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Fiscal Conditions for Growing out of Debt in Europe

Introduction

The budget deficit and public debt have been widely present for many years in modern economies. The growing deficit of public finance and resulting accumulation of public debt constitute a problem in the economy that is inextricably linked to the conduct of fiscal policy. This problem returned again, in a drastic form, when last financial crisis led to rapid deepening of budget deficits and jumping growth of public debt in relation to GDP.

In the face of the explosion of public debt, but also gradually progressive aging of the population, the need to bring fiscal discipline became clear. It will help to avoid duplication of past mistakes when during high global economic growth (particularly in years 2006–2007) the public finance was not even balanced, while the surplus should be a natural state.

However, restoring of fiscal balance will be a difficult task mainly due to poor economic outlook in many EU countries. These weak prospects for economic growth are associated with both high levels of private sector debt and high level of unemployment. In turn, the attempts to accelerate economic growth by means of an active fiscal policy will be limited by high level of public debt and efforts on fiscal consolidation in the most indebted countries. Moreover, highly expansive monetary policy conducted by European Central Bank has made the interest of long-term government bonds much lower than prior to the crisis and in case of countries with particular risk of insolvency several times lower than the maximum levels. However, if interest rates start to rise, several euro zone countries once again might find themselves in the face of insolvency. In the long term, the fiscal consolidation process will be hindered due to unfavorable demographic trends and the burden on public finances imposed by social security systems.

The major aim of this article is to show the arithmetic course of growing out of debt after the sovereign debt crisis in European Union and its consequences – as well as the challenges – related to aging process the old continent’s population is going to face in medium and long-term. The specific objectives of this article are, firstly, to demonstrate that the process of growing out of debt must be based primarily on the forming and maintenance of sufficient primary surplus in contrast to other determinants of debt dynamics and, secondly, to prove that the outbreak of financial and economic crisis, which then

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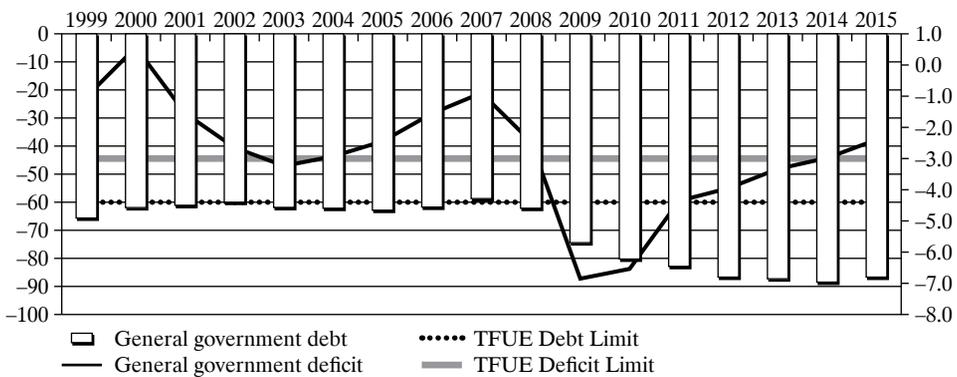
turned into a sovereign debt crisis, is the final proof of the need to return to the concept of maintaining a continued fiscal discipline.

Why does deficit occur?

Persistence of indebtedness by governments all over the world is confirmed by fiscal statistics. Fiscal data concerning OECD countries indicate that 42 out of 43 years in the period of 1970–2013 were characterized by the occurrence of budget deficits (and 41 in the US in that period)¹, while in the European Union in the period 1995–2015 the budget surplus occurred only once. Figure 1 shows the relative size of government debt and fiscal balance in European Union (as % of GDP) both prior to the crisis and during the crisis years. The right axis corresponds to the fiscal balance.

Figure 1

General government debt and fiscal balance in European Union as % of GDP (1999–2015)



Source: AMECO database, European Commission.

The data only confirm the trend observed for decades, that after the outbreak of the recent financial crisis has even strengthened, and there is little evidence for its reversal in the future – not least because of the phenomenon of an aging society².

The experience of many countries shows that, both in less and more developed democracies, governments have a natural tendency to generate excessive budget deficits (phenomena called *deficit bias*) that leads to the accumulation of public debt to dangerous borders of long-term sustainability of public finance. In the literature one can find several hypotheses to explain the phenomena of deficit bias. Firstly, the tendency of politicians to incur debt is determined by so-called political cycle (Nordhaus 1975). The politicians, maximizing the chances for re-election, “buy” voters by increasing spending or reduc-

¹ OECD Statistics database.

² The challenges of reducing debt in EU are compounded by unfavorable demographic trends due to low fertility rates, steady increases in life expectancy and the retirement of the baby-boom generation. Ageing of European population is going not only to mark social economic consequences, but will also constitute a significant burden for government budgets in the future, endangering the medium and long-term sustainability of public finance. Needless to say, it will be challenging for the member states to maintain sound and sustainable public finances in the medium and long term. Apart from the prompt necessity of carrying out a traditional fiscal consolidation, this will require a credible strategy of entitlement reforms (pensions, health care, long-term care) to address the expected growth in age-related spending.

ing taxes. Secondly, the hypothesis of fiscal illusion – voters favor wasteful governments (Wagner 1977). Society revalues for current expenses and underestimates future tax burden resulting from the earlier increase in spending. Thirdly, the deficit fiscal policy is a result of a strategic use of debt (Rubini, Sachs 1988). Government at power, being uncertain about re-election, begins to conduct a loose fiscal policy in order to reduce the room for maneuver for the future government. According to the fourth hypothesis, permanent deficit arises as a result of cost-shifting to the next generation (Tabellini 1991). Fifth, excessive indebtedness stems from a problem of common resource (so called common pool problem) (von Hagen 1998). The government prefers spending focused on specific social groups or regions. While benefits of spending are internalized by these groups, then costs of the expenditures are distributed to all taxpayers.

2. Fiscal picture in European Union

The recent development of budget deficits and public debt has become a significant policy problem in most industrialized countries. This is not surprising as markets and the public place great importance on a reasonably low and stable ratio of government debt to GDP. They tend to interpret a high and still growing debt ratio as a signal of endangering the fiscal sustainability or even looming public insolvency. Keeping the debt ratio below an upper bound to reassure economic agents is well founded, as an ever increasing debt ratio would eventually result in a fiscal debt crisis and default – either outright or through inflation or other means.

