EVOLUTION OF THE MAIN INDICATORS OF PUBLIC DEBT SUSTAINABILITY IN THE PERIOD 2014-2018 IN ROMANIA

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Abstract: *Romania's public debt is below the value registered by most of the EU member states, but its accelerated evolution and the pro-cyclical nature of the fiscal policy require a careful evaluation. The sustainability of the public finances must be a major challenge for the public policies. In order to maintain a sustainable level of the public debt, it is necessary to achieve the medium-term budgetary objective, to ensure a downward trend of the public debt share in the gross domestic product, by strictly observing the rules of budgetary policy. This paper shows an analysis of the public debt sustainability in Romania, for the period 2014 - 2018.*

Keywords: Public debt, Public debt sustainability, Budget deficit, Primary balance

JEL Classification Codes: H63, G28.

1. INTRODUCTION

The sustainability of public finances has been brought to the forefront by the significantly increasing level of debt following the economic and financial crisis that started in 2008.

The sustainability of public finances, also called the fiscal-budgetary sustainability, is the ability of the government to manage medium and long-term risks or unforeseen situations without having to make significant adjustments to budgetary expenditure, revenue or deficit with economically or socially destabilizing effects. (Romanian Parliament, 2015)

According to OECD, the fiscal sustainability is a multidimensional concept that includes the solvency and stability of several factors such as the economic growth, the taxation and the equity between generations. It generally interferes not only in the financial sector, but also in the social and political sectors. (OCDE, 2009)

The public debt sustainability is a concept that interrelates with the sustainability of public finances and fiscal policy, representing "the degree to which a government can maintain the existing programs and meet the demands of creditors, without increasing the burden of public debt on the economy." (INTOSAI - International Organization of Supreme Audit Institution)

Therefore, a fiscal policy is considered sustainable when it makes it possible to stabilize the debt - GDP ratio and preferably below the initial value. In order to ensure a clear vision of the future, a state must necessarily ensure that this ratio does not always slip and still holds a fair value.

There is no single threshold for the public debt sustainability, since each country has its own particularities. The emerging countries (including Romania) usually have a lower threshold of sustainability than the developed countries, because they are not issuers of reserve currency, their states having a lower capacity to collect revenues.

The borrowing capacity of the developed countries is superior to that of the emerging countries.

The European fiscal rules include a preventive component, which defines a balanced or surplus budgetary objective in the medium term, as well as a corrective component, the excessive deficit procedure (EDP), which is triggered when the budget deficit exceeds 3% of GDP or when the debt exceeds 60% of GDP, without a satisfactory and credible reduction perspective.

2. METHODOLOGY

A classic EU method (ECB, 2011) of estimating the fiscal effort required to stabilize or reduce the ratio of debt is that based on the inter-temporal budget constraint, a constraint that refers to the fact that the stock of public debt[1] registered at a given time (t) is equal to the remaining public debt at a given time (t-1), plus the interest paid for that debt, minus the primary budget surplus (or plus the primary budget deficit). This constraint is expressed algebraically by:

$$Dt = Dt\text{-}1 + r^* \, Dt\text{-}1 \; \text{-}Spt \qquad (1)$$

where:
Dt-1and Dt: the stock of public debt in the previous year and respectively, in the current year
r: effective interest rate defined as interest payments divided by public debt stock at the end of previos year
SPt: the primary balance of year t, representing the budget balance before interest expenses

Empirically, in order to stabilize the debt, the primary surplus must cover at least the interest expenses. If the primary balance is in deficit or the primary surplus is lower than the interest, the debt will increase from year to year creating the effect of a "snowball". In short, the maturing rates related to the previous debt, which the state will not be able to repay due to lack of resources, could be paid by subscribing to a new loan.

In order to obtain the above values proportional to the gross domestic product, we divide relation no. 1 to GDP:

$$\frac{Dt}{GDPt} = \frac{(1+r)*Dt\text{ - }1}{GDPt} - \frac{SPt}{GDPt} \qquad (2)$$

But the gross domestic product in the current year can be determined based on the gross domestic product in the previous year and the economic growth rate c:

$$GDPt = (1+c)\; GDPt\text{-}1 \qquad (3)$$

where
c is the nominal GDP rate

Using the equation (3), we can rewrite the equation (2) as follows:

$$\frac{Dt}{GDPt} = \frac{(1+r)*Dt\text{ - }1}{(1+c)*GDPt\text{ - }1} - \frac{SPt}{GDPt} \qquad (4)$$

[1] The public debt refers to the gross debt of the public administration consolidated, at nominal value, at the end of the year, according to the EC regulation 479/2009 with the subsequent modifications.

