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Primary Deficit Indicator, Tax Gap, and Fiscal Sustainability – Evidence from Central and Eastern EU Member States

Introduction

The idea of sustainability in the area of public finance is well developed in the literature (see e.g.: Adam 2015; Potrafke, Reischmann 2015; John, Kurian 2009) and dates back to the first classical economists, such as Adam Smith, David Hume or David Ricardo (see e.g.: *The Economics*... 2002). Sustainable fiscal policy literature deals mostly with the volume of public debt, debt servicing costs and the primary deficits (see e.g.: Neck, Sturm 2008; Collard, Habib, Rochet 2015; Legrenzi, Milas 2012; Molendowski, Stanek 2012). The latter, in turn, is an outcome of public revenues as well as current and investment public expenditures. The size and structure of public expenditures result from political system, functions of government and the supply of public goods and services (Kosikowski 2005, p. 107), while budget revenue is determined by fiscal capacity. The public authorities face the dilemma whether they should increase budget revenue (by increasing taxes) or should they cut expenditure (Głuchowski 1995). The third choice is public borrowing to cover the gap between revenue and expenditure.

It is worth mentioning that not only Keynesian approach (see e.g.: Gali 2013, pp. 973–1003) but the classical economy also brought (sometimes indirect) justification for public debt as an instrument of fiscal policy. It is mostly relevant to the *Ricardian equivalence* (Neck, Sturm 2008, p. 2), debt neutrality theorem (Barro 1974, pp. 1095–1117; 1989, pp. 37–54), and intergenerational distribution of public debt (Lindbeck, Weibull 1986, pp. 239–267).

Regardless to the above mentioned problems, fiscal deficits and public debts are immanent characteristics of almost all free market economies. Financing current consumption with borrowing seems attractive to the governments. However, they

should remember they cannot use ever increasing public borrowing. According to the literature review, sustainable fiscal policy excludes the possibility situation "…where the government systematically services the cost of existing debt exclusively by issuing new one" (Fan, Arghyrou 2013, p. 961). Sustainability of public finance is based on generating primary budget surpluses and controlling public debt volume (Gevorkyan 2010, p. 169).

In my previous papers I investigated the idea of short term and long term sustainability of public finance in EU economies at the general government (Uryszek 2015a; 2015c) as well as at the local government levels (Uryszek 2015b). The research showed that almost all EU Member States are far from that. The Central and Eastern EU members have generally recorded lower values of debt to GDP ratio than the EU-15. However, more detailed analyses showed that they are in worse position than the "old" EU Member States. Volumes of primary deficits prove their governments seem to play Ponzi games, which excludes the sustainable fiscal path. Under such circumstances meaningful question arises: how far are the Central and Eastern EU Member States form fiscal sustainability? To answer this question, we first need to specify how we can measure the fiscal sustainability level.

Measuring fiscal sustainability – theoretical background

For a long term fiscal sustainability, we assume that the government cannot use an ever increasing debt. It means that the fiscal authorities cannot run Ponzi games (see e.g.: Martins-da-Rocha, Vailakis 2012, pp. 455–488; Wigger 2009, pp. 492–499; Minea, Villieu 2010, pp. 709–711) and must tighten fiscal policy now or in the future. This condition has been already used to assess fiscal sustainability in practice (see e.g.: Qin et al. 2006, pp. 63–84). "In this case, the discounted value of primary balances generated over all future periods adjusted for the already existing public debt should be equal to zero" (Uryszek 2015c, p. 25). "For fiscal policy to be sustainable, sustainability being defined as the absence of default risk, this condition must be met" (Neck, Sturm 2008, p. 6). The different ways of measuring fiscal sustainability are strongly dependent on the primary balances, intertemporal budget constraint and non-Ponzi condition.

Using the idea of present value of budget constraints (see e.g.: Chalk, Hemming 2000, p. 5), McCallum (1984) argued that public debt should not growth faster than the interest rate. Basing on that, Barro (1989) and Kremers (1989) proved that if the economy growth rate is lower than the interest rate, the public debt to GDP (or the public debt to output) ratio shall be limited.

A popular group of methods used to measure the level of fiscal sustainability are sustainability statistical tests, relevant to the present value of budget constraints. Stationarity of the primary balance series is tested (which sometimes is regarded as a sufficient condition for fiscal sustainability – see e.g. Hamilton and Flavin 1986).

