

Sustainability of the public debt and the financial crisis

Aura Gabriela SOCOL

The Bucharest University of Economic Studies
auragabriela.socol@gmail.com

Abstract. *The European Union sovereign-debt crisis brings up again the problem of current account sustainability, the fiscal policy sustainability and the public debt sustainability, as well as the interconditionality between them. On the background of the severe structural problems, the lack of competitiveness has constituted the main factor resulting in the severe deterioration of the European public finances. The external deficits have put additional pressure upon the fiscal deficits. Practically, they entered a vicious circle, to a great extent due to the extremely different economic evolutions of the weak economies opposite to the strongly structurally advanced and solid economies. This study makes a risk analysis of the public debt sustainability in Romania for the period 2010-2015, under the circumstances in which it will enter the Euro zone in the near future.*

Keywords: public debt sustainability; primary surplus-generating capacity; Euro crisis; financial crisis.

JEL Codes: E62, H63.

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1. Introduction

Each financial/economic crisis has its own individual features, but most of them have a number of common characteristics. This also applies to the current world crisis. Charles Kindleberger's paper "*Manias, Panics and Crashes*" transformed Hyman Minsky's typology into a more modern expression. The Euro zone experienced, besides the entire world economy, each of the steps described below. Until 2008, the moment when the crisis appeared in USA, The Euro zone improved well enough. The Euro zone specific problem was that many of the constituent economies could not have finished the convergence process which had been started before 1999. Moreover, some of them even recorded deviations from the levels considered as sustainable: first of all, the competitiveness of the participant states was extremely heterogeneous, this resulting in unsustainable current account deficits and external debts; secondly, the public sectors deficits and, consequently, the levels of the public debt were not sustainable in some of the countries; thirdly, also the private sector deficits proved to be unsustainable and, consequently, the levels of the private debts. According to the typology of Minsky/Kindleberger⁽¹⁾, the crises have the following evolution:

1. The events start with a "dislocation", an exogenous shock outside the macroeconomic system (a war, adoption, to a large extent, of a new invention, a political event, etc.).
2. The extension of the bank loan results in the increase of the money supply and it supplies the economic growth. This may result in the creation of new banks, in the development of new loan instruments and in the unlimited extension of the personal loans until the moment when the phenomenon practically becomes impossible to be controlled.
3. The demand increases, the prices also get increased, new profit opportunities, new companies and investors appear. The revenues increases stimulate the additional investments, new increases of revenues...
4. The soap bubbles develop. The excessive trade extends from one country to another, through arbitration for goods and internationally traded assets, the capital flows or, simply, the psychological effects of transmission. The interest rates, the velocity of money and the prices, all of them continue to get increased. Some initiates profit and sell everything.
5. Financial disaster. Everybody start to be aware of development of a rush for cash – in order to get rid of assets and to obtain cash –, this resulting in some speculative lenders' incapacity to return their loans. As the disaster persists, the speculators realize that the market cannot grow more. It is the moment for them to draw back, and the rush to transform the real or financial assets into cash for a long term turns into panic.

6. Crisis. The trigger may be the failure of a bank or of a big company/corporation, the revealing of a cheat or of a defalcation, or a price decrease of the initial speculation object. The prices get decreased. The bankruptcies get increased. Closeout is sometimes required, but this cannot degenerate into panic. The banks cease to grant loans for collateral assets, of which prices get decreased.

When the crisis occurred, the states recording unsustainable positions from the points of view described above proved to be extremely vulnerable, with all the risks deriving from here. When the crisis appeared in the whole world, it shook even the most solid European economies, and, until the end of 2009, the Euro zone entered the first stage of a severe public debt crisis. On the background of the severe structural problems, the lack of competitiveness has constituted the main factor resulting in the severe deterioration of the European public finances. The external deficits have put additional pressure upon the fiscal deficits. Practically, they entered a vicious circle, to a great extent due to the extremely different economic evolutions of the weak economies opposite to the strongly structurally advanced and solid economies. The European Union sovereign-debt crisis brings up again the problem of the interconditionality between the current account sustainability, the fiscal policy sustainability and the public debt sustainability. The recent crisis has demonstrated, one more time, the fact that the pro-cyclical fiscal policies, the lack of structural reforms and the lack of support for pro-increase and competitiveness structural reforms have generated external imbalances, unsustainable public debts accompanied by high risks of non-payment of the debt service.

