

THE USE OF COMPUTER APPLICATIONS IN THE STUDY OF ROMANIA'S PUBLIC DEBT

Vătuțiu Teodora

“Titu Maiorescu” University, Faculty of Economics

Popeangă Vasile Nicolae

“Constantin Brâncuși” University, Faculty of Economics and Business Management

Popeangă Vasile

“Constantin Brâncuși” University, Faculty of Economics and Business Management

Țarcă Naiana

University of Oradea, Faculty of Economics

Total public debt represents all monetary obligations of the state (government, public institutions, financial, administrative-territorial units) at a time, resulting from internal and external loans (in lei and foreign currencies) contracted on short, medium and long term, and the state treasury and its own obligations for the amounts advanced temporarily to cover the budget deficit. Loans may be contracted by the state through the Ministry of Finance, in his own name or guaranteed by it. Public debt is expressed in local currency or foreign currency, depending on where the contracts and loan conditions. In order to evaluate Romania's public debt, obligations denominated in another currency than the national currency is calculated using the exchange rate of National Bank of Romania. Also, total public debt of a country can be expressed in absolute values (to know the load on that country's economy which is subject to its creditors), the relative values as a percentage of GDP (to allow comparison over time and between countries) and the average size per capita (to allow comparisons and analysis in time and space). Total public debt is calculated and separately manages its two forms, namely domestic public debt and external public debt. Ministry of Finance shall prepare and submit annually to the Government for approval and to Parliament for information, report on public debt, which contains information on government debt portfolio, debt service, public indebtedness indicators and information about primary and secondary market securities state and how to implement the medium-term strategy in managing government debt for the previous year. In order to make comparisons quick and effective on public debt dynamics in Romania, Excel 2010 has new features such as charts and sparkline slicers' features which can help discover trends and statistics in accordance with existing data. The aim of this article is accurate assessment of Romania's public debt and its evolution in the economic crisis in recent years, using computer applications. As a novelty, it is proposed to use charts sparkline (Small diagrams that fit in a cell) to visually summarize data trends in a small space, but in a visual form meaningful and understandable.

Keywords: report on public debt, public debt dynamics, computer applications, professional-looking diagrams, sparkline charts

Cod JEL: H63, L86

Introduction

Public debt is the amount of the debt obligations and local government, which can be expressed in local currency and foreign currency, according to Government Decision no. 132/2011 amending and supplementing the Norms for application of Government Emergency Ordinance no. 64/2007 on public debt, approved by Government Decision no. 1.470/2007 (Popeanga, 2007:

28), and completion of Methodological norms for application of 14 article of no. 64/2007 Government Emergency Ordinance on public debt, approved by Government Decision no. 683/2008 (Dascalu, 2008: 25).

Under pressure from a depleted budget crisis and the need to pay pensions and wages, the Romanian Government came under more and more debt during the previous year. Loans from the IMF, the European Commission and banks on the local market, mostly short term, doubled our debt in the last two years, virtually every government borrowed 1.3 billion per month to cover current expenditure.

Thus, from the public debt of 109.1 billion, equivalent to 21.6% of GDP at the end of 2008, Romania has come to record at the end of 2009, debts of 147.3 billion lei, equivalent to 29.99% of GDP, as on 31 December 2010, the debt reached 193.89 billion lei (37.9% of GDP). If we compare this with the end of October 2010, when public debt was 182.4 billion lei, which accounted for 35.55% of GDP, we conclude that public debt has increased by 2% in just two months, without us entering any loan tranche from the EU.

On 31 January 2011, Romania's total debt decreased by 1.8% from the end of 2010, reaching 190.381 billion lei, which is equivalent to 34.9% of gross domestic product (GDP), estimated at 544, 4 billion. At the same time, 41.9% of total public debt was in lei, 40.8% in euro and the rest in other currencies. Most of the debt was contracted by state loans (38.16%), followed by bonds (18.66%) and Treasury bills (17.9%). Compared to the end of 2010, the share of government debt in total debt declined from 31 January to 1.89 percentage points, from 95.76% to 93.87%, while local government debt represented 6.11% of debt total.