Besides, cointegration of public debt and budget primary balances is investigated (see: Afonso, Jalles 2016; Lamé, Lequien, Pionnier 2014; Trehan, Walsh 1988). The most important problem with the use of sustainability tests is that they give different empirical results, relevant to the data samples and assumptions (Hakkio, Rush 1991; Wilcox 1989; Corsetti, Roubini 1991; Tsuchiya 2016; Mahdavi 2014; Gabriel, Sangduan 2010).

"A separate strand of empirical literature focuses on indicators of how far fiscal policy departs from sustainability…" (Chalk, Hemming 2000, p. 7). These indicators are mostly relevant to the volume of public debt, values of primary balances, taxation level, output, interest rates and economy growth rate (see e.g.: Buiter 1985; Blanchard 1990). Their advantages and disadvantages are examined in the literature (see: Malito 2014). The weak point of the indicators is that fiscal sustainability is examined "…in an environment where there is no uncertainty" (Chalk, Hemming 2000, p. 9). Uncertainty should be included into the models of sustainability investigation (Bohn 1991; Hajdenberg, Romeu 2010; Tanner, Samake 2008). It makes the measures more stochastic rather than deterministic indicators. Having it in mind, we should agree, that the idea of using sustainability indicators is very attractive, as they are simple, easy to interpret and their results can be compared between different economies and over time.

Research method and data

The research method used in this article is based on two macroeconomic measures: the *constant wealth primary deficit* (or *primary gap indicator* – PGI) and the *tax gap indicator* (TGI). These tools were introduced by Buiter (1985) and Blanchard (1990). They can be classified as the sustainability indicators. The first indicator was originally dependent on the interest rate on public debt, economy growth rate, the ratio of the primary deficit to output and the net worth of public sector to output. According to this approach fiscal agents should take care of the ratio of public sector net worth to output.

As the true value of net worth of public sector is hard to estimate, Blanchard proposed to base the indicator on the primary fiscal balance necessary to stabilize the debt ratio (at the current level) and do not let it to grow. In this form it can be written as follows (cf.: Blanchard 1990; Chalk, Hemming 2000, p. 7):

$$\bar{d} = (r_t - n_t)b_t \tag{1}$$

where:
$\bar{d}$ – the primary balance necessary to stabilize the debt ratio to output,
r_t – interest rate on public borrowing in the period t,
n_t – economy real growth rate in the period t,
b_t – public debt volume to output in the period t.

The value of $\bar{d}$ smaller than the current primary balance (d_t) suggests that the latter is too large to stabilize the debt ratio, which means that the fiscal policy is unsustainable.

As an alternative, Blanchard proposed a tax gap indicator. It can be written as follows (cf.: Blanchard 1990; Chalk, Hemming 2000, p. 8):

$$\bar{t} = g_t - (r_t - n_t)b_t \tag{2}$$

where:
$\bar{t}$ – the tax to output ratio necessary to stabilize the debt ratio to output,
g_t – the ratio of non-interest public expenditure to output,
the rest – as in equation 1.

The outcome of the formula should be compared with the current level of taxation in the particular economy. If the value of $\bar{t}$ is higher than the current tax rate (t_t) the total tax burden in the economy is insufficient to stabilize debt ratio (dependent on the current public expenditure policy). Assuming that the public spending policy is constant (and the expenses will not be limited), the tax rate should be increased.

For the purpose of the article, as well as for the empirical analyses, the above mentioned formulas were changed a little. Public debt volume, primary balance and tax ratio were calculated as percentage of gross domestic product. The interest rate was calculated as the ratio of interest expenditure to the volume of gross public debt of the preceding year. This way of calculation is based on ESA 2010 and is consistent with excessive deficit procedure. It seems to be a good description of the real cost of the public debt service.

To ensure comparability between countries, the data on entire public finance (General Government) sectors based on the European System of Accounts methodology were used. They were taken from Eurostat databases. The Central and Eastern EU Member States investigated in the article are: Bulgaria (BG), Croatia (HR), Czech Republic (CZ), Estonia (EE), Latvia (LV), Lithuania (LT), Hungary (HU), Poland (PL), Romania (RO), Slovenia (SI) and Slovakia (SK).

