

FINANCIAL RISKS ASSOCIATED WITH THE GOVERNMENTAL PUBLIC DEBT'S PORTFOLIO

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ABSTRACT: *The management of public debt is a process strictly connected with and dependent on fiscal and budget policy as well as on monetary policy. Under such circumstances the analysis of governmental public debt's portfolio is carried out by taking into consideration both the internal macroeconomic evolutions and estimations (economic growth, inflation, budget incomes and the level of budget deficit, monetary conditions and structural reforms – pensions' reform), the efficiency of capital internal market, and the evolution of world-wide economy influencing Romania's loan terms on international financial markets. An important component of the management of governmental public debt is the management of the risks connected to debt's portfolio that involves activities of identification, evaluation, and insurance against various categories of risk.*

KEY WORDS: *governmental public debt; re-financing risk; market risk; risk analysis*

JEL CLASSIFICATION: *E60, G32*

1. INTRODUCTION

The main categories of risk approached by this analysis are **financial risks**, classified as follows:

1. *Re-financing risk* (lack of capacity to refinance the debt or debt's refinancing at a quite high cost) – depends on the level of development of the internal capital market and on the evolutions of international financial markets. This risk can be diminished by avoiding certain payment peaks of the debt's service determined by crowding the payment terms of certain big loans or of a high amount of governmental debt on a short term or expressed by variable debt within total debt. Accordingly, one should notice a uniform distribution of the service of governmental debt as well as an adequate duration of governmental debt's portfolio by using specific financial

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operations, including advance buy backs or the anticipated transforming of titles into other titles having a longer payment term (bond exchanges) as well as an active management of liabilities and liquid assets, including derived financial instruments (debt's installment swaps, forward rate agreement or futures contracts).

2. *Market risks* which include two components:

a. *Currency risk* (appreciation of currency debt as a result of the national currency's depreciation as compared with euro and U.S.D. when the State's incomes are collected in national currency) – influenced both by the volatility of currency courses as a result of the evolutions on international markets and by aspects connected with internal market, such as monetary terms. Taking into account that the assets (incomes collection) are denominated in national currency, in order to avoid currency risk the most recommended strategy would be the one according to which the share of governmental debt in lei within total debt increases. The exception is given by the estimations regarding Romania's adoption of euro currency (2012-2014) that would determine, during the post-adhering to euro currency, the euro denomination of the States assets (budget incomes); such a fact would increase the opportunity of contracting long term loans, denominated in euro during the analyzed time interval (2008 - 2010). Such a strategy can be implemented through contracting new loans, mainly in lei, and through the gradual increase of the share of lei debt within total debt; an active management of the already existent portfolio according to the opportunities on the financial markets while employing derived financial instruments (currency swap, currency forward contracts) will also prove to be efficient. At the same time, as regards external financing, contracting long and very long term euro loans while employing certain bullet type devices (emissions of euro-obligations) is also efficient in case one considers the existing market environment.

b. *Risk of interest rate* (increases of interest rates on the internal or external capital market) – is influenced by the volatility of interest rate, monetary terms, and budget policy, the evolutions of international financial markets; it can be compensated by using financial derivatives: swap on the interest rate, swaptions (a combination between the interest rate and options), future contracts.

Other risk categories connected to debt's portfolio are the following ones: *credit risk* (bankruptcy of counterparts), *payment risk* (errors in the payments system), *operational risk* (errors of the system of administrating the debt or human errors, lack of work procedures, lack of employees), as well as *legislative risk* (due to the interpretation of the legislation).

2. ANALYSIS OF FINANCIAL RISKS ASSOCIATED WITH THE PORTFOLIO OF GOVERNMENTAL PUBLIC DEBT

The indices we refer to with a view of *analyzing the financial risks associated with the portfolio of governmental public debt* are the following ones:

1. In case of the refinancing risk determined by the refunding scheme, absolute value, and the period of refunding/ redeeming the debt, the analysis index employed is the *percent of the due governmental public debt* during a certain time interval (1 year or 5 years refinancing degree);

2. In case of the currency risk determined by the absolute value and by the share of currency debt, the analysis indices are: *the share of euro debt within total currency governmental debt* and *the share of national currency debt within total governmental debt*;

3. In case of the interest rate risk and liquidity risk, the indices employed are the following ones:

- *The share of variable interest rate debt* within total governmental debt versus the share of fixed interest rate debt;
- *The re-fixing percent*, namely the governmental debt percent for which interest rate changes during a certain time interval (1 year or 5 years re-fixing index);
- *Average maturity* until the next change of the variable interest rate (average time to next re-fixing).