The global financial and economic crisis has fully revealed the risks of over-indebted countries, whose cause was, *inter alia*, the maintenance of structural deficits for many years³. An unavoidable aftermath of the crisis was a rapid deepening of budget deficits and jumping growth of debt-to-GDP ratio.

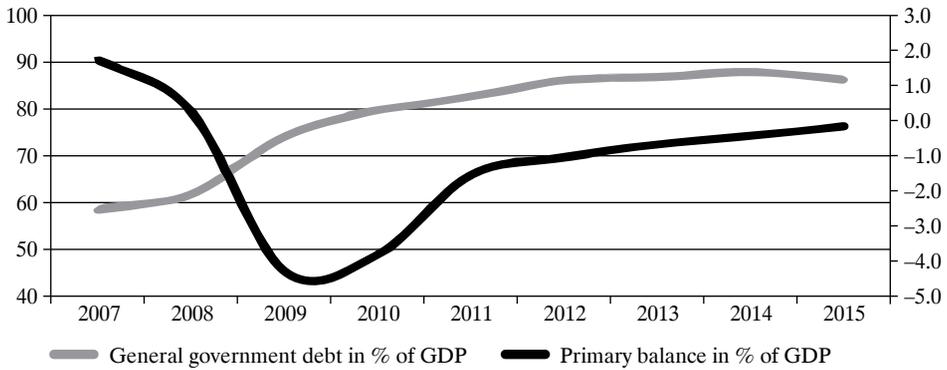
The primary fiscal balance is the best available proxy for the overall fiscal picture within government's control. The primary balance consists of government revenue less spending excluding the debt cost servicing. It is the most accurate reflection of the government's fiscal policy decisions.

However, one observation should be made here – the primary balance in relation to GDP is bounded above. This means that there is a number K such that for all periods t , $p_t \leq K$. This assumption is on reasonable grounds. Theoretically, it must be bounded, for example by 100% of GDP – when all GDP would be taxed away and then the public spending would have to be zero. However, from a practical standpoint, the primary balance and actually primary surplus ceiling, although uncertain and time-country-specific – is highly probable to amount to only a few percentage points of GDP, reflecting both social and political constraints (J. Escolono 2010).

The global financial crisis resulted in the most pronounced and pervasive peacetime worsening of the primary fiscal balance, with the average primary fiscal deficits in 2008–2009 larger than at any other point in history aside from the World Wars (Mauro et al. 2013). In European Union, the overall fiscal position was not different. Figure 2 presents the government debt and primary fiscal balance in European Union both prior to the crisis and during the crisis years. The right axis corresponds to the fiscal primary balance.

³ In years 1999–2009, EU member states violated the deficit rule 74 times and the debt rule 93 times. This simply means that the system of fiscal discipline adopted in the EU did not work.

Figure 2
General government debt and primary balance in EU as % of GDP in years 2007–2015



Source: AMECO database, European Commission.

A significant deterioration in the primary balance was accompanied by a sharp rise in debt-to-GDP ratio. Only fiscal consolidation undertaken by governments led gradually to a slowdown in the growth of debt in relation to GDP and already in 2015 the debt-to-GDP ratio has started to fall.

The experience of financial and economic crisis, which then turned into a sovereign debt crisis, forced the European leaders to adopt solutions aimed at the establishment of a sustainable fiscal discipline in the member states. In December 2011 a package of six legal acts strengthening economic governance in the EU was adopted, the so-called Six-Pack that reforms the Stability and Growth Pact of 1997. One of the directives sets requirements for budgetary frameworks indicating that member states should have fiscal rules with clearly defined objectives and with mechanisms for effective and timely monitoring. The Directive recommends that the fiscal rules should relate to the deficit and debt calculated according to the EU methodology and relate to the entire general government sector. In 2012, 25 member states⁴ signed the Treaty on Stability, Coordination and Governance (TSCG), so-called Fiscal Compact. The treaty specifies requirements for fiscal rules in the countries that are subject to the provisions of the treaty. One of the main provisions of the pact says that a country with general government debt above 60% of GDP is obliged to reduce the “surplus of debt” (the debt above 60% of GDP) by one-twentieth annually. Countries that do not adhere to those rules may be subject to fines up to 0.1% of GDP. The reformed Stability and Growth Pact and the Fiscal Compact represent the foundations of a new European economic governance system. New regulations should heavily increase the chances of changing the irresponsible fiscal policies pursued by governments before the crisis and improve economic welfare of citizens. These solutions strengthen supervision and impose on politicians maintaining discipline in public expenditure policies often treating the expenditures as an instrument of political influence.

3. Arithmetic of deficit-debt

Even though there is no formula that allows a clean additive decomposition of changes in the debt-to-GDP ratio into the most interesting underlying factors, such as interest

⁴ Among the signatories of the treaty, there were not the United Kingdom and Czech Republic.

rates, inflation, fiscal adjustment, etc., the following equation, however, comes close to it (based on J. Escolono 2010):

$$d_t - d_{t-1} = \frac{i_t}{1 + y_t} d_{t-1} - \frac{y_t}{1 + y_t} d_{t-1} + p_t, \quad (1)$$

where:

- d_t = debt at the end of period t , as a ratio to GDP at t ;
- d_{t-1} = debt at the end of period $t - 1$, as a ratio to GDP at $t - 1$;
- i_t = nominal interest rate in period t ; paid in period t on the debt stock outstanding at the end of $t - 1$;
- y_t = nominal GDP growth rate between $t - 1$ and t ;
- p_t = primary fiscal deficit in t , as a ratio to GDP at t .

This equation indicates that the change in the debt ratio equals the impact of interest (positive) and nominal GDP growth (negative), plus the contribution of the primary deficit. After simplification⁵:

$$d_t - d_{t-1} = p_t + d_{t-1} \frac{i_t - y_t}{1 + y_t}. \quad (2)$$

The equation (2) shows that the change in debt-to-GDP ratio is a sum of primary fiscal deficit and so called snow ball effect which expresses the combined effect of the interest rate of government bonds and the growth rate of nominal GDP on debt-to-GDP ratio. Maintaining a constant debt-to-GDP ratio requires that left side of equation (1) must equal zero. The condition to stabilize the debt-to-GDP ratio at a specified debt level is to ensure that:

$$-p_t = d_{t-1} \frac{i_t - y_t}{1 + y_t}. \quad (3)$$

The equation (3) indicates that the condition for stability of the debt-to-GDP ratio requires that the relation of primary deficit to GDP equals the snow ball effect. Indeed, the public debt does not grow if the primary deficit is compensated by the surplus of growth of nominal GDP above the average nominal interest of debt. In other words, the debt ratio will increase indefinitely, if nominal interest rate exceeds the growth rate of nominal GDP, unless the primary budget is in sufficient surplus to compensate for that. Very often, in order to stop the process of increasing debt, not only a primary balance, but also a primary surplus shall be achieved. This is the case many EU countries are experiencing now.

