

National Debt Management

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Abstract

According to Romania Constitution (Art.136) „the formation, administration, usage and control of state' financial resources, of administrative units, and public institutions are regulated by law”. Also, the law regarding public financing states that the management of public financial resources is accomplished by a unitary system of budgets. This comprehensive, unified, correlated system of sources and resource needs form the general, consolidated budget, which reflects national public financial flows, in terms of formation and their destination, in accordance with the financial policy objectives specific to the period (year.) General consolidated budget represents a justification document of the public financial balance and a tracking one for observance throughout the budget year. The main component of the budget system is the state budget. An important issue regarding the state budget is that regarding the coverage of a country's debts. Therefore, the article clarifies certain issues linked to the primary budget deficit, public debt, and the report between debt and income.

Keywords: *budget deficit, currency reserve, debt management, debt rate, government expenses, government incomes, national debt.*

JEL classification: H61, H62, H63

Introduction

Like any individual, the government has a series of cash reserves in bank accounts, accounts from where money will be withdrawn to pay its debts. If these cash reserves are insufficient to cover expenses, whether there is a deficit, the government has to borrow. These loans can be made either by selling to the public its debt or by borrowing from the Central Bank. In the latter case, very often, it occurs an *inflationary financing* and in the case of *deficit financing by borrowing from the public*, the government is committed to *debt financing*, as shown in Figure 1.

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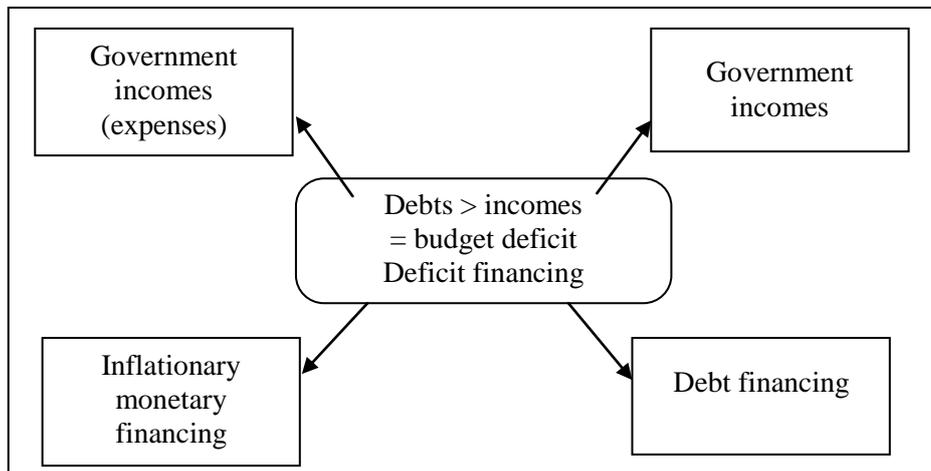


Figure 1. Budget deficit and its financing

To examine budget deficits financing we use the following notations:

B_b = value of bonds sales to the Central Bank;

B_p = value of bonds sales to the private sector;

H = reserve of currency with high purchasing power;

DB = budget deficit measured in real terms;

P = price level;

A = sales of securities (shares) of the government.

The policy of the government budget constraint can be expressed by the equation below:

$$P \times DB = B_b + B_p + A \quad (1)$$

$$P \times DB = H + B_p + A \quad (2)$$

The equation suggests that the *nominal budget deficit* is financed by borrowing either from Central Bank (B_b) or private sector (B_p) or by selling shares (A). Changes in the stake held by the Central Bank over the *treasury debts* cause a corresponding change in the *currency reserve* with high purchasing power (ΔH), so that, in this respect, the Central Bank monetises the debt. Certainly financing through debt and money are standard ways of financing deficits. Sales of values are becoming increasingly important in developing countries, such as Romania, when the government sells public land or public sector enterprises, the returns from sales being used to finance the deficit or to withdraw the public debt. Of course this form of financing should be temporary, because eventually the government will run out of assets to sell.

In the accumulated net debts of government, *public* or *national debt* is significant. A part of government debt is covered by other government agencies and social security system. Since the interest on these debts is paid by another government agency, it is necessary to focus the attention on *government net debt*, i.e the net amount the government owes to the private sector and foreign agents.