2. Using computer applications in comparative analysis of Romania's public debt in the years 2009-2010

On December 31, 2010, our country's public debt could be characterized by features presented in the table below (Table no. 1):

Table no.1

Indicator	31.12.2010
Total Public Debt * (million)	19389,44
Total Public Debt (% PIB)	37,9
Government Public Debt (% PIB)	94,03
Local Public Debt (% PIB)	5,97
Direct Public Debt (% PIB)	91,92
Publicly guaranteed debt (% PIB)	8,08
Negotiable government debt (% PIB)	41,33
Non-negotiable government debt (% PIB)	58,67
RON (% PIB)	46,21
Euro (% PIB)	42,58
Other currencies (% PIB)	11,21

* includes guaranteed debt of state and local authorities according to GEO 64/2007

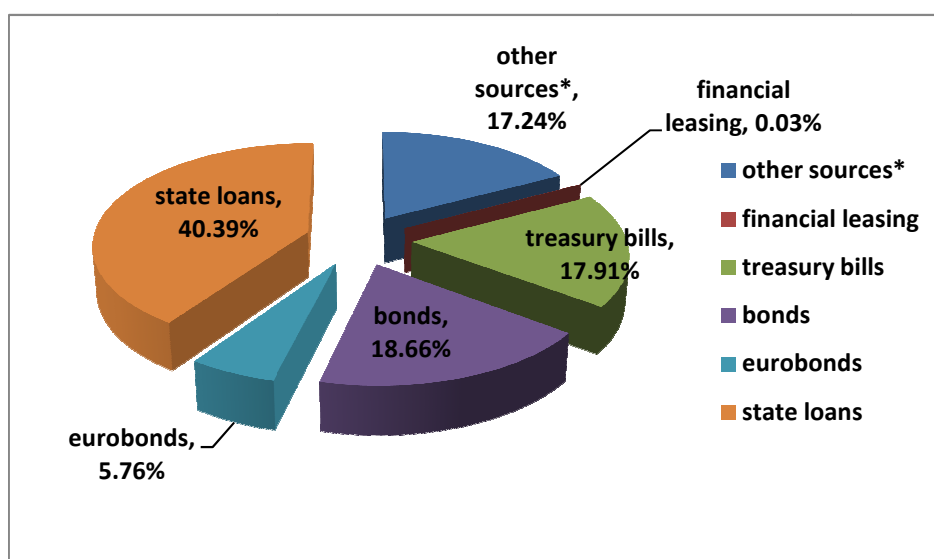
** Updates communicated to the Ministry of Finance

A first analysis shows that public debt maintains a growth trend in both absolute and relative expression. Thus, compared to 31st December 2009, on 31st December 2010 the absolute value of public debt is 565.3 million lei + 46 more or about 11.5 billion euro. And in relative terms there was an increase of + 7.91% of GDP.

In connection with the portfolio of currencies in the basket of public debt, we notice a close ratio between national currency and the euro, but a higher share in total foreign currency than in lei.

