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**PUBLIC DEBT RISK MANAGING IN THE REPUBLIC OF
MACEDONIA**

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***Abstract:** The main objective of public debt risk 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. A primary and fundamental question to debt managers is really the one related to what would be the composition and profile of the debt that the government should pursue. Republic of Macedonia must take into account the principles of portfolio management and its compliance with macroeconomic policy and restricting and eliminating the impact of risks to the sustainability of public debt in the medium and long term. Owing to there is a need to intensify the work of the strategy for managing the risk of public debt to a sustainable manner in the medium and long term.*

***Keywords:** public, debt, risk, management.*

1. Introduction

Modern risk management has become an important tool for achieving strategic debt targets in each country. Strategy about risks entails an explicit political decision about the trade-off between costs and risks.

Efforts towards the implementation of modern risk management practices have also ranked high in the agenda of public debt managers. After a series of crises in debt markets in late 90's, a growing set of countries started to explicitly take risk management into account in their formally stated debt management objective, defined by most countries as: "minimizing long-term costs subject to prudent risk levels".

The risk management function is therefore part of the wider institutional framework for debt management, which includes the integration of the management of

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domestic and foreign debt. In fact, the trend to more autonomous debt management agencies is accompanied by an increased emphasis on risk assessment and risk management. As a result, the risk management function is now a central feature of debt offices in many countries. This risk control function is in many debt offices organised in the form of separate risk management unit and as part of the middle office.

Risk management should be seen as an integral part of a wider strategic debt management framework based on benchmarks. The risk management policy framework constitutes the critical connection between the formulation and implementation of debt management decisions. This risk framework includes in most countries the following risks: market risk (interest and currency risk), credit risk, and operational risk. In relatively few countries debt managers are involved in the risks related to contingent liabilities, although there is a growing interest in exploring their role in this policy area

The objective of this paper is to describe the scope of activities and the fundamental challenges faced by the public debt risk manager. Its main motivation derives from recurrent demands coming from researchers and countries in earlier stages in capacity building for a consistent map of tools and responsibilities that this profession entails. A good view of the tools that need to be developed and the skills that such position requires may prove to be a useful road map to those intending to improve risk management practices.

Identifying and managing refinancing, operating and market risks in the Republic of Macedonia is crucial for the portfolio of public debt of the reason that it is determined mainly by external factors, turn of variations in interest rates in the international financial markets, due to their constant fluctuation, so it is difficult to predict the trend in the medium and long term.

2. Public Debt Risk Management – Needs and Challenges

Debt management functions include the identification of long term benchmarks (optimal debt composition), the development and regular assessment of risk indicators (for measuring several types of risks) and the design, monitoring and analysis of trade-offs across different refinancing strategies that can be implemented by the debt management office.

A primary and fundamental question to debt managers is really the one related to what would be the composition and profile of the debt that the government should pursue. The public debt risk manager plays an important role in addressing this question by pointing out pros and cons and possibly quantifying the costs and risks of distinct long-term debt strategies. “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.”¹

However, a sovereign borrower has to choose from a vast number of concepts embracing cost and risk. Do cost and risk refer to nominal or real variables? Do cost and risk refer to cash-flows or accrued interest expenses? Should one include changes in the

¹ Draft Guidelines for Public Debt Management, IMF and World Bank (2001) p.6.

Public debt risk managing in the republic of Macedonia

market value of debt in the appropriate definition of cost and risk? What exact time horizon should be chosen to measure cost and risk?

More fundamental questions also arise. There are those who question the capacity of government to reduce costs however defined² : Why would governments know the direction of interest rates and exchange rates any better than markets? And why should governments care about the variability of interest expenditures? Should debt managers not be more concerned with the effect of their choices on tax rates or budget deficits?

Debt managers generally tend to measure cost and risk in nominal terms, even if some initial efforts are being implemented to simulate scenarios according to real variables. Debt managers tend to measure the cost of debt by looking at the yield to maturity and not only to cash-flows. This implies that the discount or premium in issued bonds is accrued as a cost over the life of the bonds. Debt managers also tend not to mark-to-market debt since a large share of the public debt is held until maturity, thereby making it irrelevant to include unrealized gains or losses in the definition of cost³.

Governments, by and large, believe that they can systematically reduce the average cost of debt by reducing the duration of debt⁴. But they also believe that if they do so they will encounter the larger risk of interest cost variations. Governments also focus on achieving the lowest possible expected cost for a given level of risk. Such an efficiency-driven perspective has pushed governments, on the one hand, to pursue liquidity-enhancing policies, especially on the long-end of the curve, as governments believe in the existence of a liquidity premium for large issue sizes. On the other hand, some debt managers take advantage of arbitrage opportunities for a given maturity target by issuing certain instruments rather than others on that segment of the curve⁵.