The research period covers yearly observations between 1996 and 2015. The length of the research period seems to be suitable, as it is much longer than the average periods to maturity in the investigated countries (which should solve the problem of incidental debt volume fluctuations connected to debt refinancing). Besides, it covers the years before, during and after the financial crisis, what gives us a more general look at the problem of fiscal sustainability.

Primary Gap Indicator – empirical analysis

The *primary gap indicator* shows the difference between the actual and the maximum "acceptable" values of a primary deficit (or a minimum value of an "acceptable" surplus). The actual values of primary balance are shown in table 1.

Table 1
General Government primary net lending (in % of GDP)

	BG	CZ	EE	HR	LV	LT	HU	PL	RO	SI	SK
1996	n/a*)	–2.0	0.2	n/a	0.9	–2.4	4.7	n/a	–1.7	0.9	–7.2
1997	7.3	–2.5	2.6	n/a	2.3	–11.1	3.0	n/a	0.0	0.0	–3.8
1998	4.8	–3.5	–0.2	n/a	0.6	–1.9	–0.5	n/a	0.8	–0.2	–2.7
1999	3.7	–2.5	–2.9	n/a	–3.1	–1.3	1.6	n/a	0.6	–0.7	–4.0
2000	3.6	–2.7	0.2	n/a	–1.8	–1.5	2.3	0.0	–0.7	–1.2	–8.0
2001	5.3	–4.4	0.4	n/a	–1.1	–2.0	0.6	–1.7	0.0	–1.6	–2.5
2002	1.0	–5.2	0.7	–1.7	–1.5	–0.6	–4.9	–1.9	0.6	–0.3	–4.6
2003	1.8	–5.4	2.0	–2.9	–0.9	–0.1	–3.1	–3.1	0.2	–0.7	–0.2
2004	3.6	–1.6	2.6	–3.3	–0.3	–0.5	–2.1	–2.4	0.3	–0.3	–0.2
2005	2.6	–2.0	1.3	–2.0	0.1	0.5	–3.7	–1.5	0.4	0.2	–1.2
2006	3.1	–1.3	3.1	–1.5	–0.2	0.4	–5.4	–1.2	–1.3	0.2	–2.2
2007	2.2	0.4	2.9	–0.5	–0.3	–0.1	–1.0	0.3	–2.1	1.1	–0.5
2008	2.4	–1.1	–2.5	–0.8	–3.5	–2.4	0.5	–1.5	–4.8	–0.3	–1.1
2009	–3.4	–4.3	–2.0	–3.7	–7.6	–7.9	–0.1	–4.8	–8.0	–4.6	–6.5
2010	–2.5	–3.1	0.3	–3.6	–6.8	–5.1	–0.4	–5.0	–5.4	–4.0	–6.2
2011	–1.3	–1.4	1.3	–4.8	–1.6	–7.1	–1.3	–2.4	–3.8	–4.8	–2.6
2012	0.5	–2.5	–0.2	–1.9	0.8	–1.1	2.3	–1.0	–1.9	–2.1	–2.5
2013	0.3	0.0	–0.1	–1.8	0.6	–0.8	1.9	–1.5	–0.4	–12.4	–0.8
2014	–4.5	–0.6	0.9	–2.0	–0.2	0.9	1.7	–1.4	0.8	–1.8	–0.8
2015	–1.1	0.7	0.5	0.4	0.0	1.3	1.6	–0.8	0.9	0.1	–1.2
Average	1.5	–2.7	0.6	–2.2	–1.2	–2.1	–0.1	–1.9	–1.2	–1.8	–2.8

*) n/a – data not available

Source: own elaboration based on Eurostat data (gov_10a_main, gov_10dd_edpt1).

The data analyses prove that the investigated economies recorded significant primary net borrowing values. The only exceptions were Bulgaria and Estonia. The values of primary net borrowing were, of course, much higher (than on the

average) during the financial crisis and the recovery time. However, we should notice that even during the prosperity period some countries (including Poland) recorded strong primary deficits. It means that the total public revenues were not enough to cover the current and capital public expenditure. It does not sound optimistic in the context of fiscal sustainability.

The actual values from table 1 should be compared with the values of the primary fiscal balance necessary to stabilize the debt ratio (calculated according to equation 1). The latter are presented in table 2.