4. Impact of public debt on economic growth and the level of interest rates

A great deal of empirical studies show that a certain level of debt beyond a given threshold has negative consequences on the economy and policy making. The relationship between government debt and economic growth is insignificant for debt ratios below a given threshold, but above it the average growth rate starts to fall rapidly (Reinhart, Rogoff 2010)⁶. For example, Reinhart and Rogoff (2009) placed the

⁵ It was assumed that the impact of the so-called stock-flow adjustment factor equals zero in this equation.

⁶ It is essential to mention here that the article Growth in a Time of Debt has met with fierce criticism recently. Other economists, taking the same data and using the same method of analysis, could not come to the same conclusions. See e.g. T. Herndon, M. Ash, R. Pollin (2013).

threshold at which public debt is associated with lower contemporaneous growth at about 90% of GDP for both advanced and emerging economies. Other studies (Reinhart, Reinhart, Rogoff 2012) with alternative methodologies and samples yield similar estimates⁷. However, it is essential to mention here that the high level of debt is not the only or the main factor causing the weakening of long-term economic growth, because there are other factors that can influence in that direction. Economists criticizing the article *Growth in a Time of Debt* (Reinhart and Rogoff 2010) said that the idea of investigating the relationship between public debt and economic growth is not reasonable for such long periods. For instance, Andrea Terzi states that “public debt management as well as the causes and consequences of public debt differ enormously, depending on institutional setups such as exchange rate arrangements, gold parity, limits to central bank operations, banking regulation. Any calculated average over such a broad time span for numerous countries is simply mixing apples and oranges, and is not significant” (Terzi 2013). Furthermore, many economists pointed out that a negative correlation between debt and economic performance need not mean that high debt causes low growth. “It could just as easily be the other way around, with poor economic performance leading to high debt. Indeed, that’s obviously the case for Japan, which went deep into debt only after its growth collapsed in the early 1990s” (Krugman 2013).

Based on recent sovereign debt crisis and earlier episodes it can be seen that a high level of debt can reduce a room for country’s ability to deal with shocks to interest rates. The shock to cost of servicing the debt in a country with higher public debt will be more significant than for countries with a lower public debt. For instance, in countries where government debt exceeds 100% of GDP, a relatively small rise of 10 basis points in cost of debt servicing increases government outlays by more than 0.1% of GDP annually (European Commission 2009).

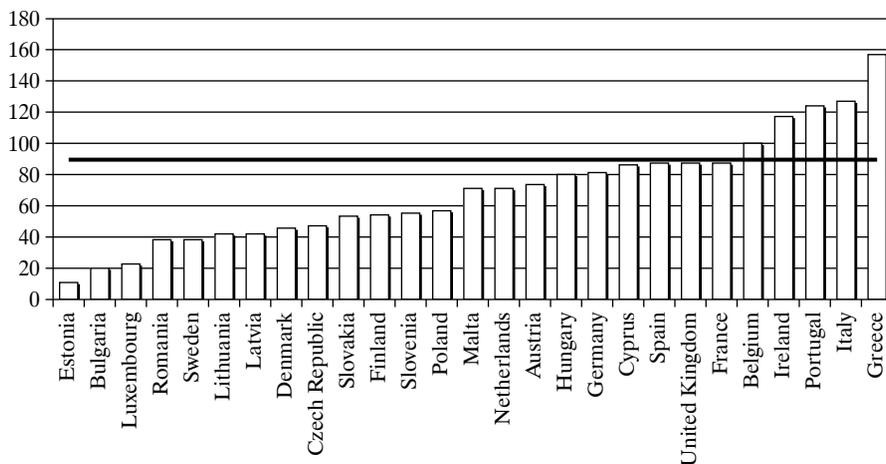
A high level of debt is also likely to lead to the threshold effects, whereby once the debt reaches a certain level, its further increase will push interest rates even higher. This increase might hinder to continue encouraging markets to buy government bonds and might lead to the effect of crowding out private investment. In addition, higher spending on public debt service is usually leading either to worsening of public spending structure (cuts take place mainly in public investment instead of social benefits) or to higher taxes which hamper the economic growth (Rzońca, Varoudakis 2007).

Overall, the explosion of public debt increases the vulnerability of economy to the crisis of confidence from the side of financial markets. An increasing public debt undermines the credibility of the country, leads to a lower rating and ultimately to increase in the cost of debt servicing along with even threatening to fall into the debt trap.

The course of the crisis in EU confirmed the results of those empirical studies. Figure 3 shows that at the end of 2012 in six countries the debt-to-GDP ratio exceeded the threshold of 90% of GDP. Three of those countries (Greece, Portugal, Ireland) were included in the program of financial assistance and Italy had significant problems in maintaining current liquidity. Moreover, against the whole EU, economies of those countries experienced much deeper recession (-2% vs. -0,1% of GDP) in 2012. This might confirm that exceeding a certain threshold has a negative impact on economic growth.

⁷ It is important to add that a critical threshold for debt level depends on individual position of particular country, including such factors as the share of foreign debt in total debt, the average maturity of debt, the value of the assets held by general government, country’s demographic structure but also on the phase of the business cycle and the risk aversion of investors. See e.g. B. Eichengreen and others (2011).

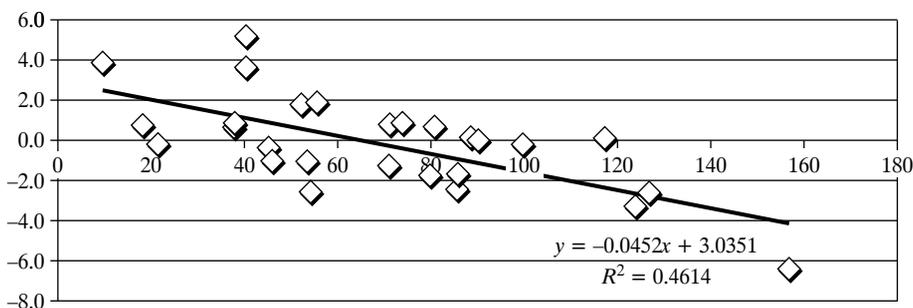
Figure 3
Public debt in EU as % of GDP in 2012



Source: AMECO database, European Commission.