If we denote by:
dt = the share of public debt in GDP in the current year
dt-1 = the share of public debt in GDP in the previous year
spt - the share of the primary balance in GDP in the current year
equation (4) becomes

$$dt = \frac{(1+r) * dt\text{ - }1}{(1+c)} - spt \qquad (5)$$

To determine the evolution of the government debt share in GDP, we subtract dt-1 from equation (5)

$$\Delta dt / t - 1 = \frac{r-c}{(1+c)} * dt\text{ - }1 - spt \qquad (6)$$

Equation (6) shows that the variation of the D / GDP ratio increases as the deficit and the interest rate are higher and the rate of growth is low. In contrast, the variation is lower (or even negative) when there is a budget surplus, the growth rate is significant, and the interest rate is low.
Therefore, a state that wants to stabilize its ratio must have zero variation, which leads to the following equality (Buiter, 2010):

$$spt = \frac{r-c}{(1+c)} * dt\text{ - }1 \qquad (7)$$

This equality leads to the following conclusions:

- If the interest rate is higher than the growth rate, a primary budget surplus is essential for stabilizing the ratio. In this case, the higher the initial debt weight (dt-1) is, the higher the primary surplus needed to stabilize the ratio becomes. As a result, the higher the initial debt, the more difficult it is to stabilize the public debt rate. The larger the ratio is, more budgetary efforts are necessary.
- On the other hand, if the growth rate is higher than the interest rate, a primary deficit is possible (allowed).
  Having said that, there are two main elements that determine the evolution of the debt:
  • the difference between the interest rate and the growth rate of the economy
  • the primary budget balance as a percentage

In conclusion, in order to stabilize the share of debt in GDP, there are two possibilities: either the primary balance reaches a surplus, or the difference between the growth rate and the interest rate is positive.

Next, we will highlight the contribution of the real interest rate and the real GDP growth to the change in the share of public debt in GDP. The accumulation effect of the public debt resulting from the difference between the interest rate on the public debt and the rate of real economic growth is known as the effect of the snowball.

Applying Fisher's relation (8) to transform the nominal change rate of GDP (c) into real rate (g) in the equation (5)

$$(1+c) = (1+g)(1+\pi) \qquad (8)$$

where:
π - inflation rate (GDP deflator),
g- real GDP growth

we get:

$$dt = \frac{(1+r) * dt - 1}{(1 + g + \pi + \pi * g)} - spt \qquad (9)$$

To determine the evolution of the public debt share in GDP, we subtract dt-1 from equation (9):

$$\Delta dt / t - 1 = \frac{r - \pi(1+g)}{(1 + g + \pi + g * \pi)} * dt - 1 - \frac{g}{1 + g + \pi + g * \pi} * dt - 1 - spt + at \quad (10)$$

or:

$$\Delta dt/t\text{-}1 = \text{snowball effect} - \text{spt} + \text{at} \qquad (11)$$

where:

- *the snowball effect,* defined as the real interest rate contribution and the real GDP growth effect contribution to change the public debt share in GDP, respectively:

$\frac{r - \pi(1+g)}{(1 + g + \pi + g * \pi)} * d_{t-1}$ representing the real interest rate contribution to the change in the public debt share in GDP,

$-\frac{g}{(1 + g + \pi + g * \pi)} * d_{t-1}$ representing the real GDP growth contribution to the change in the public debt share in GDP.

- *spt* **-** the share of the primary balance in GDP, in the current year
- *at* – adjusting the stock flow in the current year, including the modification of the public debt, which cannot be explained by the budget balance. It takes into account the accumulation of financial assets, the changes in the value of debt denominated in foreign currency and the statistical adjustments.

3. ANALYSIS OF THE RESULTS

At the end of 2018, the public debt, determined according to the EU methodology, represented 35% of GDP.

Although the indebtedness of Romania continues to be lower than the indebtedness registered by other European national economies and within the limits accepted by the nominal convergence criteria (below the limit of 60% of GDP stipulated by the Maastricht Treaty), what is worrying is its acceleration tendency, a fact that requires an analysis of the public debt sustainability.

The public debt sustainability must be evaluated from several perspectives - its size and evolution, the cost of financing, as well as the structure of the public debt portfolio (in terms of maturity, issuing markets, investor base, exposure to currency risk).