Table 2

The values of the primary fiscal balance necessary to stabilize the debt ratio (in % of GDP)

	BG	CZ	EE	HR	LV	LT	HU	PL	RO	SI	SK
1996	n/a*)	–0.4	–1.2	n/a	n/a	–2.8	n/a	n/a	n/a	–0.2	n/a
1997	n/a	0.2	–1.1	n/a	–1.0	–1.8	–4.7	n/a	–13.5	–0.3	n/a
1998	–11.8	0.1	–0.2	n/a	–0.4	–0.8	–3.5	n/a	–3.8	–0.1	–0.9
1999	6.4	0.5	0.3	n/a	0.4	2.1	–0.5	n/a	–2.2	–0.1	0.1
2000	–6.6	–0.5	–0.5	n/a	0.1	0.9	–2.4	–2.1	–5.3	–0.7	–2.0
2001	–3.3	–0.4	–0.3	n/a	–0.1	–0.2	–1.4	1.1	–5.0	–0.4	–0.8
2002	–4.1	0.6	–0.2	n/a	–0.5	–0.2	–0.5	1.4	–4.2	–0.7	0.0
2003	–1.2	0.2	–0.2	–1.1	–0.7	–0.7	–0.6	1.1	–2.8	–0.3	–3.1
2004	–2.8	–0.9	–0.3	–0.3	–1.2	–0.6	–1.8	–0.9	–2.2	–0.4	–2.8
2005	–2.2	–1.1	–0.4	–0.8	–1.6	–1.0	–0.3	0.1	–0.8	–0.1	–1.6
2006	–1.8	–1.4	–0.5	–1.2	–1.4	–1.1	–0.8	–1.0	–1.0	–0.7	–2.5
2007	–1.5	–1.2	–0.4	–1.0	–1.3	–2.0	–1.1	–2.0	–0.6	–1.2	–2.3
2008	–1.5	–1.4	0.0	–0.9	–0.9	–1.3	–0.1	–1.3	–1.3	–0.8	–1.3
2009	1.0	2.9	1.3	5.3	6.3	5.1	6.6	–0.6	2.8	4.4	3.4
2010	0.3	0.2	–0.2	3.4	4.5	1.3	0.0	–0.5	0.4	0.6	–0.8
2011	0.0	–0.2	–0.6	2.3	–2.6	–1.6	–0.3	–2.1	–0.4	1.1	–1.3
2012	0.5	0.5	–0.6	2.9	–0.9	–0.5	1.8	0.1	0.5	2.2	–0.5
2013	0.5	0.9	–0.4	3.1	0.3	0.0	1.8	1.4	–0.6	2.8	0.4
2014	1.4	0.3	–0.2	3.8	0.3	0.5	1.3	0.1	0.1	1.0	0.6
2015	0.5	n/a	0.0	2.5	0.2	1.2	1.5	0.4	0.4	1.4	0.1
Average	–1.5	–0.1	–0.3	1.4	0.0	–0.2	–0.3	–0.3	–2.1	0.4	–0.9

*) n/a – data not available

Source: own elaboration based on Eurostat data (gov_10a_main, gov_10dd_edpt1).

Data presented in table 2 show that, in several cases, creation of a primary deficits (but of a very limited value) would be enough to stabilize the debt to GDP ratio and not let it grow. This fills us with optimism, as the effort to enter the path for fiscal sustainability does not seem to be enormous. Sometimes, of course, a significant surplus would be necessary, but such cases were rather rare. However, comparison of data presented in tables 1 and 2 does not give so optimistic results. The outcomes for the *primary gap indicator* are shown in table 3.