This divergence between theory and practice can be explained by political or public choice considerations. Public debt managers try to avoid personal blame and are sensitive to pressures from political appointees to whom they must report. It is, therefore, natural to interest expenditure (not tax rates) as the only relevant variable for debt managers.

Public debt strategy becomes less effective at higher level of debt. A growing literature finds that fiscal policy becomes ineffective when the debt-to-GDP ratio is high (Perotti 1999, Sutherland 1997, Chung and Leeper 2007, Favero and Giavazzi 2007, Corsetti et al 2012, etc). Nickel and Tudyka 2013 estimates for a group of European countries that responses of real GDP and private investment to fiscal stimulus become negative when public debt surpasses 50 to 60 percent of GDP. Similar results are reported

² A similar question motivates the article by Giovannini (1997).

³ However, when evaluating day-to-day management and the possibility of buying back outstanding debt or exchanging new debt for old debt, market value considerations become necessary again for decision-making purposes, as the gain or loss will be realized. For long horizons (and many governments have them), the cost arising from marking-to-market or looking at the yield to maturity tend to coincide.

⁴ See Campbell (1995) for a perspective on the potential for US debt managers to 'beat the market' systematically by shortening the maturity of debt.

⁵ As we will see, especially for derivatives, this perspective is adopted without necessarily keeping in consideration the fact that risks do not remain constant.

in Ilzetzki, 2010 for 44 countries including 24 developing countries, and in Kirchner et al 2010 for the euro area.

3. The role of strategic benchmarks as risk management tools

A strategic benchmark plays a key role in the control of risk. The benchmark in its function as a management tool requires the government to specify its risk tolerance and other portfolio preferences concerning the trade-off between *expected* cost and risk.

To that end, debt managers need to have a view on the optimal structure of the public debt portfolio. Ideally, they should be able to assess how a portfolio should be structured on the basis of cost-risk criteria so as to hedge the government's fiscal position from various shocks. The *optimal debt composition* is derived by looking at the relative impact of the risk and costs of the various debt instruments on the probability of missing a well-defined stabilisation target (e.g. the stabilisation of the debt ratio at some target value, thereby reducing the probability of a fiscal crisis). This framework would allow the pricing of risk against the expected cost of debt service. This price information makes it possible to calculate the optimal combination along the trade-off between cost and risk minimisation⁶.

This means that the choice of debt instruments that a government should issue depends in large part on the structure of the economy, the nature of economic shocks, and the preference of investors. For example, fixed-rate nominal debt (expressed in local currency) would help hedge the budgetary impact of supply shocks, while inflation-indexed debt instruments are a better hedge than nominals in case of demand shocks. This example also makes clear that cost-effectiveness (although very important) should not be the sole decision criterion when governments and debt managers assess which (new) instruments to issue or not.

Against this backdrop, the government needs to specify *a strategic benchmark*, representing the desired structure or composition of a liability (and asset) portfolio in terms of financial characteristics such as currency and interest mix, maturity structure, liquidity, and indexation. It is a management tool that requires the government to specify its risk tolerance and other portfolio preferences concerning the trade-off between *expected* cost and risk.

For a debt manager a strategic benchmark represents the longer-term structure of the debt portfolio the government wishes to have, taking also into account the risks at the asset side. Strategic benchmarks have two key roles:

- They provide guidance for the management of costs and risk.
- Portfolio benchmarks also define a framework for assessing portfolio performance in relation to cost, return, and risk.

⁶ The debt increases when implicit or explicit contingent liabilities are transformed into actual liabilities. For example, a recent World Bank Study of public debt dynamics shows that the realisation of (implicit and explicit) contingent liabilities contributes nearly 50 per cent to the increase in public debt in a sample of 21 emerging markets. (See Anderson, 2004.)

4. Public risk managing in the R. Macedonia

4.1. Public Debt Risk Indicators

Public debt risk has many dimensions. In this section we illustrate the main indicators commonly used by public debt risk managers. Most of them are of rather simple computation and we call them “traditional indicators.” Others use stochastic simulations and usually belong to the “at-risk” family of indicators. Although not too complicated, these indicators represent adaptations to the debtor’s point of view of measures of risk that are frequently employed by the private sector, such as the Value at Risk.

It is worth mentioning that, despite the simplicity of the so called “traditional indicators,” many countries in fact do not compute them and there appears to have no international methodological consensus across those countries that do. The first problem appears to come from a chronic problem that many debt offices face in terms of back-office systems to compute in an aggregate and accurate fashion even the most simple debt indicator, that is, the debt stock. The second problem, the lack of methodological consensus, is also of important consequences as it makes cross-country comparisons of risk indicators a “risky” task to conduct.