Figure 4 indicates that there is a statistically significant, negative correlation between the level of debt and the rate of economic growth in the EU countries in 2012: increase in debt-to-GDP ratio by 10 pp. was associated with an average fall of GDP growth rate by 0.45 pp.

Figure 4
Public debt (% of GDP) and GDP growth rate (%) in EU in 2012

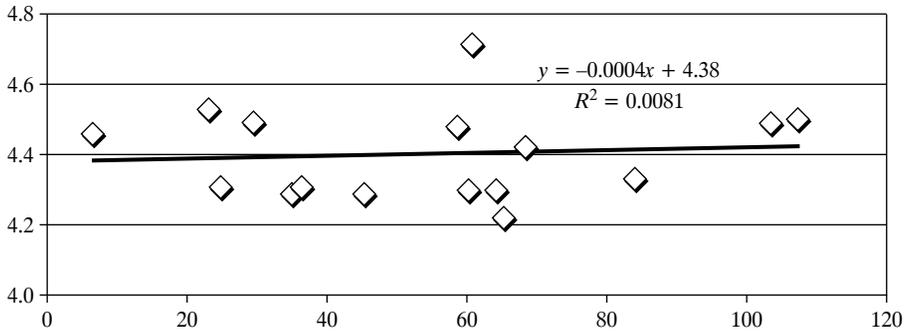


Source: Own calculation based on AMECO database, European Commission.

In turn, the impact of high level of public debt on interest rates of government bonds was revealed at the beginning of 2008 when the investors had started to differentiate countries in terms of level of debt and other factors⁸. Figure 5 shows that prior to the financial crisis there was no relationship between the level of debt and the level of interest of government bonds.

⁸ Such as lack of mutual guarantees of public debt and no automatic mechanism for pooled risk within the Monetary Union.

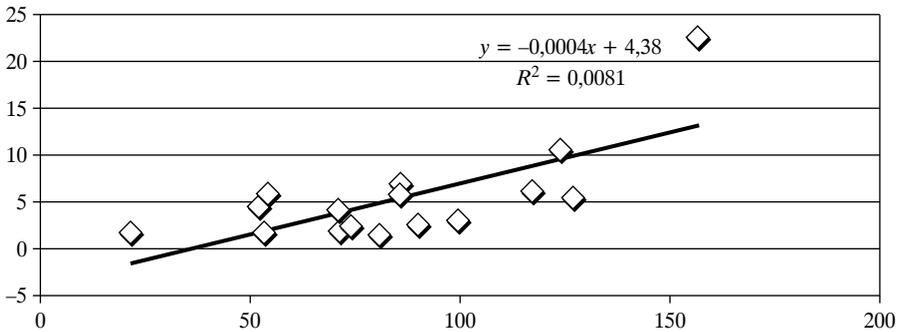
Figure 5
Public debt (% of GDP) and the level of interest rates of government bonds (%)
in the euro area in 2007



Source: Own calculation based on AMECO database, European Commission.

Since that time, however the interest rates of government bonds have differentiated and the above mentioned relationship got significant. Figure 6 illustrates the relationship between the level of debt and the level of interest of government bonds in the euro area⁹ in 2012. The chart shows that there is a statistically significant and positive relationship between those variables: increase in debt-to-GDP ratio by 1 pp. was associated with an average increase in the level of interest rates of government bonds by about 10 basis points.

Figure 6
Public debt (% of GDP) and level of interest of government bonds (%)
in euro area in 2012



Source: Own calculation based on AMECO database, European Commission.

After having investigated the correlation between the level of debt and the rate of economic growth in the EU, but also the level of interest of government bonds, it is important to consider the impact of debt level on both the expression $(i - y)$ and the level of primary deficit sufficient for stabilizing the debt-to-GDP ratio at a given level in accordance with

⁹ On purpose, this and later analysis is limited to euro area countries in order to eliminate a significant influence of factors as independent monetary and exchange rate policies on the level of interest of government bonds. The United Kingdom and Spain are good examples to illustrate that. In 2012, the average interest rates of long-term government bonds in Spain equaled 5.9%, but in the UK 1.7% only despite even higher debt-to-GDP ratio in the latter. However, the UK is not a member of euro area and conducts an independent monetary policy.

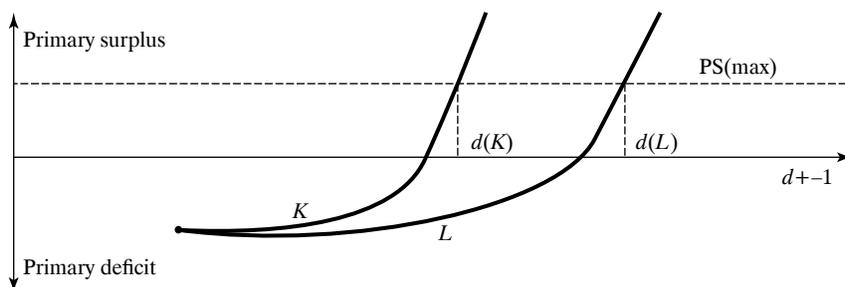
equation (3). In this equation, the expression $(i - y)$ is regarded as a constant parameter which implies a linear correlation between the deficit and the debt.

However, a deeper analysis of this equation and, first of all, the experience of recent sovereign debt crisis and other similar episodes suggest that actual correlation may be rather non-linear and may be of accelerating character, at least above a certain level of debt. This means that the values of parameters i and y are not constant and independent on values of parameters d and p , but they follow the changes of debt-to-GDP ratio (Rosati 2013). In particular, the recent sovereign debt crisis proves that for high debt-to-GDP ratios, the value of i starts to increase, whereas the value of y starts to fall. As a result, the expression $(i - y)$ becomes positive and grows in absolute terms. This, in turn, requires to maintain not only a primary balance but also a primary surplus sufficient to stabilize the debt-to-GDP ratio.

