum_{i=1}^N T_i C_i} \right) = \left(\frac{\sum_{i=1}^N T_i^{*,E} C_i}{\tau_s \sum_{i=1}^N C_i} \right)$$

Rate Gap:

$$1 - P_R = \left(\frac{\sum_{i=1}^N T_i C_i}{\tau_s \sum_{i=1}^N C_i} \right) \left(\frac{\sum_{i=1}^N T_i^{*,R} C_i}{\sum_{i=1}^N T_i C_i} \right) = \left(\frac{\sum_{i=1}^N T_i^{*,R} C_i}{\tau_s \sum_{i=1}^N C_i} \right)$$

By definition we have:

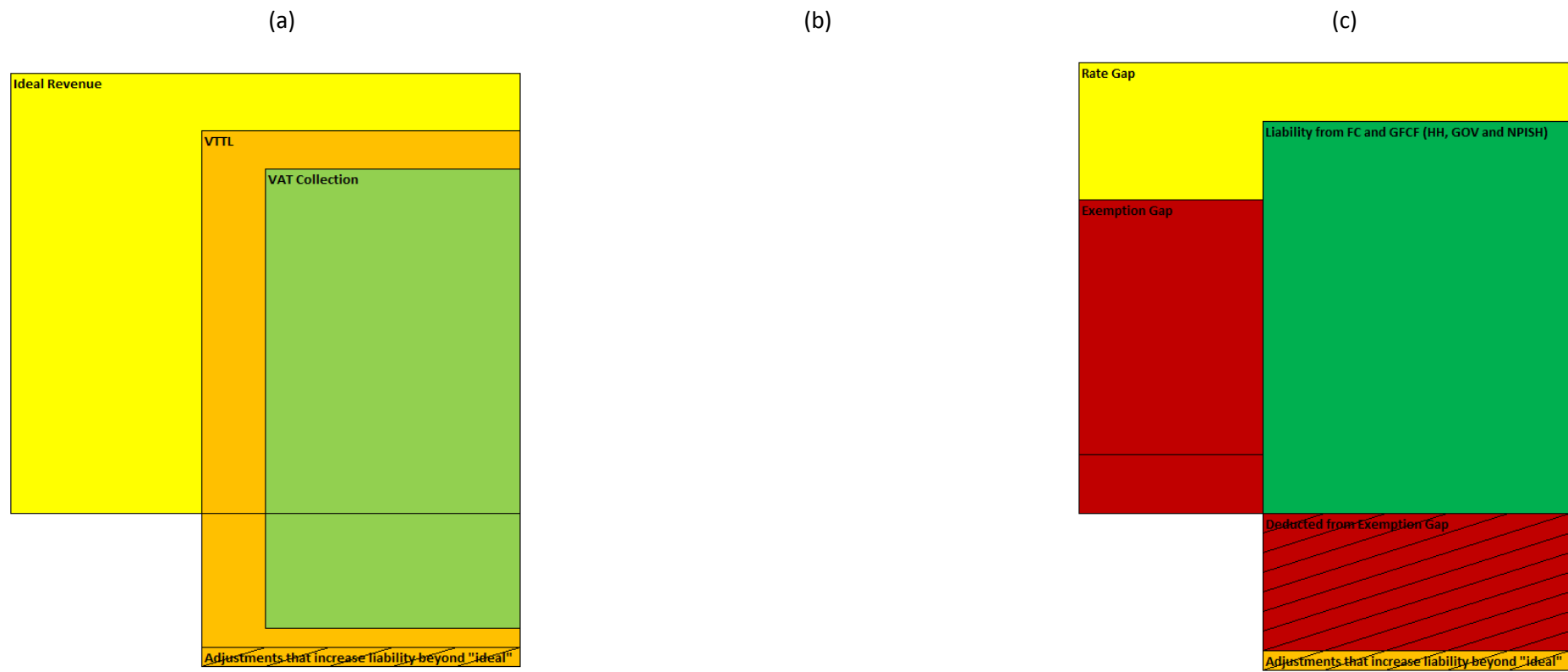
$$\begin{aligned} \tau_s \sum_{i=1}^N C_i &= \sum_{i=1}^N T_i^* C_i + \left(\tau_s \sum_{i=1}^N C_i - \sum_{i=1}^N T_i^* C_i \right) \\ &= \sum_{i=1}^N T_i^* C_i + \left(\tau_s \sum_{i=1}^N C_i - \sum_{i=1}^N T_i^{*,R} C_i \right) + \left(\tau_s \sum_{i=1}^N C_i - \sum_{i=1}^N T_i^{*,E} C_i \right) \end{aligned}$$