The risk analysis of the portfolio of governmental public debt has been done by the Romanian Ministry of Finances that has elaborated a projection of the *service of governmental public debt* contracted on December 31st, 2007 and used a "Risk cost" (CaR)/"Risk budget" (BaR) analysis – the impact of financial variables' fluctuation upon debt's cost (interest payments upon governmental public debt)¹.

In order to avoid the risk they needed data regarding the estimates of budget deficit and primary surplus/deficit, projections of the service of governmental public debt (detailed according to capital rates and interest payments as well as to the type of interest rate – fixed or variable), scenarios regarding deficit's financing and re-financing the debt for the time interval chosen by the analysis (three years – as in the case of elaborating the State's budget), as well as data regarding the rates of reference interests afferent to lei, euro, USD, and CAD loans, and those regarding the rates of currency exchange in order to calculate their volatilities with a view to extrapolating these variables for the analyzed period of time.

The hypotheses and constraints of the model are displayed by table 1:

Table 1. Hypotheses and constraints regarding the evaluation of the risks associated with public debt according to the model conceived by the expert Bruno Debergh

Hypotheses:	Constraints:
- Debt fluxes have been taken over from the informatics program called DMFAS (Debt Management and Financial Analysis System) and from the internally developed systems due to the fact that the data basis of the FTI system (Foundation Telecommunications, Inc.) has reached the final stage of checking-up and updating;	- At the moment FTI informatics system is going to be used, the projection of interest payments will be done according to the efficiency curves drawn out for all existing currencies of the portfolio of governmental public debt; to them one should also add the margin specific to each loan according to the loan agreement/contract.

¹ When defining the strategy for evaluating the main risks they used the model provided by M. Bruno Debergh, an expert employed by the Phare program EUROPEAID/119860/C/SV/multi, lot 11, request no Rosu 62, "Government debt management system". The model used in order to evaluate the risk associated with Belgium's public debt has been adapted so that it met the requirements of the portfolio of Romania's governmental debt which contains several currencies denominated debt and mainly includes loans; the model also analyzed the structure of financing the lei and other currencies budget deficit.

<p>- As the model allows only four currencies, debt fluxes have been grouped in RON, EUR, USD, and CAD (the last currency includes fluxes for CAD, GBP, JPY, WON, CHF) and efficiency curves have been determined only for these four currencies;</p>	
<p>- In case of the availabilities of the State's treasury general current account (about 29.4 billion lei on 31.12.2007) they considered that such a debt will be re-financed by titles emitting representing about 3 billion lei per year during a 10 years period, beginning with 2009; interest payments for temporary re-financing have been calculated at a rate of interest of 1%;</p>	<p>Such a re-financing will only be possible in case market's conditions are advantageous enough to diminish budget deficits definitely not financed.</p>
<p>- As most of the portfolio of the governmental public debt is made of loans, when calculating the future debt fluxes (capital rates, interest payments) they have had in view the drawings estimated to occur until the final drawing date of the loan sums according to the loan agreements/ financing contracts;</p>	<p>- A certain amount of such loans drawings may not occur or may occur after a delay as compared with the schedule stipulated by the contracts due to the blockings appeared in implementing the projects or due to other causes that determine delays of the drawings program agreed with the financiers;</p>
<p>- The projections of currency courses for the next period are those transmitted by the National Board of Prognosis (CNP)</p>	<p>- Spot currency courses in use are those valid on 31.12.2007;</p>
<p>- Currencies efficiency curves are derived from the interest rates published by Reuters, except for the RON curve that used the efficiency curves of the emissions launched by the Ministry of Public Finances on the primary market;</p>	<p>- The procedures of interpolation and extrapolation in case of the terms for which Reuters does not publish interest rates; in case of the RON curve, the secondary market of the State titles is but poorly liquid and the efficiencies considered are only approximate; - As in case of the fluxes of interest payments with variable rate the model employs, beginning with 2009, the currencies efficiency curve conceived according to the interest rates published by Reuters, for the margin that adds in case of the loans having a variable interest rate an average margin has been calculated for each currency; the applied value has been added to the debt fluxes with a fixed interest rate, namely in the case of EUR - 96 bp, USD - 130bp, JPY - 144bp, CAD - 87 bp, CHF - 72 bp, GBP - 111 bp. For the basic year (2008) the payments of floating rate interests are those calculated according to interest rates on 31.12.2007;</p>
<p>- Volatility in case of currency courses and interest rates is calculated by the model for the last 85 months;</p>	<p>- Volatility required the introduction into the model of the currency courses and interest rates valid during the last day of the month;</p>
<p>- Scenarios have had in view the financing of the lei or of lei and Euro budget deficit. The budget deficit in view is the consolidated</p>	<p>- When comparing the financing of the consolidated general budget deficit with the refundable financings that represent</p>