Figure 7 illustrates this well by showing a primary deficit p and debt-to-GDP ratio d depending on different values $(i - y)$. In this picture primary deficit-to-GDP ratio that is required to level off debt-to-GDP ratio is presented as a function of debt-to-GDP ratio for previous period and for different values of expression $(i - y)$. It can be seen that for low debt-to-GDP ratios, the expression will be negative and a particular country will be able to sustain a primary deficit in accordance with equation (3). However, for high debt-to-GDP ratios, the expression is becoming positive and a particular country needs to develop and maintain later a primary surplus in order to level off debt-to-GDP ratio.

Figure 7

The relation between debt-to-GDP ratio (d) and primary deficit-to-GDP ratio (p) consistent with the condition for debt stabilization



Source: own based on Blanchard (1984).

Following equation (3), the required primary surplus will be higher not only because it has to be consistent with higher debt-to-GDP ratio d_{t-1} but also because, as along with an increase of d , the value of expression $(i - y)$ increases either. In the picture, lines K and L show the relationship between d and p for two examples of different countries. Certainly, countries K and L have different paths of changes in expression $(i - y)$. It is also certain, that the higher the debt-to-GDP ratio d , the higher the value of expression $(i - y)$ and accordingly, the higher the primary balance p to be consistent with equation (2). The line $PS(max)$ stands for so called “maximum potential primary surplus” (Blanchard 1984). This is a primary surplus limit in relation to GDP, above which a particular country will be determined to stop honoring the debt due to lack of political and social acceptance for further necessary sacrifices, often substantial ones.

As already mentioned, a primary balance is bounded above. Above a certain critical level, maintaining a high primary surplus is becoming impossible due to social and polit-

ical reasons and debt-to-GDP ratio tends to slip out of control. While in the short term, one-off fiscal adjustment can be quite substantial, then maintenance of high primary surplus for many years is generally impossible – a primary surplus in accordance with equation (3) just exceeds coined by Blanchard (1984) the “maximum potential primary surplus”.

Based on Figure 1, the limit in case of country *K* occurs with lower debt-to-GDP ratio as the value of expression $(i - y)$ increases faster along with increase in debt-to-GDP ratio. The primary deficit might be even reduced as fast as feasible, however, the maximum level of debt is reached before the deficit is eliminated due to faster increase of expression $(i - y)$ compared to the pace of primary deficit reduction.

In contrast, in case of country *L*, the limit occurs with higher debt-to-GDP ratio *d* as along with increase in debt-to-GDP ratio, the value of expression $(i - y)$ increases more slowly. In other words, the level of debt that causes insolvency for country *L* is higher in relation to GDP than for a country *K*. In case of country *L*, the pace of primary deficit reduction can be slower either.

The level of debt beyond which the country is beginning to have a problem with its servicing depends on many factors. However, the countries enjoying a high confidence on the financial markets are better placed to incur debt without increasing the expression $(i - y)$. In such a case, “maximum sustainable level of debt” is higher (country *L*) than in another case (country *K*) (Blanchard 1984).

In order to better illustrate the above, two groups of countries are presented that in 2010 reached a similar debt-to-GDP ratio (see table 1). The first group – Ireland and Portugal – was forced to ask for financial assistance to international organizations in years 2010–2011.

Table 1
Determinants of debt dynamic in Ireland, Portugal, Belgium and Italy in 2010

	Country	Debt in % of GDP	Primary balance in % of GDP	<i>i</i>	<i>y</i>	$(i - y)$
Group I	Ireland	91.2	-27.5	5.7	2.8	2.9
	Portugal	94.0	-7.0	5.4	-1.0	6.4
Group II	Belgium	96.6	-0.5	3.5	3.8	-0.3
	Italy	119.3	0.1	4.0	1.8	2.2

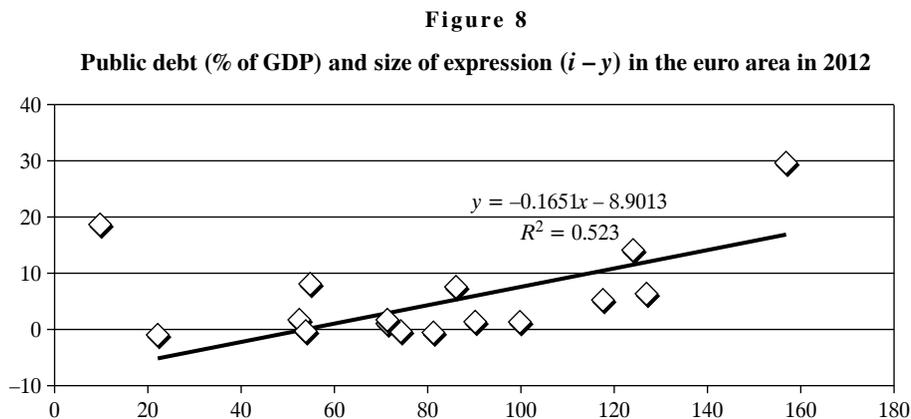
Source: Based on AMECO database, European Commission.

Regardless of the causes to bring such a high debt, both countries recorded very high primary deficit, notably Ireland and that was one of the main factors for financial markets to set the interest of government bonds at much higher level than for euro area (average interest run at 3.6% in EA) and made the debt service impossible¹⁰. On the other hand, the second group – Belgium and Italy – despite similar and even higher (in Italy) debt-to-GDP ratio recorded either a primary surplus (in Italy) or a small primary deficit (in Belgium). That group experienced a higher confidence on financial markets and was better placed to incur debt without increasing the expression $(i - y)$. Comparing those observations with

¹⁰ In case of Portugal, negative dynamics of nominal GDP did also contributed to the increase in expression $(i - y)$, in contrast to Ireland.

Figure 1, one can conclude that the first group (Portugal and Ireland) represents country *K*, whereas, the second group (Belgium and Italy) represents country *L*, for which the level of debt that causes insolvency is higher in relation to GDP than for a country *K*.

In turn, Figure 8 shows the relationship between the level of debt and size of expression ($i - y$) for EA countries in 2012.



Source: own calculation based on AMECO database, European Commission.

Based on this chart, there is a statistically significant and positive relationship between the analyzed variables: increase in debt-to-GDP ratio by 10 pp. is associated with faster increase in size of expression ($i - y$). For debt-to-GDP ratio in the range of 60%–90% of GDP the value of expression ($i - y$) increases from -0.7 to 7.5 , and when the level of debt achieves 160% of GDP, the value of ($i - y$) grows already to 29.6 indicating that the correlation is of non-linear character.