Thus:

$$\begin{aligned} P &= 1 - \left(\frac{\sum_{i=1}^N T_i^* C_i}{\tau_s \sum_{i=1}^N C_i} \right) = \left(\frac{\tau_s \sum_{i=1}^N C_i - \sum_{i=1}^N T_i^* C_i}{\tau_s \sum_{i=1}^N C_i} \right) = \left(\frac{2\tau_s \sum_{i=1}^N C_i - \sum_{i=1}^N T_i^{*,E} C_i - \sum_{i=1}^N T_i^{*,R} C_i}{\tau_s \sum_{i=1}^N C_i} \right) \\ &= P_R + P_E \end{aligned}$$

Using the above convention, one can decompose the Rate Gap and the Exemption Gap into the components indicating loss of the Notional Ideal Revenue due to the implementation of reduced rates and exemptions on specific the goods and services. Such additive decomposition is carried out for the computation of, as defined by Barbone et al. (2015), the Actionable Exempt Gap, which excludes services and notional values that are unlikely to be taxed even in an ideal world.

Figure A1. Components of Ideal Revenue, VTTL, and VAT Collection



Source: own.

Annex B. Statistical Appendix

Table B1. VTTL (EUR million)

	2010	2011	2012	2013	2014
Belgium	28364	29624	31311	30923	30037
Bulgaria	4350	4538	4754	4653	4739
Czech Republic	13361	13623	14309	14455	13835
Denmark	25745	26582	27329	27409	27694
Germany	199390	213145	218749	221107	226570
Estonia	1406	1558	1725	1826	1892
Ireland	11911	11445	12019	11913	12691
Greece	22370	23522	19781	18940	17602
Spain	63444	64641	64103	69589	69970
France	150550	153975	163713	164791	172606
Croatia	.	.	.	.	5878
Italy	130761	137939	132748	132796	133752
Latvia	1841	2167	2213	2275	2334
Lithuania	3475	3905	4114	4253	4377
Luxembourg	2667	2964	3289	3532	3872
Hungary	10813	10874	11626	11668	11888
Malta	785	871	925	958	993
Netherlands	44847	45883	45754	47731	47664
Austria	24998	26299	26747	27399	28327
Poland	34601	37604	37573	37227	38618
Portugal	15574	16469	16465	16236	16766
Romania	16164	18159	17713	18186	18757
Slovenia	3234	3231	3219	3260	3433
Slovakia	6247	6476	6854	6914	7169
Finland	16725	18008	18808	20028	20357
Sweden	34731	37893	40167	39540	39334
United Kingdom	127711	144831	159761	157228	174248
EU-27	996 065	1 056 226	1 085 769	1 094 837	1 136 339

Source: own calculations.

Table B2. Household VAT Liability (EUR million)

	2010	2011	2012	2013	2014
Belgium	16104	16677	17123	17482	17320
Bulgaria	3144	3294	3528	3372	3450
Czech Republic	8131	8497	9057	9294	8858
Denmark	14831	15163	15639	15763	15982
Germany	127788	136189	137795	140021	143114
Estonia	1001	1098	1202	1286	1343
Ireland	6933	6981	7334	7307	7649
Greece	14940	16602	14424	13886	13087
Spain	43003	44891	47179	51331	51985
France	92167	94180	96942	98029	103300
Croatia	.	.	.	.	4545
Italy	93263	99199	97324	96981	98766
Latvia	1441	1669	1752	1803	1859
Lithuania	2696	3033	3196	3317	3442
Luxembourg	985	1072	1108	1113	1180
Hungary	7475	7735	8234	8232	8142
Malta	355	377	403	421	438
Netherlands	23826	24285	24745	26245	26149
Austria	16900	17767	18307	18883	19656
Poland	22713	24769	25601	25402	26209
Portugal	10886	11453	12296	12092	12461
Romania	9713	11029	10925	11452	12052
Slovenia	2241	2271	2285	2284	2394
Slovakia	4600	4799	4959	5105	5289
Finland	9461	10154	10570	11405	11585
Sweden	18989	20307	21391	20879	20523
United Kingdom	83291	94959	105129	104416	116341
EU-27	636 877	678 450	698 448	707 801	737 119

Source: own calculations.