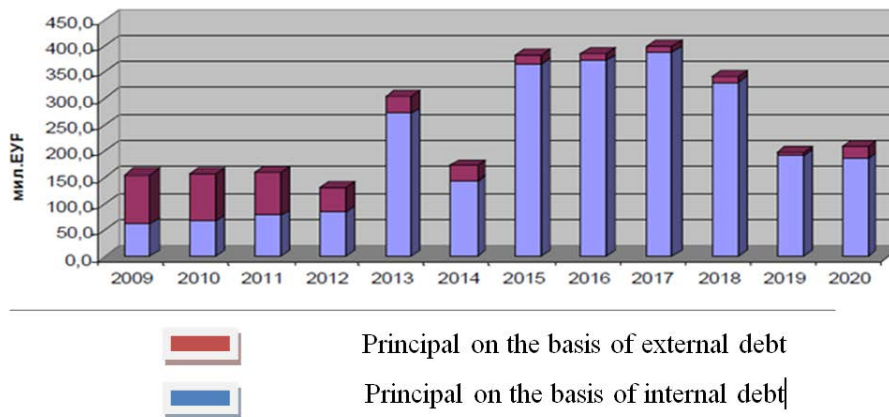
Uncertainty arising from future trends of macroeconomic variables in the international and the domestic capital market has a significant impact on decisions to effectively manage the debt portfolio of the country. In conditions of large fluctuations in economic variables has a need for active risk managing to which the portfolio of public debt is undergone. As main risks in the management of this portfolio are identified: refinancing risk, market risk,

4.1.1. Refinancing Risk

Refinancing risk of a public debt is defined as the risk of adverse changes in the stream of debt payments upon its refinancing. In extreme cases it may even lead to the incapacity of a government to roll-over part or the total amount of the debt coming due at a particular date.

Portfolio exposure to public debt refinancing risk is measured by the repayment profile of debt and indicator showing the average maturity of the debt (Average Time to Maturity – ATM). Taking into consideration the projections for the repayment profile in the coming years can be noted that the obligations to repay as the external and internal debt increase. A particular challenge for effective risk management refinancing is expected in 2013 and 2015, when regularly expire first and second Eurobond issued in 2005 and 2009 amounting to 150 and 175 million euro’s, respectively. The reason for the increased repayments in the coming period is happen mainly for the reason of projected capital investment in the energy sector and infrastructure.

Figure 1. Profile repayment of total public debt



Sources: Ministry of finance

4.1.2. Market risk

Market risk can be defined as the uncertainty related to the expected costs owing to the volatility in the market indexes or currencies. Although in financial markets this type of risk has a strong relationship with the volatility of asset market prices, in the case of public debt this type of risk regards to changes in the value of the portfolio (the debt stock).

Although an apparently simple concept, one would be intrigued by the degree of discussion that involves the methodology to compute market risk due to divergences on how to reach a relevant measure of stock, which forms the basis for any market risk calculation. Should one evaluate the debt in terms of mark-to-market (MtM) or mark-to-curve (MtC)? Should we express the stock in nominal or in real values?²⁹ These are frequent questions that arise from this debate that have deserved a lot of attention from Debt Management Offices.

Despite the relevant discussion above, many countries compute measures of market risk. In the category of “traditional” indicators, duration, refixing-duration and convexity are the most common, whereas the so-called “Cost-at-Risk” is the one coming from the stochastic group of indicators. Stress tests are commonly used as complements in market risk analysis to measure the consequences of severe shocks, most often in the interest and exchange-rates.

Identifying and managing market risks in the Macedonia is crucial for the portfolio of public debt of the reason that it is determined mainly by external factors, turn of variations in interest rates in the international financial markets, due to their constant fluctuation, so it is difficult to predict the trend in the medium and long term.

Public debt risk managing in the republic of Macedonia

4.1.2.1 The risk of changing interest rates

Measuring and managing the risk of changing interest rates is especially important in countries where domestic financial markets are underdeveloped and need for borrowing is covered from external sources without concession condition to the risk of changing interest rates is greater. The changing interest rates on the domestic and international markets affect the cost of debt, especially when fixed interest rate debt should be refinanced or the date when the interest rate is fixing again at a debt with a variable interest rate. Therefore it can be seen close relation to the risk of interest rate by refinancing the debt. Taking into account the projection of the interest structure of total public debt portfolio in terms of the ratio of debt with a fixed interest rate debt also with a variable interest rate can conclude that the sensitivity of the portfolio of changes in the interest rates in the coming years in Macedonia is relatively stable due to the retention of the existing structure interest rates. Sensitivity to changes in interest rates is especially evident at domestic debt due to the increased share of debt with a variable interest rate while the external public debt is relatively stable.