A rapid growth in the value of expression ($i - y$) constitutes an evidence that a country in which the debt-to-GDP ratio reaches a high value, sooner or later encounters a limit, beyond which servicing the debt becomes unmanageable – the so-called maximum sustainable level of debt. In accordance with equation (3), the primary balance should be in such a high surplus to compensate for the size of expression ($i - y$) that from socio-political reasons it seems generally impossible. Furthermore, gaining the political support for a prolonged period of adjustment becomes highly challenging, particularly in a cyclical adverse conditions and when additional efforts are required to address extra costs, e.g. age related costs. Therefore, as the history shows clearly, under such circumstances the governments often decide to accuse debt service and ask for financial assistance to international organizations. Recent example of Greece is a glaring evidence here.

The course of the sovereign debt crisis in Europe provides strong evidence that the higher the debt-to-GDP ratio, the lower the rate of growth and higher level of interest rates on government bonds. A major role in this respect plays sovereign risk default that runs through two channels (Rosati 2013). First of all, through higher borrowing costs for the private sector because of lower expected rates of return on investment (due to higher taxes in the future) and through the credit crunch for private sector due to deterioration of the financial condition of banks. As a result, an increase in debt-to-GDP ratio leads to worsening of an expression ($i - y$) and constitutes an evidence for non-linear and accelerating character of relationship reflected in equation (2), at least above a certain level of debt.

5. Sustainability of general government debt in European Union

According to equation (3), the value of primary balance needs to equal its right side in order to stabilize the debt-to-GDP ratio. However, with high and positive value of expression $(i - y)$, stabilizing the debt-to-GDP ratio requires to maintain not only a primary balance but also a sufficient primary surplus. Currently, both EU as a whole and EA have been aiming to achieve a primary surplus. In this respect, in the years 2009–2015 the progress has been highly noticeable and it was a result of conducting a fiscal consolidation. Table 2 presents a sustainability of general government debt in EU and in EA including two sensitivity scenarios in order to illustrate better the changes in relation to the required level of primary balance in accordance with equation (3).

Table 2
Sustainability of general government debt in EU and in EA

	Primary balance as % of GDP		Threshold of primary balance beyond which the debt starts to fall (% of GDP)	
	2009	2015	Scenario 1*	Scenario 2**
European Union	-4.2	-0.1	0.2	-3.2
Euro area	-3.5	0.3	0.2	-3.4

* Scenario 1 reflects lower inflation and real GDP rates by 1.0 pp. compared to the forecast for 2016. ** Scenario 2 reflects higher inflation and real GDP rates by 1.0 pp. compared to the forecast for 2016.

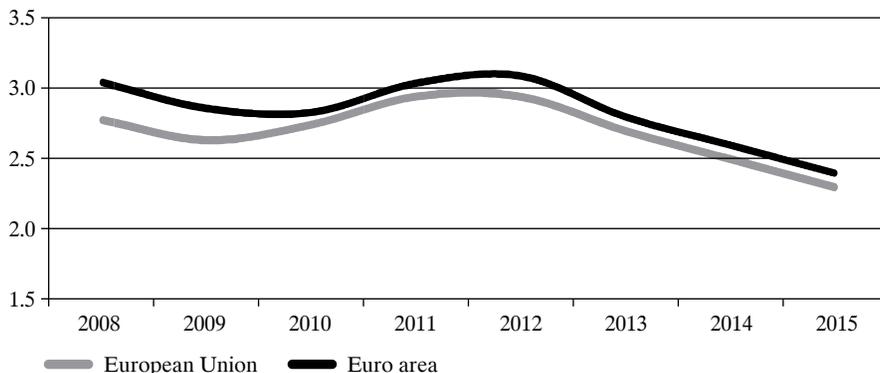
Source: own calculations based on Ameco database, European Commission (2016).

Scenario 1 assumes lower inflation and real GDP rates by 1.0 pp. compared to the forecast for 2016. In this case, primary balance, beyond which the debt starts to fall, assumes slightly positive value already achieved by the euro area and for European Union being close to it. In turn, scenario 2 assumes higher inflation and real GDP rates by 1.0 pp. compared to the forecast for 2016. In that case, the value of primary balance, beyond which the debt starts to fall, decreases considerably allowing even for some relaxation of fiscal policy stance. The analysis of Table 2 only confirms that the sign and value of primary balance in accordance with equation (3) is highly sensitive about the changes of parameter (y) in expression $(i - y)$.

Furthermore, recent years indicate that a highly expansive monetary policy conducted by European Central Bank has had a strong impact on the development of that expression. Currently, the average interest of long-term government bonds (i) is much lower than prior to the crisis and in case of countries with particular risk of insolvency it is several times lower than the maximum levels.

Indeed, it is peculiar to see that in EU, despite the large increase in debt-to-GDP ratio by 26 pp. in years 2008–2015 (in EA by 24 pp.), the cost of debt servicing in relation to GDP declined both in EU and in EA. Figure 9 shows the cost of general government debt service in relation to GDP.

Figure 9
The cost of general government debt service in Europe in years 2008–2015

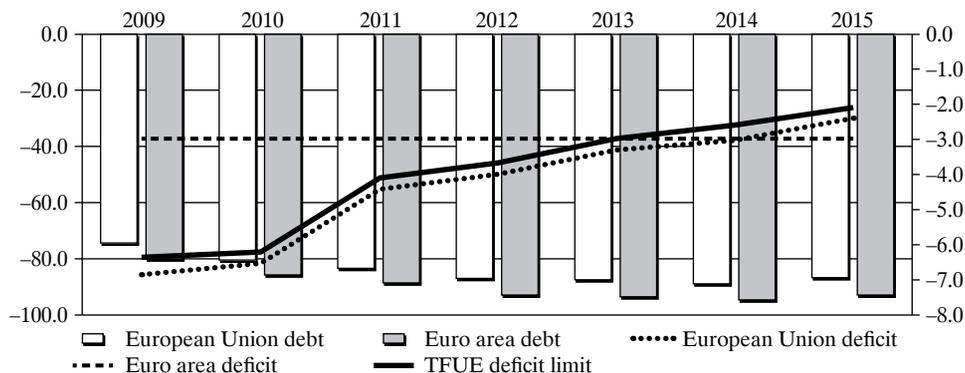


Source: AMECO database, European Commission (2016).