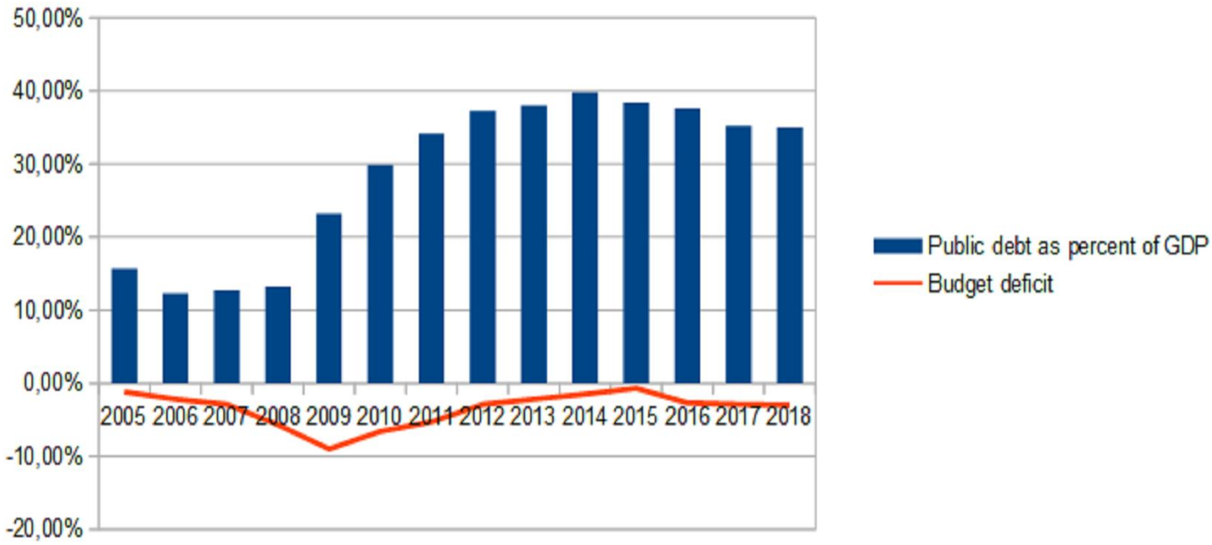

Figure 1. Public debt and budget deficit as percent of GDP

Source: Information obtained by processing Eurostat's data

The increase of the public debt from a value below 15% of GDP (the average of the period 2005-2008 was 13.5% of GDP) to 35% in 2018 occurred in a short period. The debt increase in the period 2009-2011 (mainly due to the accumulation of significant budget deficits between 2008 and 2011, reaching a peak of 9.1% in 2009) was mainly the result of the loans accessed from the international financial institutions (IMF, EU, WB) and the government securities issued on the domestic market but also on foreign capital markets, starting with March 2010, in the context of restrictive conditions on the international financial markets. The evolution of the public debt from 13.2% of GDP in 2008, to 23.2% in 2009 and subsequently to 34.2% in 2011 was influenced significantly by the effects of the global crisis, in order to avoid a major imbalance of the balance of external payments, Romania having to resort to a package of financial assistance granted by the IMF and the EU, according to the agreement in 2009, in the amount of 20 billion euros. Starting with 2011, in accordance with the provisions of the agreement concluded with the international partners, the financial reserve in foreign currency was gradually established.

In the period 2012-2014, the public debt continued to increase (in 2014 reaching 39.8%, the highest value in GDP ever recorded), under the pressure of financing the budget deficits, of the needs to consolidate the financial reserve in foreign currency at the disposal of the Treasury, as well as the service related to the repayment of the debt, respectively by refinancing (rolling) it.

Due to the excessive deficit procedure launched by the European Commission in 2009 (to exceed the budget deficit ceiling of 3% of GDP, in 2008) aiming at a sustainable reduction of the budget deficit by 2012, to below 3% of GDP, the process of fiscal consolidation was initiated, with a result in the plan of restoring the budgetary balance, but with the costs of hard adjustments such as the reduction of the wage expenses and the reduction of the public investments. The fiscal consolidation measures materialized in the reduction of the budget deficit, which reached 2.9% of GDP in 2012, and subsequently maintaining the fiscal policy in a prudent environment led to the improvement of the public debt sustainability, registering for the first time, in 2015, the decrease in the share of public debt in GDP.