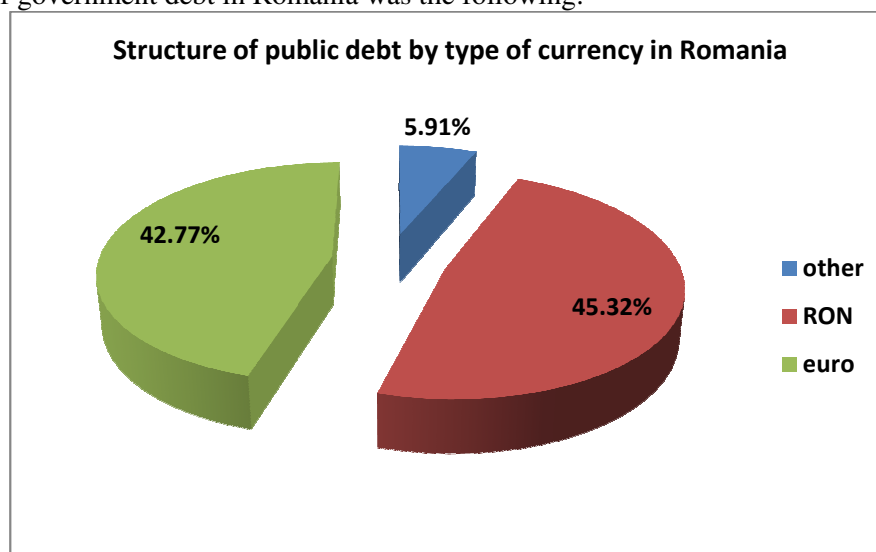
To analyze these data, we can use Excel, creating models for data analysis, while making a presentation of data in several types of professional-looking diagrams (Vătuțiu, 2008: 120). Thus, by types of instruments, on 31st December 2010, the structure of public debt is rendered meaningful by using Excel application:

Public debt structure of Romania on December 31, 2010, by type of instruments

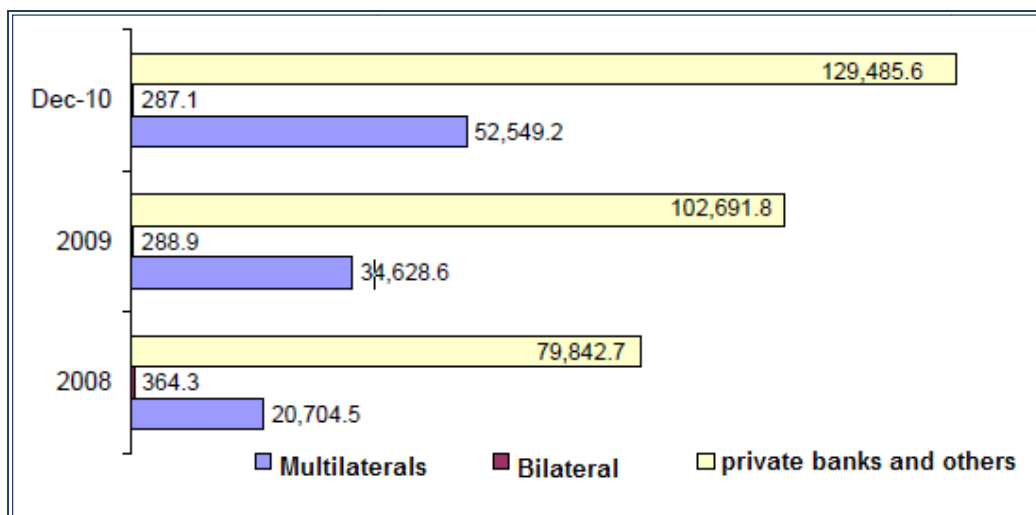


* Availability of loans is the Treasury General Account, used to finance the budget deficit communicated to the Ministry of Finance

One can observe the prevalence of government bonds with a weight of about 40.39% of the total, followed by bonds (18.66%) and T-bills (17.91%). By type of currency at the same time, the structure of government debt in Romania was the following:



By type of holders, the structure of public debt in million, was the following:

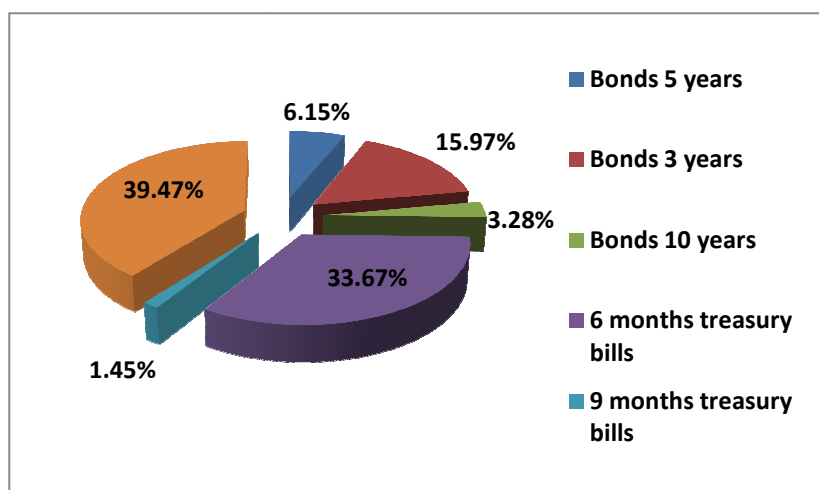


The structure of new public loans contracted during the period January 1, 2010 - December 31, 2010, in million, and is shown in the table below (Table no. 2):

Table no.2

Issuance of domestic bonds	51 912,4
Cash Management Tools	3 050
State loans, of which:	11 347
- contracted directly	5 977,3
- state guaranteed	5 369,8
Total	66 309,5

State Securities issued between 1 January -31 December 2010 by type of maturity were:



A quick look shows that Romania contracts most of its new short-term public debt (almost 34% within 6 months and almost 40% within one year), which will significantly increase annual public financial effort generated by this debt in the current budget year (2011). On the primary

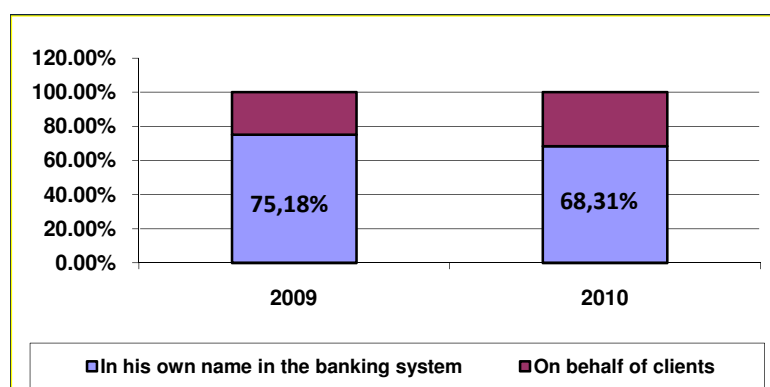
market, in the first half of 2010, issues of public credit instruments (in million) were presented as follows:

Remaining maturity of government securities in ROL million is shown below (Table no. 3):

Table no.3

	31 December 2009	% of total	31 December 2010	% of total
The total amount of which:	46 134	100	66 290	100
short term	25 350	54,95	35 421	53,43
medium	19 489	42,24	28 142	42,45
long term	1 295	2,81	2 727	4,11

Regarding the structure of holders of government securities on the domestic market, on 31st December 2010, the situation was as follows:



Conclusions

Compared to the end of 2009, when it was 147.33 billion lei, which accounted for 30% of GDP, public debt rose by almost 8% of GDP in 2010 (46.6 billion), given that the deficit budget shrank by almost 1% of GDP. This means that public debt has been pressured by loans outstanding in 2010, many of which are rolled in 2011.

In late 2010, government debt represented 94% of public debt, respectively 182.3 billion lei, up by nearly one third (45.8 billion) over the previous end of year.

Government debt contracted by multilateral loans (like the IMF-EU-BM) rose last year with 17.92 billion lei, up to 52.55 billion lei, while the debt contracted through loans from private banks and other lenders increased with 27.9 billion, up to 129.5 billion lei.

Domestic debt has not registered a significant change, increasing with 735 million lei, up to 11.57 billion lei. New loans contracted by the government last year were worth 66.3 billion. In other words, the Romanian Government borrowed on average each month, 5.52 billion lei (1.3 billion euro) to cover current expenses. Romania's debt increased with 46.5 billion during 2010.