Table 3

The outcomes for the *primary gap indicator*

	BG	**CZ**	**EE**	**HR**	**LV**	**LT**	**HU**	**PL**	**RO**	**SI**	**SK**
1996	n/a*)	failed	passed	n/a	n/a	passed	n/a	n/a	n/a	passed	n/a
1997	n/a	failed	passed	n/a	passed	failed	passed	n/a	passed	passed	n/a
1998	passed	failed	passed	n/a	passed	failed	passed	n/a	passed	failed	failed
1999	failed	failed	failed	n/a	failed	failed	passed	n/a	passed	failed	failed
2000	passed	failed	passed	n/a	failed	failed	passed	passed	passed	failed	failed
2001	passed	failed	passed	n/a	failed	failed	passed	failed	passed	failed	failed
2002	passed	failed	passed	n/a	failed	failed	failed	failed	passed	passed	failed
2003	passed	failed	passed	failed	failed	passed	failed	failed	passed	failed	passed
2004	passed	failed	passed	failed	passed	passed	failed	failed	passed	passed	passed
2005	passed	failed	passed	failed	passed	passed	failed	failed	passed	passed	passed
2006	passed	passed	passed	failed	passed	passed	failed	failed	failed	passed	passed
2007	passed	passed	passed	passed	passed	passed	passed	passed	failed	passed	passed
2008	passed	passed	failed	passed	failed	failed	passed	failed	failed	passed	passed
2009	failed	failed	failed	failed	failed	failed	failed	failed	failed	failed	failed
2010	failed	failed	passed	failed	failed	failed	failed	failed	failed	failed	failed
2011	failed	failed	passed	failed	passed	failed	failed	failed	failed	failed	failed
2012	passed	failed	passed	failed	passed	failed	passed	failed	failed	failed	failed
2013	failed	failed	passed	failed	passed	failed	passed	failed	passed	failed	failed
2014	failed	failed	passed	failed	failed	passed	passed	failed	passed	failed	failed
2015	failed	n/a	passed	failed	failed	passed	passed	failed	passed	failed	failed
Average	passed	failed	passed	failed	failed	failed	passed	failed	passed	failed	failed

*) n/a – data not available

Source: own elaboration based on data from tables 1 and 2.

The results for the *primary gap indicator* show that in most investigated economies (and in most years) the values of the actual primary fiscal deficit were too large to stabilize the debt to GDP ratio. "Failed" means that the values of the deficits were higher (or the surpluses were lower) than the primary fiscal balance necessary to stabilize the debt ratio. If the country "passed" that means the economy recorded the primary balance which was high enough to stabilize the debt ratio. We may see that most of the countries strongly "failed". Exactly 122 cases per 201 (11 countries, 20 years, less 19 "not available" observations) "failed". Bulgaria and Estonia were two countries in the relatively best situation. Besides, Hungary and Romania "passed" on the average. The rest of the economies "failed".

Tax Gap Indicator – empirical analysis

The *tax gap indicator* shows whether the level of the tax revenues is high enough to stabilize the debt to GDP ratio. In practice however, it is better to use all the public revenue to compare with the outcome of the TGI. It is because tax revenues (even including social contributions) to not cover all the revenues. Different countries can use other sources of revenue to a different extent. It is much more important to check whether all the public revenues (including taxes, of course) are high enough to stabilize the debt ratio than to focus on taxes only. The total General Government revenues are presented in table 4.

Table 4
Total general government revenue (in % of GDP)

	BG	CZ	EE	HR	LV	LT	HU	PL	RO	SI	SK
1996	33.2	37.8	39.0	n/a*)	35.0	33.3	46.6	46.5	29.4	42.9	43.4
1997	31.2	38.0	39.6	n/a	36.6	38.5	44.0	42.3	30.0	41.9	42.3
1998	35.8	37.1	38.7	n/a	38.0	38.1	43.3	40.8	32.4	42.7	40.4
1999	40.0	37.6	37.0	n/a	37.1	38.0	43.6	41.1	34.6	42.8	40.6
2000	40.6	36.9	36.3	n/a	34.5	36.2	44.2	39.0	33.8	42.5	40.0
2001	41.6	37.2	35.2	43.3	32.8	33.6	43.2	40.2	32.6	43.1	38.0
2002	38.0	38.0	36.5	44.3	33.0	33.3	42.1	40.4	32.9	43.4	37.1
2003	38.3	42.1	37.0	42.4	32.0	32.3	42.0	39.6	31.7	43.2	37.2
2004	39.7	39.4	36.7	41.9	33.8	32.6	42.3	38.7	32.2	43.4	35.5
2005	37.8	38.7	35.1	41.6	33.9	33.7	41.7	40.6	32.3	43.6	36.7
2006	35.5	38.5	36.5	41.9	35.6	34.0	42.3	41.2	33.1	43.0	35.0
2007	38.5	39.3	36.8	42.5	33.4	34.4	45.0	41.3	35.4	42.1	34.2