The Romanian fiscal position has deteriorated since 2016, as a result of the pro-cyclical policies, the deficit of the consolidated general budget resumed its upward trend to reach a 3% threshold in 2018, with the risk of triggering the excessive deficit procedure.

The expansionary policy started in 2016, by applying the Fiscal Code of 2015, continued in the years 2017-2018, has led to the depletion of the fiscal space obtained in the period 2012-2015. The budget deficit increase is the effect of the structural deficit[2] increase, which significantly has exceeded the medium term target of 1% since 2016, assumed both domestically, by Law no. 69/2010, the Law of fiscal-budgetary responsibility, as well as externally, by the European Tax Compact of 2012.

The significant deviation of the structural deficit since 2016 from the commitments made within the medium-term budgetary objective may create some difficulties in maintaining the sustainability of public debt in an adverse scenario. The European Commission (EC) has included Romania in the Procedure for significant deviation from the medium-term objective, recommending that the nominal growth rate of government spending should be maintained at a maximum of 3.3% in 2018, which would correspond to a structural adjustment of 0.8 % of GDP.

The deepening of the budget deficit starting with 2016, due to the continuation of an expansionary fiscal-budgetary policy, has resulted in the increase of the financing need (from 1.5% of GDP in 2014, to 2.7% of GDP in 2016 and to 3% in 2018), a fact that may create pressures on the cost of financing the budget deficit and implicitly on the sustainability of public debt in the medium term. (see Table no.2)

The rising risks associated with the budget deficit were also reported by the main rating agencies. Currently, Romania ranks last in the investment category, any rating drop meaning the transition to the high risk assets category. (countryeconomy.com/ratings, 2019)

The indebtedness of a country should not be analyzed only in a strictly mathematical size, but it should also be correlated with the level of public debt per inhabitant and the level of GDP per inhabitant, because, at the same percentage of GDP, the degree of supportability of the public debt burden is much lower in the case of developing countries (with a low level of GDP) compared to the developed ones (which, implicitly, have higher GDP). The sustainable fulfillment of the Maastricht criteria is conditioned by the attainment of a high level of real convergence, the level of GDP / inhabitant representing the most synthetic indicator in this regard.

Table 1. Public debt and GDP per capita between 2005-2018

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Public debt (million euros)	12,398	12,586	14,124	16,610	27,436	36,934	44,187	49,446	53,429	59,211	60,535.97	62,882	64,630.4	70,766.1
Nominal GDP (million euros)	79,224	97,216	127,632	146,591	125,214	125,409	131,925	133,147	143,802	148,733.2	157,549.34	167,684.9	183,858.75	202,452.9
Population (million inhabitants)	21.26	21.13	20.64	20.44	20.30	20.20	20.10	20.02	19.95	19.87	19.76	19.64	19.53	19.40
GDP per capita euro/inhabitant	3,700	4,600	6,100	7,100	6,100	6,200	6,500	6,600	7,200	7,485	7,973	8,538	9,414	10,436

[2] the structural deficit represents the budget deficit adjusted with the cyclical component estimated on the basis of the potential GDP

GDP growth rate per capita	-	24%	33%	16%	-14%	2%	5%	2%	9%	4%	7%	7%	10%	11%
GDP per capita euro/UE inhabitant	-	-	26,100	26,100	24,500	25,500	26,200	26,600	26,800	27,700	29,100	29,300	30,000	30,900
Public debt euro/inhabitant	583	596	684	813	1,352	1,828	2,199	2,470	2,679	2,980	3,064	3,202	3,309	3,648
Public debt growth rate per capita		2%	15%	19%	66%	35%	20%	12%	8%	11%	3%	5%	3%	10%

Sources: Eurostat, IMF and authors' calculations

Since the population of Romania has been in a permanent decline and the volume of the country's public debt has registered a continuous rise, the debt level of the population has increased rapidly, recording the value of 3648 euros / inhabitant at the end of 2018, an increase of 6.26 times compared to the value of 583 euros / inhabitant registered in 2005.

The same upward trend was recorded by the GDP indicator in euro / inhabitant during the period 2005-2018, at the end of 2018 recording the value of 10436 euros / inhabitant, respectively 2.82 times higher than the value of 3700 euros / inhabitant registered in 2005. However, Figure 2 shows that the rate of public debt / inhabitant recorded a more pronounced increase than the rate of GDP / inhabitant during the period 2005-2018, indicating a lower degree of supportability for the population compared to the developed countries.