2. Public debt sustainability. Effects of a monetary union

The problem of the budget deficit *sustainability* is as follows: the budget deficit determines the increase of the public debt, which will have to be paid in the future. If the interest rate to the public debt exceeds the economic growth rhythm, the public debt will increase faster than the gross domestic product. Eventually, this dynamics results in unsustainable deficits which require corrective actions. Formally, the dynamics of the debt can be analyzed starting from the definition of the government budget constraint.

$$\begin{aligned}
 G - T + r \times B &= \Delta B + \Delta M \\
 (g - t) + r \frac{B}{Y} &= \frac{\Delta B}{Y} + \frac{\Delta M}{Y} \tag{1} \\
 \left(\frac{B}{Y} \right)' &= \frac{B' \times Y}{Y^2} - \frac{B \times Y'}{Y^2} \rightarrow \dot{b} = \frac{\Delta B}{Y} - \frac{B \times \Delta Y}{Y^2} \rightarrow
 \end{aligned}$$

$$\frac{\Delta B}{Y} = \dot{b} + \frac{B}{Y} \times \frac{\Delta Y}{Y} \quad (2)$$

If we introduce equation (1) into equation (2), we will obtain

$$(g - t) + r \times \frac{B}{Y} = \dot{b} + \frac{B}{Y} \times \frac{\Delta Y}{Y} + \frac{\Delta M}{Y}$$

Noting, $\frac{\Delta Y}{Y} = x$ the result will be

$$\dot{b} = (g - t) + (r - x) \frac{B}{Y} - \frac{\Delta M}{Y} \quad (3)$$

If $r < x$, then either a budget surplus ($g-t$) or a money supply will be necessary. The ratio debt/GDP will become stable when

$$(r - x) \frac{B}{Y} = \frac{\Delta M}{Y} + (t - g) \quad (4)$$

Equation 4 shows that when the interest rate to the government debt gets increased faster than the GDP, the ratio between debt and GDP gets increased without limits. In other words, the deficit may explode. The increase of the debt accumulation can be stopped if the primary deficit (expressed as a percentage of the GDP) turns into surplus ($g - t < 0$). Thus, if the interest rate exceeds the rate of economic growth, either the stabilization of a primary surplus ($t > g$), or the increase of the money quantity will be necessary, which has to be enough so as to stabilize the ratio between debt and GDP (by Grauwe, 2003). On the other hand, relation 4 shows that the stabilization of the public debt at its sustainable level depends on the following: a national economy's capacity to generate primary surpluses, the interests to which the markets grant loans to the state, according to the attached risk premium, as well as its own rate of economic growth.

If a country is part of a monetary union, then the effects are the more important. A country encountering problems related to the sustainability of the budget/public debt sustainability generates negative externalities within that monetary union. In case a country allows the increase of the current budget deficit so that the interest rate to the government debt exceeds the rate of economic growth, then it will be constrained to appeal more and more frequently to the capital markets from the monetary union, thus generating pressures meaning the increase of the interest rates. But the increase of the interest rates results in the increase of the debt burden for the other countries from the monetary union. If the governments of these countries decide to stabilize the ratio between debt and GDP, they will be forced to adopt restrictive fiscal policies. Consequently, an unsustainable increase of some countries' budget deficits will force other countries from the monetary union to follow deflationary policies and exactly these countries support the necessity of a control mechanism which makes the restrictions for the extent of the budget deficits possible. Another possible negative externality of the unsustainable budget deficits affect the central bank from the monetary union (ECB). The countries affected by the increase of the interest rates may put

pressures upon the central bank, meaning the relaxation of the monetary policy. Thus, the unsustainable fiscal policies promoted by the national governments may come into conflict with the monetary policy which covers the entire monetary union (Grauwe, 2003).

Determining the limit of the sustainable public debt and of the insolvency

The sustainability relation described above may also be viewed from another perspective. Thus, the relation between the term $(r-x) \times d$, which does not represent but *the net financing need*, and (pb) – primary surplus, or rather *a country's capacity to generate primary surpluses* (as it is described in IMF, 2011) determines *the sustainable level of a country's public debt*. (Figure 1). It is well known that a higher and higher level of the public debt determines a less and less sustainable fiscal policy and debt. This is because – *ceteris paribus* – a higher debt supposes a higher primary surplus in order to support it. Moreover, higher rates of the debt in the GDP are usually associated with higher interest rates and, very likely, low rates of economic growth, this creating, again, a primary surplus which is too high to be able to balance the situation again. Hypotheses such as the existence of high interest rates or of a low economic growth, for example, result in a less favorable dynamics of the public debt, thus requiring an increase of the primary balance in order to stabilize the share of the public debt in the GDP, which could further determine modifications in the analysis related to the debt sustainability.

The empirical evidences show that the countries starting from high shares of the public debts in the GDP are more sensitive to the shocks determined by the increase of the interest rate and/or by the decrease of the economic growth rate. The higher the initial level of the debt, the greater is the impact of a given increase of the interest rate or of a decrease of the economic growth upon the primary surplus required to maintain the debt stable. Beside certain levels, a higher level of the public debt results in a low rate of economic growth on a long-term (Kumar, Woo, 2010).