<p>general budget deficit as the governmental public debt also includes loans whose refunding source are local budgets.</p>	<p>governmental public debt, one notices that the first one is also done owing to loans directly contracted by the authorities of the local public administration, besides other internal sources (privatizing incomes, sums retrieved by AVAS out of inefficient bank assets, and other availabilities of the general account of the State's treasury).</p>
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Source: The Ministry of Public Finances

In order to carry out the *analysis of the financial risks associated with the portfolio of governmental public debt* **four scenarios** have been employed. According to all scenarios, the refinancing of the governmental public debt in lei is done through contracting denominated debt in lei, and term debt in various currencies; in order to simplify the model it is refinanced by euro denominated debt.

The four scenarios differ from the point of view of the **manner of financing the budget deficit**. Accordingly:

- the 1st scenario: financing is done only through contracting debt in lei;
- the 2nd scenario: financing is done as follows: 50 % in lei and 50 % in euro;
- the 3rd scenario: financing is done as follows: 75 % in lei and 25 % in euro;
- the 4th scenario: financing is done as follows: 85 % in lei and 15 % in euro.

In all four cases, the financing of the budget deficit and the refinancing of governmental public debt is done owing to the emitting of the following *instruments*:

- In case of the debt in lei: 30% - 1 year term treasury certificates, 20% - 3 years term obligations, 25 % - 5 years term, 20 % - 10 years term, 5% - 15 years term;
- In case of the debt in euro: 80% - 10 years term fixed interest debt and 20% - 15 years term floating debt.

The hypotheses regarding the financing, during the analyzed period, according to types of debt instruments and types of currencies have had in view an intuitive strategy that follows the last two years implicit strategy; the analysis of the portfolio of governmental debt at the end of 2007 also proved that such a strategy is necessary; nevertheless one should mention that the instruments employed by the analysis are market instruments taking into account the goal of developing the State titles market.

The analysis of the risk indices for the scenarios employed and the quantification of the importance of such risk factors have resulted in **two optimal scenarios**: the one where the financing of the budget deficit is totally covered by internal sources and the one where the financing of the budget deficit is done as follows: 85% - internal sources and the difference covered out of external sources. Taking into account the deterioration of the crediting terms on the internal market during the first part of 2008 as well as the Romania's cost advantages given by the access to the international markets, one considers as optimum the scenario where the financing of the budget deficit is done as follows: 85 % out of internal sources and 15 % out of external sources.

In order to monitor the financial risks associated with the portfolio of governmental public debt the indices displayed by table 2 are proposed as margins against which the efficiency of the real portfolio is going to be periodically evaluated:

Table 2. Indices employed in order to evaluate the efficiency of the portfolio of governmental public debt and their margins

Indices	Minimal margins	Maximal margins
Share of governmental debt in lei within total governmental public debt	55%	
Share of governmental debt in Euro within total governmental public debt		40%
1 year refinancing degree*)		15%
5 years refinancing degree*)		55%
1 year re-fixing percent*)		35%
5 ears re-fixing percent*)		65%

*) *To the extent to which the conditions of the internal market would allow the giving up of temporary financing out of the availabilities of the State's treasury general current account, the refinancing of the debt during the period 2009 – 2019 through titles emissions will be carried out.*

Source: The Ministry of Public Finances

With a view of limiting the risks associated with the portfolio of governmental public debt, the Ministry of Public Finances targets the improvement of the structure of the portfolio diminishing financial risks owing to:

a. Increasing the share of lei denominated governmental public debt within the total governmental debt; It targets the limiting of currency risk and the development of the internal market of State titles. Considering that the collection of budget incomes is done in lei through contracting governmental public debt in the same currency they would eliminate currency risk. Accordingly, they propose the maintaining of a share of governmental public debt in lei within total governmental debt of, at least, 55%, at the end of 2008 while maintaining an increasing trend of this share until 2010.

b. Increasing the share of Euro denominated governmental public debt within total governmental public debt in foreign currency; The increase of the Euro financing share has in view, on the one hand, costs minimizing under the circumstances of still maintaining a significant interests differential between sovereign loans in lei and those in Euro without significant exposal to currency risk and taking into account the structure of currency reserve administered by the National Bank of Romania as well as the currencies structure of exports and imports, and especially taking into account the prospect of adhering to the unique European currency in 2014. Under the circumstances of the target margin, namely, at least, 55% share of governmental public debt in lei within total governmental public debt at the end of 2008, during the period 2008 – 2010 they propose a maximum limit of 40% for the share of governmental public debt in Euro within total governmental public debt, and a minimum limit of 65% within total governmental public debt in foreign currency.