Table B3. Intermediate Consumption and Government VAT Liability (EUR million)

	2010	2011	2012	2013	2014
Belgium	6973	7349	7663	7865	7264
Bulgaria	686	728	703	766	777
Czech Republic	3393	3517	3460	3510	3346
Denmark	7317	7490	7836	7777	7859
Germany	41045	43362	44334	45644	46424
Estonia	204	230	242	254	261
Ireland	3264	2999	3445	3318	3591
Greece	3011	3039	2875	2602	2320
Spain	11494	11041	11042	11662	11435
France	26434	27207	28468	28656	29841
Croatia	.	.	.	.	877
Italy	18762	19094	18289	18984	18952
Latvia	301	369	367	384	392
Lithuania	467	500	536	538	557
Luxembourg	587	618	631	657	828
Hungary	1964	1965	1989	1927	2045
Malta	395	456	476	492	503
Netherlands	12186	12377	12697	13444	13332
Austria	4413	4515	4668	4760	4992
Poland	6812	7129	7042	7149	7615
Portugal	2817	3014	2831	2759	2924
Romania	2330	2753	2773	2846	2742
Slovenia	511	527	528	541	554
Slovakia	991	1048	1129	1146	1194
Finland	4013	4270	4474	4784	4960
Sweden	9771	10759	11494	11576	11532
United Kingdom	33414	37990	39567	38362	42727
EU-27	203 555	214 346	219 559	222 403	229 844

Source: own calculations.

Table B4. GFCF VAT Liability (EUR million)

	2010	2011	2012	2013	2014
Belgium	3764	4007	4895	4406	4687
Bulgaria	486	463	478	476	482
Czech Republic	1793	1574	1783	1652	1651
Denmark	3022	3292	3178	3179	3193
Germany	29400	32277	35350	34162	35808
Estonia	192	220	272	276	278
Ireland	1531	1307	1079	1134	1301
Greece	4058	3494	2220	2187	1957
Spain	8774	8463	5632	6330	6279
France	27234	28103	33496	33224	34203
Croatia	.	.	.	.	512
Italy	15173	15035	12770	12744	12384
Latvia	151	196	194	191	198
Lithuania	311	372	378	390	404
Luxembourg	298	305	317	306	339
Hungary	1292	1074	1169	1328	1532
Malta	30	37	45	42	50
Netherlands	8400	8750	7824	7547	7677
Austria	2387	2477	2296	2321	2353
Poland	4354	4738	3924	3678	4090
Portugal	1485	1665	981	1047	1049
Romania	3586	3718	3387	3380	3451
Slovenia	376	322	303	335	399
Slovakia	670	607	745	644	701
Finland	2729	3037	3296	3294	3209
Sweden	5297	6055	6407	6479	6667
United Kingdom	9475	9884	12626	11296	13129
EU-27	136 267	141 471	145 080	142 097	148 052

Source: own calculations.

Table B5. VAT Revenues (EUR million)