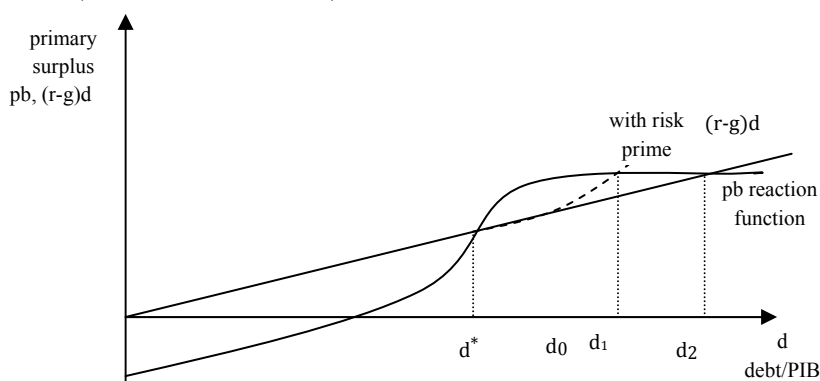


Figure 1. Limit of the sustainable debt

Point d^* is the point in which $(r-x) \times d$ is equal to pb and it represents the sustainable level of the public debt. We can notice that in the first part of the chart the curve describing the primary surplus-generating capacity (pb reaction function) is more elastic than in the second part. This means that, starting from the initial levels of a low debt, then the necessity to generate a primary surplus is quite low. In the second part, the primary surplus-generating capacity saturates, this meaning that, beside the level d^* , any increase of the debt results in a necessity to generate much higher primary surpluses. As we have previously shown, if the own rate of economic growth is lower than the interest to which the state grants loans, then it is necessary to generate primary surplus in order to stabilize the debt. An economy's primary surplus-generating capacity is determined based on an estimation made for the reaction function of the fiscal policy.

3. Public debt sustainability in Romania. Effects under the terms of entry into the Euro zone

Under the terms of Romania's proposing to be part of the Euro zone, we make further a risk analysis for Romania's public debt sustainability for the period 2010-2015, after a procedure calibrated according to the public debt sustainability made by World bank experts, the resulting toolkit providing indicators able to identify the risks and vulnerabilities of the debt. This toolkit uses three categories of variables as inputs: macroeconomic, budgetary and related to the debt, making calculations starting from the trajectory of the public debt in the GDP to the profile of the public debt, making an analysis of the risks related to re-financing and cash, by using Monte Carlo simulations. Moreover, we may estimate the risks associated with the shocks upon the public debt as a result of various hypotheses related to the evolution of the rate of exchange, of inflation and of the real GDP increase rate, thus generating various stochastic scenarios.

The inputs necessary to the analysis are divided into three categories: a) Macroeconomic variables (the real economic growth rate, the initial GDP, the domestic inflation rate, the foreign inflation rate, the share of the tradable goods sector in the GDP, the rate of exchange and the real interest rate to the initial debt and to the new debt – domestic and foreign); b) Budgetary variables (the share of the primary budget balance in the GDP and the initial payments with interests to the public debt) and c) Variables related to the public debt (the initial weight of the debt in the GDP expressed in national currency, the maturity profile for the initial debt stock expressed in the national currency, the initial share of the debt in the GDP expressed in foreign currencies, the maturity profile for the initial debt stock expressed in foreign currencies, the share of the

debt in the newly created debt expressed in foreign currencies and the maturity profile of the newly created debt).

In the first scenario, we analyzed the public debt sustainability based on the official macroeconomic hypotheses of the National Forecast Commission and the Ministry of Public Finance. The share of the tradable goods sector has been estimated based on the added value brought by the output in the total added value. The real rate of interest has been calculated based on the data provided by the National Bank of Romania. The estimates for the primary budget balance have been based on the hypotheses provided in the Government Debt Management Strategy for 2011-2013. Considering the macroeconomic data from the official scenario, we have obtained a trajectory for the dynamics of the public debt, which is presented in Table 1.

Table 1

The dynamics of the public debt – The official scenario

Years	Debt to GDP (%)	Total debt dynamics mld Ron
2010	34.29	180,0
2011	36.74	205,9
2012	38.43	227,9
2013	38.56	242,6
2014	37.87	251,9
2015	37.45	249,6

Source: author's calculations.

We can notice that the share of the public debt in the GDP will increase from 36.7% in 2011 up to 38.6% in 2013, and then tending to decrease up to 37.9% in 2014, 37.45% in 2015, respectively as a result of the high rates of economic growth taken into account and of the decrease of the real interest rate. Moreover, the primary deficit as a share in the GDP is improving from 2.7% of the GDP in 2012 up to 0.5% of the GDP in 2014.