c. Decreasing refinancing degree for governmental public debt in lei and for the Euro denominated one; They have in view the limiting of refinancing risk and of liquidity risk through mainly contracting average and long term loans, taking into account the efficiency limit cost/risk as well as the market conditions of such instruments as compared with the short term emitted instruments. The evolutions of internal and international financial markets during the first months of 2008 determined

the contracting of certain short and average term loans on the internal market while having in view de-inflationist expectations and the diminishing of interests' rates during the last part of the year as well as during the years to come.

d. Increasing the share of fixed interest debt within total governmental public debt; The increase of the share of fixed interest debt has in view, on the one hand, the limiting of the risk afferent to the increase of reference interests rates, especially in case of currency governmental public debt; on the other hand, it targets the decrease of the incertitude regarding the yearly budget effort necessary to operate interest payments.

d. Increasing negotiable debt within total governmental public debt; contracting foreign currency denominated debt, especially through launching emissions of obligations on international capital markets and simultaneously diminishing the loans contracted from international financial institutions; Taking into account the objective of developing the State titles market, of increasing the liquidity of State titles, and of developing their secondary market, as well as of growing the flexibility of the active management of governmental public debt, we consider that governmental public debt should mainly be contracted through emitting State titles in lei and foreign currency on internal and international markets.

e. Uniform distribution of the service of governmental public debt; It targets the settling of the term dates of the new loans so that they avoid payment peaks on short periods of time in order not to increase liquidity and re-financing risks.

3. CONCLUSIONS

The field of public debt is an interesting subject both for the countries that administrate an important portfolio of public titles and for those that currently or during crisis circumstances take part in its management. Although there are recommendations made by the international institutions that settle the coordinates of public debt's administration, we consider that the *problems connected with the policy of contracting and administrating public debt should remain an internal policy matter*, according to the degree of economic development and to the maturity of the financial markets.

The process of administrating governmental public debt should have in view the *maintaining of the indices of governmental public debt within sustainable limits*. Public debt's solvability is provided when the exceeding resulting from the future economic activity places itself at a level that can cover contracted public debt with all its afferent costs.

As regards the destination of the loans contracted by the State, let's emphasize the *need to mainly contract loans for productive investments*. When lacking investments programs capable of determining economic progress, productivity and jobs increase, contracted public debt deepens commercial lacks of balance; debiting countries while accumulating such loans become more and more dependent on the crediting institutions.

Accordingly, as regards the origin of the loaned funds, we consider that each country should permanently focus upon the *decrease of financial dependence on foreign entities*.

The management of governmental public debt is a process strictly connected with and dependent on the fiscal and budget policy as well as on the monetary policy of a state. With a view to limit the risks associated with the portfolio of governmental public debt, *the entity that administrates public debt should have in view the improvement of the structure of this portfolio through diminishing financial risks*.

REFERENCES:

- [1]. Călin, M. (2006) *Datoria publică*, Didactical and Pedagogical Publishing House, Bucharest
- [2]. Dascălu, E.D. (2008) *Datoria publică - reglementare și administrare în România*, Didactical and Pedagogical Publishing House, Bucharest
- [3]. Holt, A.G. (2009) *Risks associated to Public Governmental Debt and Their Management*, Annals of the University of Petroșani - Economics, 9(2), Universitas Publishing House, Petroșani
- [4]. Iloiu, M. (2005) *Risk and Risk Management*, Annals of the University of Petroșani - Economics, 5, Universitas Publishing House, Petroșani
- [5]. Klein, T.M. (1994) *External debt management*, The World Bank, Washington D.C.
- [6]. Maklem, T. (1995) *Some macroeconomic implications of rising levels of government debt*, Bank of Canada Review
- [7]. Mehran, H. (1985) *External debt management*, Washington DC, International Monetary Fund
- [8]. Sturzenegger, F.; Zettelmeyer, J. (2006) *Debt defaults and lessons from a decade of crises*, Cambridge, Massachusetts and London, The MIT Press
- [9]. International Monetary Fund (2003) *Proposed features of a sovereign debt restructuring mechanism*, Washington D.C.
- [10]. United Nations Conference on Trade and Development (2009) *Compendium on debt sustainability and development*, United Nations New York and Geneva
- [11]. United Nations Conference on Trade and Development (2009) *Presentations on Debt Management*, UNCTAD's Seventh International Debt Management Conference, Geneva
- [12]. World Bank, International Monetary Fund (2002) *Guidelines for public debt management: Accompanying Document*, Washington D.C.