Table 4

	BG	CZ	EE	HR	LV	LT	HU	PL	RO	SI	SK
2008	38.5	38.1	37.1	42.0	33.2	35.0	45.1	40.9	33.2	42.5	34.3
2009	35.4	38.1	43.9	41.6	34.7	35.8	46.1	38.0	31.5	42.3	36.1
2010	33.5	38.6	40.7	41.3	36.3	35.4	45.0	38.1	32.7	43.6	34.5
2011	32.1	40.4	38.6	41.0	35.8	33.5	44.3	38.8	33.7	43.3	36.4
2012	34.4	40.7	38.8	41.7	36.4	33.0	46.3	38.9	33.4	44.5	36.2
2013	37.2	41.6	38.1	42.5	36.1	32.9	47.0	38.4	33.1	45.2	38.6
2014	36.6	40.8	38.7	42.6	35.9	34.1	47.5	38.9	33.5	44.9	39.2
2015	38.2	42.2	40.0	43.7	35.9	34.9	48.7	38.9	34.8	45.1	42.7
Average	36.7	39.1	38.2	42.3	35.0	34.6	44.6	40.3	32.8	43.3	38.2

*) n/a – data not available

Source: own elaboration based on Eurostat data (gov_10a_main).

The level of "fiscalization" of the investigated economies is significant. The ratio of public revenue to GDP ranged from 29.4% (for Romania in 1996) to 48.7% (in Hungary, 2015). The average ratios of revenues to GDP were at the level between 32.8% and 44.6%. These values should be compared with values of public revenues necessary to stabilize the debt ratio (calculated according to equation 2) – presented in table 5.

Table 5

The values of public (tax) revenues necessary to stabilize the debt ratio (in % of GDP)

	BG	CZ	EE	HR	LV	LT	HU	PL	RO	SI	SK
1996	n/a*)	40.2	39.9	n/a	n/a	38.6	n/a	n/a	n/a	42.2	n/a
1997	n/a	40.3	38.1	n/a	35.2	51.4	45.8	n/a	43.5	42.2	n/a
1998	42.8	40.5	39.1	n/a	37.7	40.9	47.3	n/a	35.4	43.0	44.0
1999	29.9	39.6	39.6	n/a	39.9	37.2	42.5	n/a	36.2	43.6	44.5
2000	43.6	40.1	36.6	n/a	36.3	36.8	44.3	41.1	39.7	44.4	50.0
2001	39.6	42.0	35.1	n/a	34.0	35.8	43.9	40.7	37.6	45.1	41.3
2002	41.1	42.6	36.0	n/a	35.0	34.0	47.5	41.0	36.5	44.4	41.6
2003	37.7	47.3	35.2	46.4	33.5	33.1	45.8	41.6	34.3	44.2	40.5
2004	38.9	41.9	34.4	45.5	35.3	33.7	46.2	42.0	34.0	44.0	38.5
2005	37.4	41.8	34.2	44.3	35.4	34.3	45.8	41.9	32.7	43.5	39.5
2006	34.2	41.2	33.9	44.6	37.2	34.7	48.6	43.4	35.4	43.5	39.7
2007	37.8	40.1	34.3	44.1	35.0	36.6	47.1	42.9	38.1	42.2	37.0

Table 5

	BG	CZ	EE	HR	LV	LT	HU	PL	RO	SI	SK
2008	37.6	40.6	39.5	43.6	37.6	38.7	44.8	43.7	39.4	43.6	36.8
2009	37.8	39.5	44.6	40.0	35.9	38.6	39.6	43.4	36.6	42.5	39.1
2010	35.7	41.5	40.6	41.5	38.6	39.2	45.5	43.6	37.7	47.1	41.5
2011	33.4	42.1	37.9	43.5	39.9	42.3	45.8	43.2	37.9	47.0	40.3
2012	33.4	42.8	39.6	40.7	36.5	34.6	42.2	39.8	34.8	44.4	39.2
2013	36.4	40.6	38.6	41.2	35.2	33.8	43.3	38.5	34.1	54.9	39.0
2014	39.8	41.2	38.1	40.8	35.8	32.7	44.5	40.2	32.5	45.7	39.4
2015	38.7	n/a	39.4	40.8	35.7	32.4	45.6	39.3	33.5	43.6	43.7
Average	37.5	n/a	37.7	42.8	36.3	37.0	45.1	41.6	36.3	44.6	40.9

*) n/a – data not available

Source: own elaboration based on Eurostat data (gov_10a_main, gov_10dd_edpt1, gov_10a_taxag).