As part of the total debt, the government share has increased from 92.65% in 2009 to 94.03% in 2010. Basically, the government debt increased by 45.31 billion lei, to 137 billion lei in 2009 to 182,310,000,000 in 2010. According to the report last year, for 2011 it is scheduled that internal sources will only cover 41.8% of the budget deficit, and below 2% will be covered by privatization receipts and recoveries AVAS. In 2011, the Ministry of Finance expects the government debt service to be 62.7 billion, of which 8.7 billion lei (€ 2 billion) only interest.

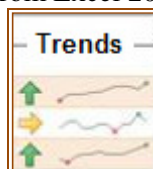
However, debt service seems to be much higher than 67 billion (15.8 billion). Most would represent state securities issued in past years that will become due this year, amounting to 42.3

billion lei, which would add to the IMF approved budget deficit - and some 24 billion arrears to be settled. The Government is committed to the foreign creditors not to exceed this year's budget deficit with more than 4.4% of GDP. Loans taken so far by the Romanian State from the IMF and the European Commission will start being returned next year. Until then, one will only pay interest on these loans.

Thus, in 2012 we will refund 124,13 million euro to the IMF, and in 2013 almost 968 million euro, followed by a 1 billion euro refund in 2014.

The year 2015 will be a difficult one, as one will have to refund 157 millions to the IMF, and also a tranche of 1.5 billion euro to the EU. The loan will be repaid to the Commission in 2017 (euro 1.15 billion) and 2019 (EUR 1 billion) too.

To fast track trends and highlight important changes in government debt, you can use new features of visualization and analysis of data from Excel 2010.



The new feature "sparkline Diagrams" provides a compact and clear visual representation of data using small charts assigned to cells on the worksheet. Slicers allow filtering and segmenting PivotTable data in several layers, so that the user can concentrate more on analysis and spend less time on formatting. These new features help one discover patterns or trends in collected data, which could lead to better informed decisions.

In Excel 2010, working on multiple threads helps speed up data retrieval, sorting and filtering rates of PivotTable reports, transforming complexity into clarity with the aid of new visualization tools.

Bibliography

- 1.Dascalu Elena Doina, Datoria Publică- reglementare și administrare în România, Editura Didactică și Pedagogică, București, 2008
- 2.Mosteanu Tatiana, Catarama Delia Florea, Campeanu Emilia Mioara, Gestiunea datoriei publice, Editura Universitara, București, 2005
- 3.Popeangă Vasile, Finanțele instituțiilor publice, Ed. Academica Brâncuși, Tg-Jiu, 2007
- 4.Văcărel Iulian, (coordonator), Finanțe Publice, Editura Didactică și Pedagogică, București, 2007
- 5.Vătuiu Teodora, Elemente de birotică cu aplicații, Ed. Universitas, Petroșani, 2008
- 6.HG nr. 132/2011 pentru modificarea și completarea Normelor metodologice de aplicare a OG nr. 64/2007 privind datoria publică, aprobate prin HG nr. 1.470/2007, precum și pentru completarea Normelor metodologice de aplicare a prevederilor art. 14 din Ordonanța de urgență a Guvernului nr. 64/2007 privind datoria publică, aprobate prin Hotărârea Guvernului nr. 683/2008 publicată în M. Of. nr. 139 din 24 februarie 2011,

Site-uri Web:

- 7.<http://office.microsoft.com/ro-ro/excel-help/utilizarea-diagramelor-sparkline-pentru-afisarea-tendintelor-datelor-HA010354892.aspx?CTT=5&origin=HA010369709>, accessed March 20, 2011
- 8.Ministerul Finanțelor Publice, accessed March 18, 2011, http://discutii.mfinante.ro/static/10/Mfp/buletin/executii/Raport_dat_publ31ian2011.pdf