	2010	2011	2012	2013	2014
Belgium	25262	25979	26844	27250	27518
Bulgaria	3299	3362	3769	3898	3799
Czech Republic	10420	11246	11377	11694	11602
Denmark	23040	23682	24399	24321	24985
Germany	180213	189910	194034	197005	203081
Estonia	1257	1363	1508	1558	1711
Ireland	10067	9755	10219	10372	11496
Greece	15958	15021	13713	12593	12676
Spain	57649	55904	56652	61126	63756
France	135578	140552	142527	144301	148129
Croatia	.	.	.	.	5368
Italy	97586	98650	96170	93921	96897
Latvia	1202	1374	1570	1690	1787
Lithuania	2180	2444	2521	2611	2764
Luxembourg	2600	2879	3162	3415	3725
Hungary	8442	8516	9084	9073	9754
Malta	477	520	540	582	642
Netherlands	42654	41610	41699	42424	42708
Austria	22735	23447	24563	24953	25445
Poland	27466	29764	27783	27780	29317
Portugal	13527	14265	13995	13710	14672
Romania	9494	11412	11212	11913	11650
Slovenia	2926	2995	2888	3045	3154
Slovakia	4182	4711	4328	4696	5021
Finland	15533	17315	17987	18888	18948
Sweden	33825	36631	37834	39048	38846
United Kingdom	113687	130679	143301	142227	157428
EU-27	861 259	903 986	923 679	934 094	976 879

Source: Eurostat.

Table B6. VAT Gap (EUR million)

	2010	2011	2012	2013	2014
Belgium	3102	3645	4467	3673	2519
Bulgaria	1050	1176	986	755	940
Czech Republic	2941	2377	2932	2761	2233
Denmark	2706	2899	2930	3088	2709
Germany	19177	23235	24715	24102	23489
Estonia	149	195	217	268	181
Ireland	1844	1690	1800	1541	1195
Greece	6412	8501	6068	6347	4926
Spain	5795	8737	7451	8463	6214
France	14972	13423	21186	20490	24477
Croatia	.	.	.	.	510
Italy	33175	39289	36578	38875	36855
Latvia	639	792	642	584	547
Lithuania	1295	1462	1594	1642	1612
Luxembourg	67	84	128	116	147
Hungary	2371	2357	2542	2595	2134
Malta	308	350	385	375	351
Netherlands	2193	4273	4055	5307	4956
Austria	2263	2852	2184	2446	2882
Poland	7135	7840	9790	9447	9301
Portugal	2047	2204	2470	2526	2093
Romania	6670	6748	6501	6272	7107
Slovenia	308	236	331	214	280
Slovakia	2065	1765	2526	2218	2148
Finland	1192	693	821	1140	1409
Sweden	906	1262	2333	492	489
United Kingdom	14025	14152	16905	15705	17756
EU-27	134 806	152 237	162 537	161 442	159 460

Source: own calculations.

Table B7. VAT Gap (percent of VTTL)

	2010	2011	2012	2013	2014
Belgium	10.94	12.30	14.27	11.88	8.39
Bulgaria	24.15	25.92	20.73	16.23	19.83
Czech Republic	22.01	17.45	20.49	19.10	16.14
Denmark	10.51	10.91	10.72	11.27	9.78
Germany	9.62	10.90	11.30	10.90	10.37
Estonia	10.58	12.50	12.59	14.67	9.58
Ireland	15.48	14.77	14.97	12.94	9.42
Greece	28.66	36.14	30.68	33.51	27.99
Spain	9.13	13.52	11.62	12.16	8.88
France	9.95	8.72	12.94	12.43	14.18
Croatia	.	.	.	.	8.67
Italy	25.37	28.48	27.55	29.27	27.55
Latvia	34.70	36.57	29.03	25.69	23.42
Lithuania	37.26	37.42	38.73	38.61	36.84
Luxembourg	2.50	2.85	3.88	3.29	3.80
Hungary	21.93	21.68	21.87	22.24	17.95
Malta	39.23	40.25	41.62	39.20	35.32
Netherlands	4.89	9.31	8.86	11.12	10.40
Austria	9.05	10.85	8.17	8.93	10.17
Poland	20.62	20.85	26.06	25.38	24.08
Portugal	13.15	13.38	15.00	15.56	12.49
Romania	41.27	37.16	36.70	34.49	37.89
Slovenia	9.54	7.31	10.30	6.57	8.14
Slovakia	33.06	27.26	36.86	32.08	29.97
Finland	7.12	3.85	4.36	5.69	6.92
Sweden	2.61	3.33	5.81	1.24	1.24
United Kingdom	10.98	9.77	10.55	9.94	10.14
EU-27	13.53	14.41	14.97	14.75	14.03

Source: own calculations.

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