The results for the TGI calculations are shown in table 6. They were calculated using data from tables 4 and 5. The outcomes, as in the previous case, were divided into two groups: "passed" and "failed".

Table 6
The outcomes for the *tax gap indicator*

	BG	CZ	EE	HR	LV	LT	HU	PL	RO	SI	SK
1996	n/a*)	failed	failed	n/a	n/a	failed	n/a	n/a	n/a	passed	n/a
1997	n/a	failed	passed	n/a	passed	failed	failed	n/a	failed	failed	n/a
1998	failed	failed	failed	n/a	passed	failed	failed	n/a	failed	failed	failed
1999	passed	failed	failed	n/a	failed	passed	passed	n/a	failed	failed	failed
2000	failed	failed	failed	n/a	failed	failed	failed	failed	failed	failed	failed
2001	passed	failed	passed	n/a	failed	failed	failed	failed	failed	failed	failed
2002	failed	failed	passed	n/a	failed	failed	failed	failed	failed	failed	failed
2003	passed	failed	passed	failed	failed	failed	failed	failed	failed	failed	failed
2004	passed	failed	passed	failed	failed	failed	failed	failed	failed	failed	failed
2005	passed	failed	passed	failed	failed	failed	failed	failed	failed	passed	failed
2006	passed	failed	passed	failed	failed	failed	failed	failed	failed	failed	failed
2007	passed	failed	passed	failed	failed	failed	failed	failed	failed	failed	failed
2008	passed	failed	failed	failed	failed	failed	passed	failed	failed	failed	failed
2009	failed	failed	failed	passed	failed	failed	passed	failed	failed	failed	failed

Table 6

	BG	CZ	EE	HR	LV	LT	HU	PL	RO	SI	SK
2010	failed	failed	passed	failed	failed	failed	failed	failed	failed	failed	failed
2011	failed	failed	passed	failed	failed	failed	failed	failed	failed	failed	failed
2012	passed	failed	failed	passed	failed	failed	passed	failed	failed	passed	failed
2013	passed	passed	failed	passed	passed	failed	passed	failed	failed	failed	failed
2014	failed	failed	passed	passed	passed	passed	passed	failed	passed	failed	failed
2015	failed	n/a	passed	passed	passed	passed	passed	failed	passed	passed	failed
Average	failed	failed	passed	failed	failed	failed	failed	failed	failed	failed	failed

*) n/a – data not available

Source: own elaboration based on data from tables 4 and 5.

The results for the *primary tax indicator* show that in most investigated economies (and in most years) actual public revenues were not high enough to stabilize the debt to GDP ratio. "Failed" means that the values of actual revenues were lower than the minimum "necessary" numbers. "Passed" means that the actual public revenues were sufficient to stabilize the debt ratio and do not let it rise. In this case (on the average) only Estonia was successful. The rest of the economies (sometimes strongly) failed.

Conclusions

It is evident that the Central and Eastern EU economies have significant problems with sustainability in the area of public finance. The outcomes of the research prove the hypotheses put forward in the "Introduction" were true. The real obstacle is the issue of primary deficits and limited revenue rising capacity.

The analyses show, that primary deficit are too large and the public revenues are insufficient to stabilize the public debt volume and prevent it from rising. Large primary deficits recorded in the investigated economies in the years 1996–2015 prevented form stabilizing the public debt to GDP ratios. Besides current public revenues (or – in more general words – revenue rising capacities) in those countries are too low to stabilize current public debt volume (determined by public spending policies).

To support the idea of sustainable public finance, the governments should try to diminish the volume of debt and to avoid generating large primary deficits by tightening fiscal policies. Moreover, if the decrease of public expenditure is impossible, there is a strong necessity to improve the revenue raising capacity and to generate more public revenues.

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Summary

The main goal of the article is to test the level of fiscal (un)sustainability in the Central and Eastern EU economies, using *primary deficit indicator* and *tax gap indicator* – tools proposed and described by Buiter and Blanchard. This goal is accompanied by the following hypotheses: (1) large primary deficits recorded in the investigated economies prevent form stabilizing the public debt volume, (2) actual public revenues in those countries are too low to stabilize current public debt volume (predetermined by public spending policies). The research period covers the years 1996–2015. Data were taken from Eurostat. The results of the research confirm the hypothesis.

Keywords: public finance, primary deficit, tax gap, public debt, fiscal sustainability

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