Unless we consider monetary financing and asset sales, the national debt is the result of past budget deficits. Periodic sale of securities by the State, generally, is not intended to finance the budget deficit, but to refinance a portion of the national debt that reached maturity. The process by which Treasury finances and refinances *national* (public) *debt* is called *debt management*. Only a part of it is dealing with the current budget deficit, compared with *accumulated debt refinancing*. Reasoning similarly, the same principles apply in the case of a budget surplus, i.e. when the government has a surplus of taxable income in comparison to expenditure. Based on this surplus, the government may withdraw its debts, paying the securities that must be paid, thereby making the *public debt stock* to decline significantly.

“The main objective of *public debt management* is to ensure that the government’s financing needs and its payment obligations are met at the lowest possible cost over the medium to long run, consistent with a prudent degree of risk.” (IMF, 2001)

National debt management is to establish a state *debt management’ strategy* capable of mobilizing the necessary amounts of funding, to achieve the risk and cost objectives set by state institutions as well as other targets set by them, such as maintenance and development of an efficient market for government securities. States should follow that both the level and growth of public debt to be bearable, and public debt service should be provided in various situations by respecting the objectives of cost and risk. Also, it is necessary to maintain the public sector debt on a sustainable path and implement a credible *strategy to reduce the debt*, if it is excessive.

Public debt should be properly structured in terms of interest rates, maturities and currency of loans. A poor structuring, concerning the above mentioned items, and a high level of guarantees provided by the government to loans made by public institutions or private businesses, were factors that contributed to the outbreak or spread of economic crises. Crises were often triggered by strategies that privileged excessively the cost savings of borrowings, resulting in short-term loans with a variable interest rate. They exhibit the state budget to a serious risk if, at the moment of refinancing, market conditions change adversely.

1. Primary budget deficit and interest payments on public debt

We intend to continue to demonstrate that any country that has a primary *budget deficit* will reach a higher total budget deficit, as the country's debt continues to rise due to higher interest that must be paid on public debt and the public debt must be determined according to her relative value, determined by the debt-income ratio (GDP).

Clarifying the issue raised requires that we should first make a distinction between the two components of budget deficit (DB), primary deficit (B_p) and *interest payments* on the public debt, interests that represent the product between

the real interest rate charged by banks (r) and primary budget deficit. As a result, the total deficit will be:

$$DB = B_p + rB_p = (1 + r) B_p \quad (3)$$

In turn, primary (surplus) deficit (B_p) can be determined as the difference between total *government spending* (excluding interest payments) which we denote by G and all *government incomes* (V_G). Therefore:

$$B_p = (G - rB_p) - V_G \quad (4)$$

where the *real interest rate* (r) is determined as a difference between the *nominal interest rate* (i) and the *inflation rate* (q). Therefore:

$$r = i - q \quad (5)$$

Under these circumstances, the budget deficit will be called *deficit without interest*. The distinction between governmental expense with interest and interest free underlines the role of *public debt* inside the government budget. As the budget deficit requires payment of certain interests, the overall budget will be poor when interest paid on debts (rB_p) are higher than primary surplus (B_p).

Therefore, if there is a primary deficit in budget, then the total budget deficit will continue to grow because debts are increasing. The problem is the same both at country and at an individual level. Who spends more than earns and borrows to cover the difference, will need to borrow more and more each year as the interest on the old loans continues to grow. Hence, we conclude that if the economy does not develop, any policy that leads to debt is unsustainable because the debt will be unimaginably high in comparison to the economic development.

2. Ratio of public debt - income and its evolution

History of world economy records that debt of countries increased notably during the wars in which they were involved and declined in each period after the war. Therefore, during the post-war periods, the ratio debt-income decreased even if the debt increased as a result of budget deficits. If the *national debt* of a country increases every year, it does not mean that the government budget will be out of control and that interest rates rise so much that taxes should continue to grow until, eventually, something has to happen. This will not happen because the economy continues to grow.

Debt-income ratio is reflected in the *debt rate* which is determined as follows:

$$Debt\ rate = \frac{Debt}{Income} = \frac{Debt}{GDP} = b \quad (6)$$

Debt rate decreases when nominal GDP grows faster than the debt. Numerator, i.e debt, will increase as a result of deficits. The ratio denominator increases both as a result of inflation and also as a result of real GDP growth. It is useful to analyze the relationship between debt and income than the absolute value of debt, as the denominator (GDP) is a measure of the economy size and the

numerator is a measure of the debt size. A debt should be considered high or low not by its absolute value but after its relative value according to the size of the economy, in our case to GDP.