Low interest of government debt causes that even the most indebted countries can afford to service the debt. Due to this, among the others, both Ireland and Portugal could exit from the bailout programs.

The monetary policy of ECB got ahead the austerity policy and pushed back the specter of bankruptcy of several euro area countries. Indeed, austerity policy has not been reverted and countries have not increased their deficits (see Figure 10; right axis); however, against the so-called Fiscal Compact¹¹ still some countries have not yet started the process of deleveraging (see Figure 10; left axis). Retraction of the spectrum of the financial crisis also reduced the determination of some countries to pursue structural reforms (e.g. Italy).

Figure 10
Fiscal balance and general government debt in EU and in EA in years 2009–2015



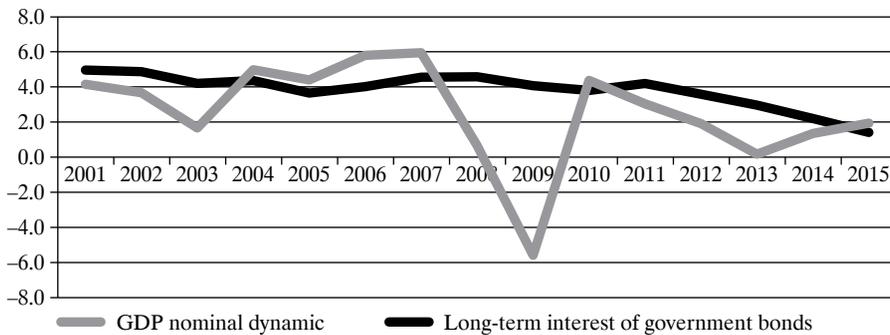
Source: Ameco database, European Commission.

¹¹ The Treaty on Stability, Coordination and Governance (TSCG).

However, if interest rates start to rise, several euro area countries once again might find themselves in the face of insolvency. Low cost of debt service is a result of the ECB's policy. It is to know whether this policy can be maintained as long as countries manage to conduct necessary structural reforms along with further fiscal consolidation, but also whether the second parameter in the expression from equation (3) – the dynamics of nominal GDP (y)¹² – accelerates sufficiently, supporting the process of growing out of debt. One has to remember, however, that in the medium term the interest on long-term government bonds denominated in the currency of the country usually equals the growth rate of nominal GDP of that country, which reflects the nominal rate of return provided by the economy (see Figure 11). However, in the long term, nominal interest rates need to be higher than growth of the economy (see e.g. Fischer i Easterly 1990).

Figure 11

Nominal interest of long-term government bonds and nominal GDP dynamics in Europe in years 2001–2015



Source: Eurostat.

Remembering that the ultimate goal is a reduction in the debt-GDP-ratio, the countries are also to answer the question: while aiming at reduction of that ratio they should mainly lower the denominator (debt) or increase the numerator (GDP) of the fraction? It seems that there is no clear answer to this question under normal circumstances. The countries enjoying a high confidence on financial markets have more opportunities to borrow money without increasing the expression $(i - y)$ and, in particular scale, fiscal stimulation may be more effective in such countries than in others. However, current monetary policy conducted by ECB disturbs that and creates additional risks ahead, especially for countries that are currently conducting an expansive fiscal policy. The increase in debt causes a short-term increase in aggregate demand. In the short term, this allows for a better use of production capacity and reduces unemployment. However, it weakens the need for painful treatment that would permanently improve competitiveness and increase production capacity.

The highly expansive monetary policy of ECB, but also financial mechanisms created in the EU, caused that the creditors look calmer at increasing levels of debt. When in

¹² The current very low inflation in Europe will not facilitate this task acting on parameter (y) by lowering its dynamics. This means that fiscal effort necessary to reduce the debt is much higher than at moderate inflation. In addition, low inflation also reduces tax revenues and makes it difficult for banks to repair their balance sheets (low inflation means low asset prices and a greater proportion of loans with insufficient collaterals).

the autumn of 2009 they went into panic, the average debt-to-GDP ratio was close to 75%. In 2014 it amounted close to almost 90% of GDP. However, if the austerity policy is replaced by a policy of short-term expansive fiscal policy or macroeconomic conditions change significantly, the debt-to-GDP ratio will be on the upward trend again. The investors will shortly realize that the debt slips out of control. Again, they will sell off treasury bonds, leading to the financial crisis. Therefore, to protect against such a scenario and to be in accordance with equitation (3), the process of deleveraging must be accompanied by developing and maintaining a primary surplus sufficient to reduce debt-to-GDP ratio. Hence, the relevant adjustment of primary balance constitutes an indispensable condition for sustained growing out of debt by Europe.

Conclusions

The markets and the public place great importance on a reasonably low and stable ratio of government debt to GDP. They tend to interpret a high and growing debt ratio as a signal of endangering fiscal sustainability or even looming public insolvency. The analysis carried out in the article confirms that relationship. The standard model of dynamics of the deficit – debt relation does not take into account the feedback between the level of debt and the rate of growth of GDP and the level of interest on government bonds.

However, the recent sovereign debt crisis in Europe provides strong evidence that the higher the debt-to-GDP ratio, the lower the rate of growth and higher level of interest rates on government bonds. A major role in this respect plays a mechanism of sovereign risk default that runs through two channels. First of all, through higher borrowing costs for the private sector because of lower expected rates of return on investment (due to higher taxes in the future) and through credit crunch for private sector due to deterioration of the financial condition of banks. As a result, an increase in debt-to-GDP ratio leads to worsening of the expression $(i - y)$ and constitutes an evidence for non-linear and accelerating character of relationship reflected in equation (3), at least above a certain level of debt.

Moreover, recent years indicate that a highly expansive monetary policy conducted by the European Central Bank has had a strong impact for the development of this expression. Currently, the interest on long-term government bonds (i) is much lower than prior to the crisis and in case of countries with particular risk of insolvency it is several times lower than the maximum levels. However, if interest rates start to rise, several euro area countries once again might find themselves in the face of insolvency. It is to know, whether this policy can be maintained as long as particular countries manage to conduct necessary structural reforms along with further fiscal consolidation. Nevertheless, earlier or later an increase in interest rates (i) from current artificially underestimated level can lead to worsening of expression $(i - y)$.