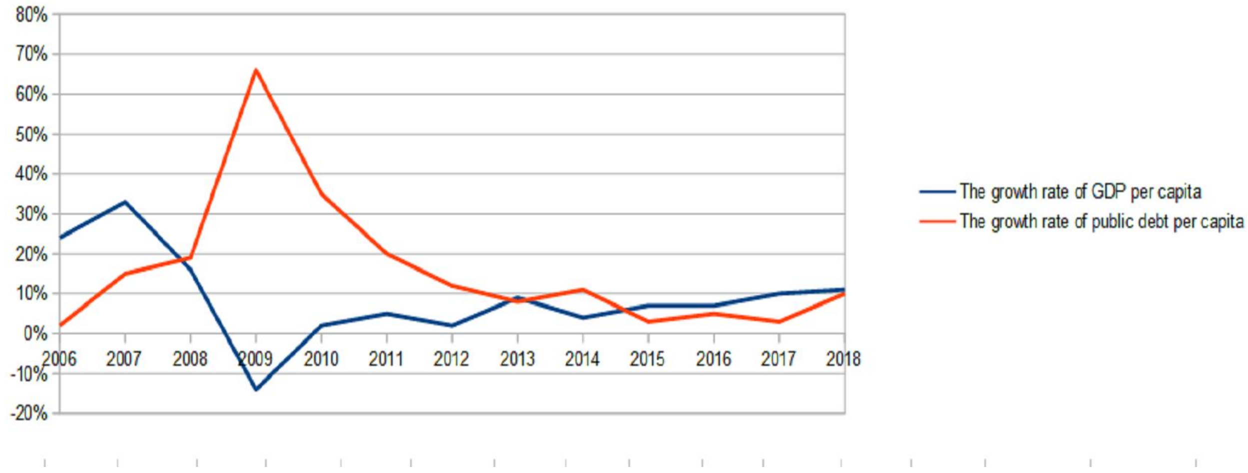

Figure 2. The growth rate of GDP and public debt per capita
Sources: Eurostat, IMF and authors' calculations

Compared to the average EU level, Romania is experiencing major gaps, the most edifying indicator being the GDP / inhabitant. In the case of GDP per capita, an indicator that measures the economic activity, there are significant differences between the Member States. In 2018, the GDP per capita, expressed in euros, ranged from 25% of the EU average registered in Bulgaria to 313% in Luxembourg, with Romania on the antepenultimate place in the EU, with 34% of the average EU GDP per capita.

Although from the point of view of the public debt share and the deficit in GDP, Romania is below the limits set by the Maastricht Treaty and among the first countries of the EU, there is an important gap compared to the EU Member States in terms of the living standards, our country ranking antepenultimate.

To make a complete analysis of the public debt sustainability, one should consider not only the size, but also the cost of financing and its structure (from the point of view of the issuing markets, the investor base, the currencies, the residual maturity, the maturity, the typology of the instruments).

During the analyzed period (2014-2018), from the point of view of the issuing markets, the evolution of the public debt structure was positive since the share of the internal debt has increased from 47.2% in 2014, to 52% in 2018, to the detriment of the external debt (Figure 3). Regarding the sources of financing, the banking sector holds about one half of the public debt. Given the small size of the banking system, its focus regarding the government sector is high, despite a low public debt share in GDP.