Let's try to formulate mathematically this report.

We introduce the following notations;

r = real interest rate (interest rate adjusted by inflation);

z = primary budget surplus (excluding interests) measured as a fraction of GDP;

b = ratio debt-income;

i = nominal interest rate;

P = the price level;

Y = real output level;

B = nominal amount of outstanding debt.

Between nominal rate and real interest rate there is a difference q due to inflation, as seen from equation(3).

Debt-income ratio is defined as the ratio of outstanding debt and nominal GDP, i.e

$$b = \frac{B}{P \cdot Y} \quad (7)$$

In time, the debt-income ratio changes by ΔB . From equation (4) the change in time can be calculated as such:

$$\Delta b = \frac{\Delta B}{P \cdot Y} - b \left(\frac{\Delta P}{P} + \frac{\Delta Y}{Y} \right) \quad (8)$$

$$\Delta b = \frac{\Delta B}{P \cdot Y} - b(q + y) \quad (9)$$

Debt increase, from year to year, is the result of budget deficit for which interests are paid (iB), less primary budget surplus calculated based on GDP (i.e zPY). Therefore:

$$\Delta B = iB - zPY \quad (10)$$

Substituting equation (6) in equation (5) we get:

$$\Delta b = \frac{iB - zPY}{PY} - b(q+y) \quad (11)$$

$$\Delta b = \frac{iB}{PY} - \frac{zPY}{PY} - b(q+y) \quad (12)$$

But the ratio B/PY is precisely debt-income ratio reflected in relation (4). Then:

$$\Delta b = ib - z - b(q+y) \quad (13)$$

In this way, the increase in the debt ratio has three components: the nominal paid interests, primary budget surplus and nominal income growth. A user-friendly form of the equation (8) can be obtained by using the definition of the *real interest rate* ($r = i - q$) from where we get i :

$$\begin{aligned}
 & i = r + q \\
 \text{then: } & \Delta b = b(r + q) - z - b(q + y) \\
 & \Delta b = br + bq - z - bq - by
 \end{aligned}
 \tag{14}$$

From where:

$$\Delta b = b(r - y) - z$$

In this form we see that the debt ratio increases whenever the real interest rate exceeds the *rate of economic growth* ($r > y$) and the primary budget is balanced or in deficit. Of course, there are other combinations that can maintain or lower the interest rate, such as for example a negative real interest rate combined with *deficits without interests*. We notice that under equation (9) debt-income ratio grows over time. The evolution of this ratio depends on the relationship between the real interest rate, growth rate of production and budget surplus without interest. The higher the interest rate, the lower the growth rate of output, the higher the debt-income ratio is preferably to grow.

A large budget surplus without interest tends to decrease the debt-income ratio.

Conditions that make debt-income ratio (GDP) to increase or decrease, can be summarized as shown in Table 1:

Table 1. The connexion between budget surplus and the debt-income ratio

Growth in debt rate	Debt-income ratio
$b(r - y) - z > 0$	increases
$b(r - y) - z = 0$	steady
$b(r - y) - z < 0$	decreases

In a period of slow growth in production and of high interest rates, as it is now in Romania, the deficits change into a growing debt-income ratio.

Conclusions

We can conclude by some questions that might arise after the above mentioned data. We may question what would happen if the deficit would be so great that apparently the debt would unlimited increase compared to income? Such a process can not continue indefinitely. Ultimately, the public debt and interest payments would reach intolerable levels, imposing an urgent measure of *balancing the budget*. This could entail inflation, taxes or special discounts, utterly unpopular, of government spending. As an extreme measure, the government could give back some of the *public debt*. But we must not neglect that the debt which supplies a deficit can cause, on long term, more inflation than financing it with money. This is because repeated deficits ultimately lead to inflation because the government will be burdened with debts and interest payments that can not be financed by taxes or other loans.