Furthermore, additional sensitivity analysis carried out in the article confirms that the sign and value of primary balance in accordance with equation (3) is highly sensitive about the changes of the second parameter of expression $(i - y) - (y)$, which depends on the inflation rate and the growth rate of real GDP. The analysis shows that a small change in those two parameters can either support the process of growing out of debt or, on the contrary, hamper it. Current outlook in this respect is only moderately positive, due to very low inflation rate and moderate real GDP dynamics. The results of extensive empirical studies indicate that if the policymakers face increases in long-term real borrowing rates, their response is to tighten the fiscal policy. On the contrary, if the policymakers

are hit with prospect of lower long-term economic growth, their response is to loose the fiscal policy (Mauro et al. 2013).

Therefore, taking into account all the above, the process of deleveraging must be based, first of all, on developing and maintaining a primary surplus sufficient to reduce debt-to-GDP ratio. Hence, the relevant adjustment of primary balance constitutes an indispensable condition for sustained growing out of debt in EU. The adoption of the reformed Stability and Growth Pact along with Fiscal Treaty might support the process and constitute a final proof of the need to return to the concept of maintaining a continued fiscal discipline. On the other hand, the adopted solutions are nothing else but an attempt to return to the unwritten principle of a balanced budget and the treatment of budget deficit as a transition state at most, and certainly not normal, as it was commonly practiced since the Great Depression of the twentieth century until the outbreak of the financial crisis in 2008, which then turned into a sovereign debt crisis in the European Union.

Finally, the process of growing out of debt in EU and the recovery of the most indebted countries capacity to borrow again on financial markets will be hindered not only by relatively poor economic outlook and efforts of fiscal consolidation. The challenges of reducing debt in the EU will be compounded by unfavorable demographic trends due to low fertility rates, steady increases in life expectancy and the retirement of the baby-boom generation. Progressive ageing of European population is going not only to mark social economic consequences, but will also constitute a significant burden for government budgets in the future, endangering the medium and long-term sustainability of public finance.

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WARUNKI FISKALNE WYJŚCIA Z DŁUGÓW W EUROPIE

Streszczenie

Kryzys zadłużenia w strefie euro postawił na porządku dziennym sprawę przywrócenia równowagi w finansach publicznych krajów najbardziej zadłużonych, co mogłoby dopomóc im w odzyskaniu zdolności do zaciągania dalszych kredytów na rynku finansowym. Nie będzie to jednak zadanie łatwe z uwagi na słabą koniunkturę w większości krajów UE, a zwłaszcza w strefie euro. Próby przyspieszenia wzrostu gospodarczego poprzez aktywną politykę fiskalną będą ograniczone ze względu na wysoki poziom zadłużenia i konieczność zachowania dyscypliny budżetowej w najbardziej zadłużonych krajach. Obecny niski koszt obsługi długów jest wynikiem ekspansywnej polityki pieniężnej Europejskiego Banku Centralnego. Ale jeżeli stopy procentowe zaczną rosnać, to kilka krajów strefy euro stanie ponownie w obliczu groźby niewypłacalności. W długim okresie proces uzdrawiania finansów publicznych będzie hamowany przez niekorzystne trendy demograficzne i związany z tym wzrost wydatków budżetowych. Prosta arytmetyka budżetu państwa i długu publicznego pokazuje, że proces wychodzenia z zadłużenia musi być oparty głównie na wypracowaniu i utrzymaniu odpowiedniej nadwyżki pierwotnej w budżecie. Kryzys finansowo-ekonomiczny, który zamienił się potem w kryzys zadłużenia publicznego, jest ostatecznym dowodem konieczności powrotu do dyscypliny budżetowej.

Słowa kluczowe: finanse publiczne, dług publiczny, deficyt budżetowy, Europa

JEL: H62, H63, O52

FISCAL CONDITIONS FOR GROWING OUT OF DEBT IN EUROPE

Summary

Sovereign debt crisis in the euro zone put in the spotlight the issue of restoring the balance in the public finances of indebted countries as to resort to their capacity to borrow again on financial markets. Restoring fiscal balance will be a difficult task due to poor economic outlook in most EU countries, particularly in the euro area. The attempts to accelerate economic growth by means of an active fiscal policy will be limited by high level of public debt and efforts on fiscal consolidation

in the most indebted countries. Current low cost of debt service is the result of highly expansive monetary policy of European Central Bank. However, if interest rates start to rise, several euro zone countries once again might find themselves in the face of insolvency. In the long term, the fiscal consolidation process will be hindered due to unfavorable demographic trends and resulting growth in age-related spending. The simple arithmetic of government balance and public debt indicates that the process of growing out of debt must be based primarily on the forming and maintenance of sufficient primary surplus. The financial and economic crisis, which then turned into a sovereign debt crisis in the euro zone, is the final proof of the need to return to fiscal discipline.

Key words: public finance, public debt, budget deficits, Europe

JEL: H62, H63, O52

ФИСКАЛЬНЫЕ УСЛОВИЯ ВЫХОДА ИЗ ЗАДОЛЖЕННОСТИ В ЕВРОПЕ

Резюме

Кризис задолженности в зоне евро поставил на повестке дня вопрос о восстановлении равновесия в публичных финансах наиболее задолженных стран, что могло бы помочь им вернуть кредитоспособность на финансовом рынке. Однако эта задача не из легких ввиду слабой конъюнктуры в большинстве стран ЕС, особенно в зоне евро. Попытки ускорения экономического роста посредством активной фискальной политики будут ограничены ввиду высокого уровня задолженности и необходимости сохранения бюджетной дисциплины в наиболее задолженных странах. Нынешние низкие издержки обслуживания долгов являются результатом экспансивной политики Европейского центрального банка. Но если процентные ставки начнут расти, то несколько стран зоны евро вновь станут перед риском банкротства. В длительный период процесс оздоровления публичных финансов будут тормозить неблагоприятные демографические тенденции и связанный с ними рост бюджетных расходов. Простая арифметика бюджета государства и публичного долга указывает, что процесс выхода из задолженности должен опираться главным образом на выработку и сохранении соответствующего первичного профицита бюджета. Финансово-экономический кризис, который затем перешел в кризис публичной задолженности, является бесспорным доказательством необходимости возврата к бюджетной дисциплине.

Ключевые слова: публичные финансы, публичный долг, бюджетный дефицит, Европа

JEL: H62, H63, O52