In the second scenario, we have introduced four hypotheses with a high realism degree, accounting for the nature of the new macroeconomic European framework and the new domestic macroeconomic situation. Thus, we have considered as follows: the decrease by one percent of the economic growth rate in each of the years 2012/2015; the increase by one percent of the real interest rate in each of the years 2012/2015; the increase by one percent of the primary budget deficit in each of the years 2012/2015 and the maintenance of the estimates for the domestic inflation, the foreign inflation and the share of the tradable goods in the GDP.

Table 2

The dynamics of the public debt – The pessimistic scenario

Years	Debt to GDP (%)	Total debt dynamics mld Ron
2010	34.29	180,0
2011	36.74	205,9
2012	39.95	236,2
2013	39.64	249,4
2014	41.26	274,5
2015	41.98	280,7

Source: author's calculations.

The sensitivity analysis for the public debt in the hypothesis of the pessimistic scenario shows a share of the public debt in the GDP of 39.95%, this representing an increase by 1.5 percents of the GDP compared to the estimate made in 2012 for the same year. The major difference for the public debt dynamics in the two estimates is given by the fact that, in the pessimistic scenario, the share of the public debt marginally decreases in 2013, up to 39.64% of the GDP, and then it increases in 2014 up to 41.26% of the GDP (in the optimistic scenario, the share of the public debt in the GDP was getting marginally increased in 2013 compared to 2012, from 38.43% of the GDP up to 38.56% of the GDP, after which it was getting decreased in 2014 up to 37.87% of the GDP).

Moreover, the result of the calculations made was that the constant primary surplus necessary to stabilize the public debt to the level from 2011, considered sustainable for the Romanian economy (namely 37% of the GDP), is 0.3% of the GDP (the hypothesis of the official scenario) and 0.8% of the GDP (the hypothesis of the pessimistic scenario). As solutions for improvement of the debt sustainability and/or risk management, we may propose: the annual review of the government public debt management strategy or, whenever the market conditions and/or the financing needs require it; maintenance under control of the refinancing risk through *bond exchange* instruments (conversion of the medium-term securities into long-term securities) and *buyback* (rebuying securities in advance) – these instruments being specific to the secondary securities market; extension of the securities due time by issuing a significant proportion from the financing need with medium and long-term due times, obtaining loan contracts from international financial institutions with medium and long-term due times, the development of a financial buffer in foreign currency which could cover the financing need of the deficit and the refinancing of the public debt for approximately four months; the active management of the cash by placing fixed-term deposits at the Romanian financial institutions, collateralized with securities; the performance of repo and reverse repo operations (buying securities with the seller's obligation to rebuy them at a higher price within the term agreed in the convention); conventions agreed with

the pension funds from pylon 2 so that they could rebuy the securities on a medium and long term; the analysis of the opportunity to rebuy, in advance, for certain loans previously agreed upon at very high interests, mutually agreed with the financing institutions; the issuance of inflation indexed securities on the domestic market (especially for the population and for the banks, in order to diversify the risk); the decrease of the foreign exchange risk by increasing the share of the government public debt denominated in lei in the total debt; the active management of the foreign exchange risk by using foreign exchange swap instruments; the active management of the interest rate by using the interest rate swap instruments; the increase of the share of the public debt with fixed interest; the development of the occurring opportunities related to the financing on the foreign markets; the constant going out on the foreign markets in order to increase the investors' confidence.

Conclusions

When the crisis appeared in the whole world, it shook even the most solid European economies, and, until the end of 2009, the Euro zone entered the first stage of a severe public debt crisis. On the background of the severe structural problems, the lack of competitiveness has constituted the main factor resulting in the severe deterioration of the European public finances. The external deficits have put additional pressure upon the fiscal deficits. Practically, they entered a vicious circle. One of the main lessons of the current crisis for a country, and much more for a country which is part of a monetary union or which prepares itself to enter a monetary union, is that the public debt sustainability becomes an essential condition. The public debt stabilization to its sustainable level depends on the following: a national economy's capacity to generate primary surpluses, the interest to which the markets grant loans to the state, according to the attached risk premium, as well as its own rate of economic growth. This means that the idea of debt sustainability must be thought of in individual terms, as long as it depends on its own economic conditions. As for Romania, the risks related to the above-mentioned estimates – both scenarios – may be considered to be of medium intensity. The risks are rather related to the necessity to generate primary surplus in order to stabilize the debt at its sustainable level.

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Note

⁽¹⁾ Adapted from Llewellyn and P. Westaway, 2011.

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