It is interesting to notice that the more the government will continue to finance the deficit by borrowing, the greater will be the last inflation. If the

government starts *monetary financing* today, it needs to print money at a rate capable of financing the payment of interests at the existing national debt. If it waits, say 5 years, to begin financing with money, the government will have to print money at the exchange rate at which it could finance the payment of debts at the national debt that will be five years from now. In the meantime, interest on debt will accumulate, over five years the debt will be higher and therefore, will be the *inflation rate*.

From this example we see that, due to accumulation of interests, short-term debt financing, which means the monetary financing, may ultimately be inflationary than immediate monetary financing of a given deficit. Making such calculations, we will have the unpleasant surprise to see that it is possible, in the future, that the inflation rate to be dependent, more on budget deficits than on the *current growth rate of money*.

Question therefore arises: the government will be forced finally to a monetary financing for any given deficit or may continue *debt financing* indefinitely? The answer is suggested by equation (9) meaning that it depends on the relationship between the growth rate of output and the real interest rate. If real interest rate exceeds the growth rate of output and the primary deficit is zero or positive, debt financing can not go on forever because it becomes an increasingly high part of GNP and interests payment continues to grow. At some point, the government will have to resort to monetary financing and higher inflation or will have to cut spending and/or increase taxes.

If the real interest rate is below the growth rate of output, with a primary deficit zero, the government can continue debt financing without resulting an increase in debt-income ratio (GNP). In this case, debt financing is viable in the long term. Also, if the government is willing to raise taxes at a future date in order to pay bills of interests, then there is no necessary connection between current deficits and *future monetary growth*.

If budget deficits are permanent and if the *national debt* grows in relation to GDP - then, ultimately, the government will have to raise taxes or increase inflation to cover debts, which is a long-term threat and makes people more concerned about deficits. If the total deficit is constant as a percentage of GNP, then the debt-GNP ratio will stabilize if the economy does not grow at all. Therefore, a question arises: how can inflation help to finance the deficit? Inflation can make a small contribution to deficit financing. More important is the fact that a high inflation that can not be anticipated, will reduce the *real value of government debt*.

In most countries, the *national debt* is nominal, i.e the government is obliged to pay creditors a certain amount. A policy that increases the price level reduces the real value of the payments that the government is obliged to make. We can draw the conclusion that the debt can be effectively removed by a fairly large inflation that can not be anticipated, as long as the debt is nominal.

Bibliography

1. Anghelache. C., (2012). *România 2012 – Starea Economică în Criză Perpetuă*. Editura Economică, Bucharest.
2. Băcescu-Cărbunaru A., Băcescu M., (2012). *Dicționar de Macroeconomie*. Editura C.H. Beck, Bucharest.
3. Băcescu-Cărbunaru, A., (2010) *Statistică Macroeconomică*. Editura Universitară, Bucharest.
4. Băcescu-Cărbunaru, A., (2000). *Macroeconomia relațiilor economice internaționale*, Editura All-Beck, Bucharest.
5. Băcescu, M., Băcescu-Cărbunaru, A., Dumitrescu, F. & Condruz-Băcescu, M., (2008). *Politici macroeconomice de integrare a României în Uniunea Europeană*. Editura Economică, Bucharest.
6. Băcescu, M., & Condruz-Băcescu, M., (2012). “The Main Causes and Ways of Decreasing the Economic Crisis in Romania”, in *Review of International Comparative Management*, 13(1), Bucharest.
7. Boajă, M., Claudiu, R.S., (2007). *Relații Financiar-Monetare Internaționale*, Editura Universitară, Bucharest.
8. Moșteanu, T., Câmpeanu, E., M., Cataramă, D. & Miricescu, E.C. (2008). *Gestiunea Datoriei Publice*, Editura Universitară, Bucharest.
9. Nastase, M., Cretu, A., (2009). “Effects of Global Financial Crisis”, *Review of International Comparative Management*, 10(4), Bucharest.
10. Piga, G., (2001). *Derivatives and Public Debt Management*, ISMA, Zurich.
11. The World Bank and International Monetary Fund, (2007). *Strengthening Debt Management Practices: Lessons from Country Experiences and Issues Going Forward*. Prepared by the Staff of the World Bank and the IMF.
12. The Staffs of the International Monetary Fund and the World Bank, (2001). *Guidelines for Public Debt Management*, March 21.
13. *** (2012). *Anuarul Statistic al României 2012*, Institutul Național de Statistică, Bucharest.