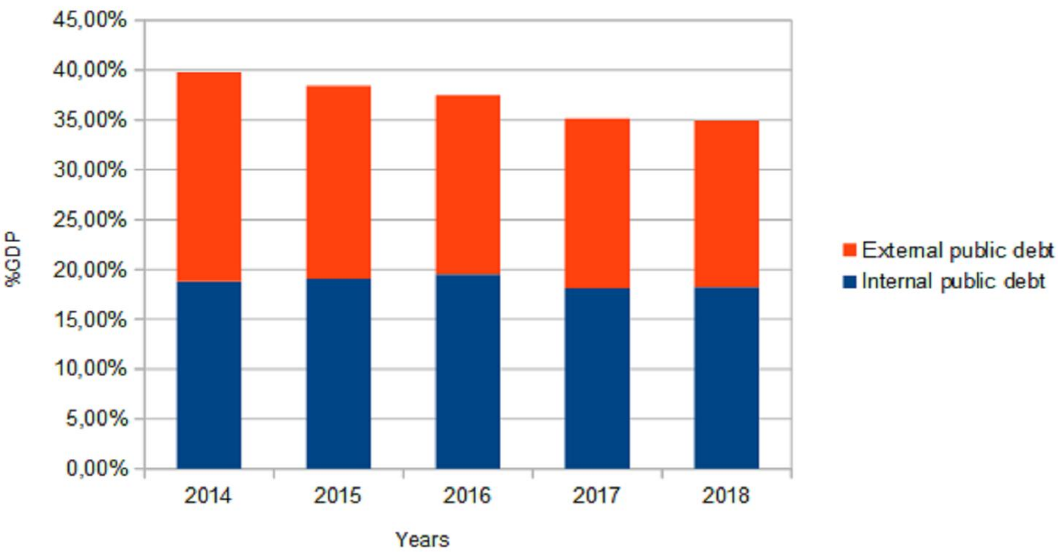

Figure 3. External and internal public debt

Source: Information obtained by processing data from the Ministry of Public Finance

From the point of view of the currency structure, the public debt has evolved favorably, in the sense of reducing the share of debt denominated in foreign currencies from 57% in 2014, to 50% in 2018 and implicitly of increasing the share of public debt denominated in RON from 43 % in 2014, to 50% in 2018 (Figure 4).

This decreasing trend of the public debt share denominated in foreign currency contributes to the decrease of the foreign exchange risk and to the decrease of the adverse consequences on the access to financing, in case of a period of risk aversion of the international investors towards the emerging markets.

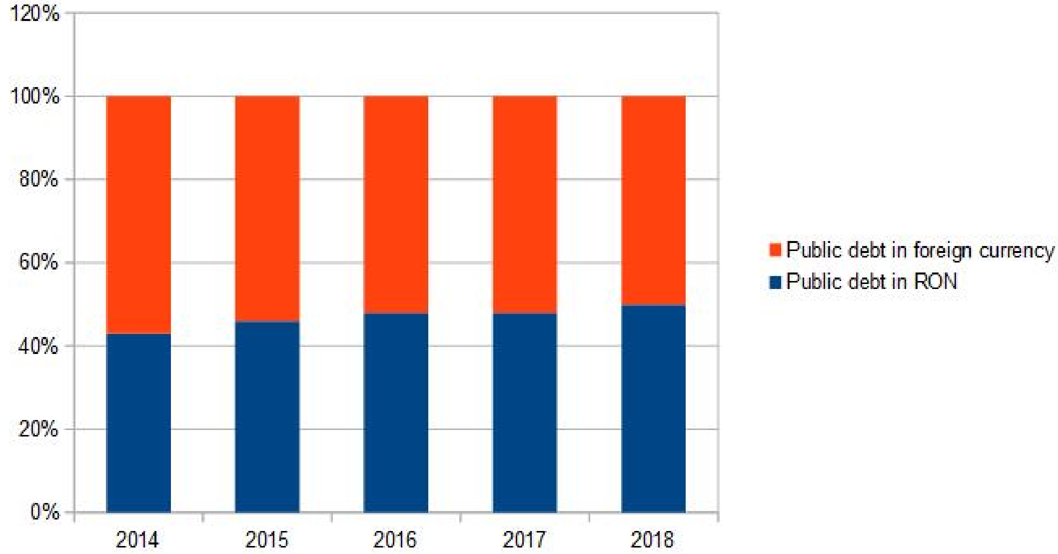

Figure 4. Public debt by currency

Source: Information obtained by processing data from the Ministry of Public Finance

The average maturity remaining for the public debt increased from 5.3 years in 2014 to 6.3 years at the end of 2018, amid the increase of the average maturity of the bonds issued on the external market by 1.5 years, with the effect of reducing the risk of refinancing (Figure 5). At the same time, the share of debt issued in the medium and long term is 97% at the end of 2018, compared to 93% at the end of 2014 (Figure 6). Another element able to limit the refinancing risk, but also the currency risk, is represented by the MFP foreign currency reserve, constituted to cover the financing need for a period of 4 months.

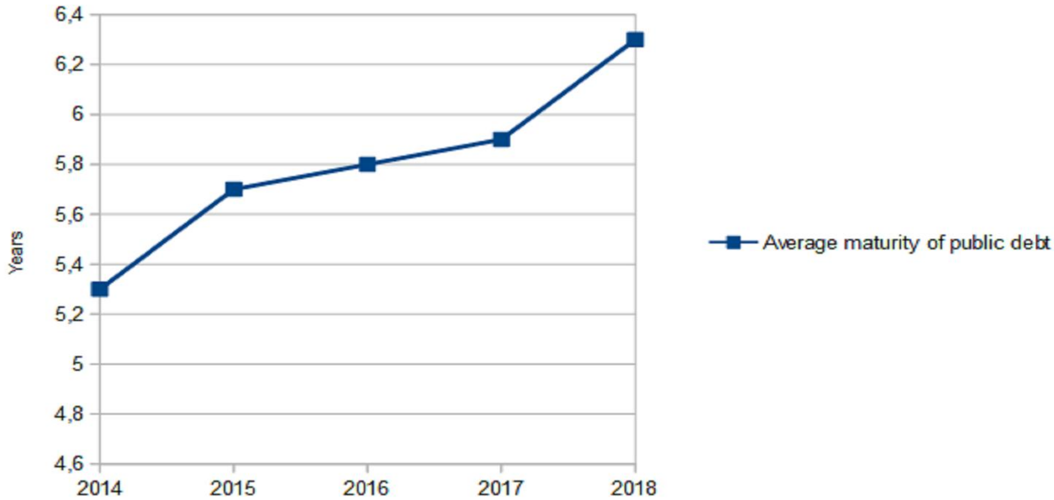

Figure 5. Average maturity of public debt

Source: Information obtained by processing data from the Ministry of Public Finance

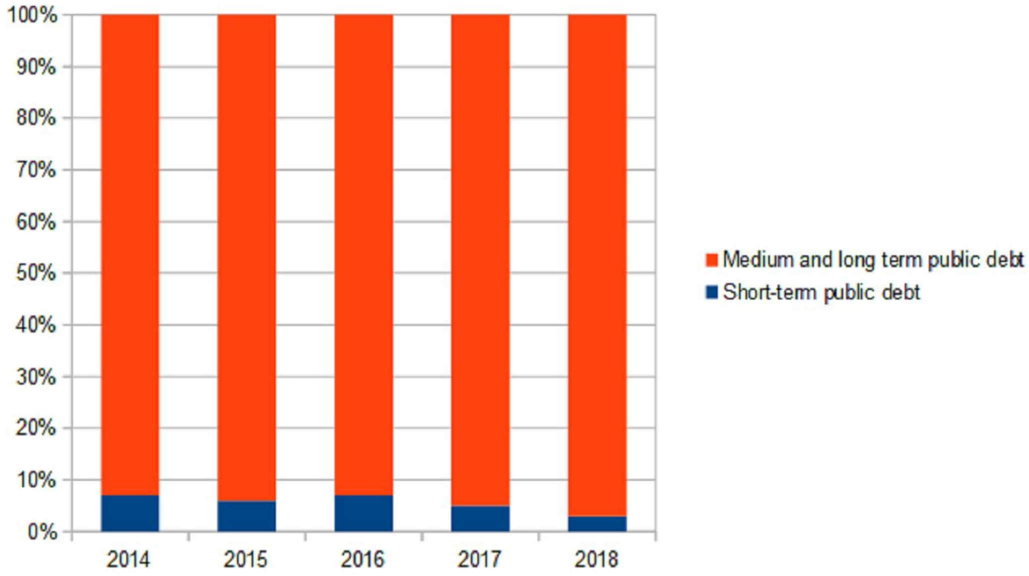

Figure 6. Public debt structure by maturity

Source: Information obtained by processing data from the Ministry of Public Finance

The government securities have significantly increased their shares from 69% in 2014 to 82.5% in 2018 to the detriment of loans (Ministry of Public Finance, 2014-2018), the public debt portfolio becoming a majority tradable one (the government securities being by far the most liquid instrument available on domestic financial markets). However, the impediment consists in the fact that the main holder is the banking sector, although its share has decreased below 50%, Romania recording one of the highest weights of banks exposure to the government sector. This risk (refinancing) factor can be mitigated on the long term by increasing the demand from institutional investors, such as pension funds or other capital market participants.

The cost of financing materialized in the interest payments related to the public debt has decreased significantly, reaching 1.2% of GDP at the end of 2018, compared to 1.7% of GDP in 2014. This decrease is due to both the real GDP growth and the average yields for the debt issued in RON, from 5.3% in 2014 to 3.8% in 2018. (see Table no.2)

The stabilization of the public debt at its sustainable level depends on: the capacity of the economy to generate primary surpluses, the interest the state borrows on financial markets, as well as its own rate of economic growth. In Romania, the main risk is that of not generating the primary surplus.

In order to deepen the analysis of the public debt sustainability, we highlighted the effect of the snowball, respectively the influence of the real growth and the real interest, but also the influence of the primary balance on the change of the public debt share in GDP, by applying formula no. 10 from the methodology; the calculations can be found in Table no 2, based on the data provided by the IMF and Eurostat.

Table 2. The snowball effect and the primary balance on the change of the public debt share in GDP between 2014-2018

	2014	2015	2016	2017	2018
Public debt* (as percent of GDP) – d	39.8%	38.4%	37.6%	35.2%	35.00%
Real GDP growth – g	3.00%	3.90%	4.80%	6.90%	4.10%
Inflation rate (GDP deflator) - π	1.70%	2.40%	2.10%	5.30%	5.90%
Nominal GDP growth - c	4.70%	6.40%	7.00%	12.60%	10.20%
Effective interest rate - r	4.40%	3.80%	3.80%	3.60%	3.80%
Interest (as percent of GDP)	1.70%	1.60%	1.31%	1.30%	1.20%
Primary balance (as percent of GDP)- sp	0.20%	0.90%	-1.20%	-1.60%	-1.80%
Budget balance (as percent of GDP)	-1.50%	-0.70%	-2.70%	-2.90%	-3.00%
Stock flow adjustments - a	2.10%	0.50%	-0.82%	-0.98%	0.06%
Real interest rate contribution	0.97%	0.49%	0.57%	-0.69%	-0.75%
Real GDP growth efect contribution	-1.10%	-1.46%	-1.72%	-2.30%	-1.31%
Snowball effect	-0.13%	-0.97%	-1.15%	-2.99%	-2.06%
Changes in the ratio public debt (as percent of GDP)	1.77%	-1.37%	-0.77%	-2.37%	0.20%

Sources: Eurostat, IMF and authors' calculations

* The public debt, according to the EU methodology, refers to the gross debt of the public administration consolidated, at nominal value, at the end of the year, according to the EC regulation 479/2009 with the subsequent modifications.
** The primary balance represents the budget balance before the interest expenses, eliminating that "non-discretionary" component of the budgetary policy, the interest expenses.

As it can be seen from the results in Table no., the contribution of the real rate of economic growth was significant during the analyzed period, having a positive influence in reducing the share of public debt in GDP. Also, the contribution of the real interest rate has led to the decrease of public debt share in GDP in the years 2017 and 2018, but their beneficial effect was minimized by the recording of the primary deficit starting with the year 2016 (1.2% of GDP) and its increase in 2017 and 2018. As a result, the level of public debt decreased at a slower rate than possible in the period 2015-2018. The favorable economic conditions should have been used to rebuild fiscal buffers in time to absorb the new shocks when they came,last but not least, a predictable increase in interest rates that have been predicted.

Based on the autumn forecast of the European Commission in 2019, Romania is going to experience a worsening of the primary deficit, from 1.8% of GDP in 2018, to 2.4% in 2019, 3.2% in 2020, until 4.8% of GDP in 2021. Real GDP is forecast to grow by 4.1% in 2019, 3.6% in 2020 and 3.3% in 2021 (a deceleration from 6.9% in 2017). Despite a favorable contribution of the interest rate, the effect of the primary deficit will prevail and the gross public debt will increase in the forecast period from 35% of GDP in 2018 to 40.6% of GDP in 2021. (The European Commission, 2019)

4. CONCLUSIONS

The share of public debt has decreased since 2015, supported by the continuous economic growth and the very favorable financial conditions. At the same time, the other indicators of its sustainability have improved the average residual maturity, the interest costs have reduced, and the investor base in government securities has diversified.

However, due to the high primary deficit and the hypothesis of maintaining the current expansionary and pro-cyclical fiscal policies, we consider that the share of debt in the gross domestic product will be on an upward trajectory and that in the long term it will exceed the reference value of 60% of GDP.

When assessing the fiscal-budgetary sustainability, a careful attention should be paid to the current and potential level of the public debt. The countries with high debts are more vulnerable to the economic recessions and to the interest rate shocks. In the absence of a sufficiently high primary surplus, which could be difficult to maintain over time, the public debt could be unsustainable even without an aging population. Therefore, a high level of public debt may endanger the fiscal-budgetary sustainability.

The National Bank of Romania appreciates that the public debt increase above critical threshold between 40 and 45% of GDP may become problematic at the current level of economic development and the limited capacity of its absorption by the local financial markets, generating risks of debt sustainability in the medium term.

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