Figure 2. Interest rate structure of government debt



Sources: Ministry of finance

4.1.2.2. Average time to re-fixing -ATR

ATR indicator measures the average time until to the changes in interest rates. The greater value of this indicator shows that the majority of the debt portfolio will not caused serious change in the interest rate and such portfolio is less risky portfolio.

Figure 3 Average time to re-fixing interest rate (ATR)

	2014
Internal debt	1,9
External debt	4,2
Total government debt	3,4

Sources: Ministry of finance

According to projections of the structure of public debt to the next period, it expects a further slight decrease in the average time to re-fixing interest rate.

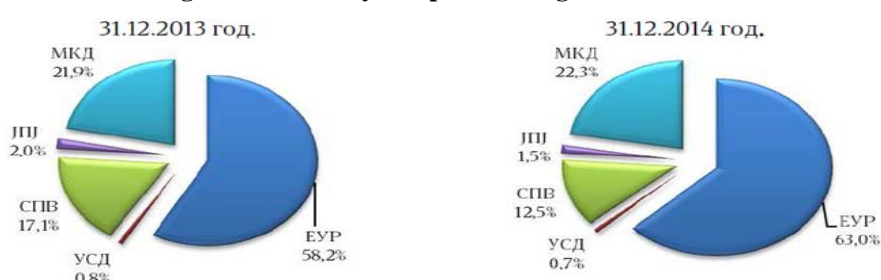
In this way the public debt portfolio of the Republic of Macedonia would be more exposed to changes in interest rates, given the possible increase in interest rates could lead to higher interest costs. The fall in the average time changes in interest rates, primarily due

to the reduction of external debt to fixed interest rate so and the depreciation of the structural bonds for old foreign currency deposits and restitution.

4.1.2.3. Risk of changes in exchange rate

Risk of changes in the exchange rate refers to the debt indexed or denominated in foreign currency. Most of the debt denominated in foreign currencies of the total public debt indicates a greater risk of changes in exchange rates. This is key risk for developing countries where external debt is fully indexed, as and most of the domestic public debt is denominated in foreign currency.

Figure 4. Currency composition of government debt

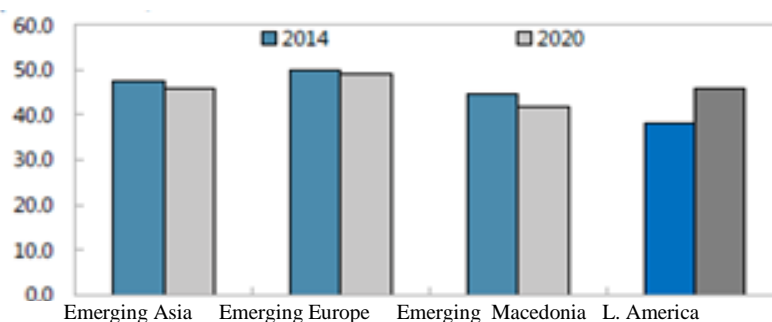


Sources: Ministry of finance

Exchange rate changes can greatly affect, i.e. increase anticipated costs for repayment of public debt - denominated in foreign currency. But given the fact that in R. Macedonia 1995 applies de facto fixed exchange rate against the German mark, and since 2002 against the euro, exposure to such risk would be measured also as a share of total euro portfolio public debt, which is actually the dominant currency with representation from 63% of total euro portfolio public debt, which is actually the dominant currency with representation from 63% of total debt structure at the end of 2014.

Where fiscal policy serves as the main macroeconomic policy tool, a significant part of public debt carries FX risks, financing needs are high, and long-term pressures from pensions and health spending are considerable. Against this backdrop, the authorities' intention to entrench fiscal sustainability using fiscal rules is a step in the right direction.

Figure 5. General Government debt Percent of GDP)



Sources: WEO database.

Public debt risk managing in the republic of Macedonia

Emerging Europe includes Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kosovo, Latvia, Lithuania, FYR Macedonia, Montenegro, Poland, Romania, Serbia, Slovak Republic and Slovenia. Emerging Asia includes China, India, Indonesia, Malaysia, Phillipines, Thailand and Vienam. Emerging Latin America includes Argetina, Brazil, Colombia, Mexico, Peru and Venezuela.

5. Conclusion

The fiscal situation in R. Macedonia has deteriorated since the global financial crisis. Benefiting from strong economic growth, R.Macedonia entered the crisis with one of the lowest public debt level in emerging Europe. Since 2008, there has been a reversal. This reflects fiscal support for the economy in the aftermath of the crisis, but also policy choices and low revenue efficiency. Loosening of the fiscal policy pushed the overall fiscal balance into a deficit of 0.9 percent of GDP by end-2008 and the overall deficit increased to 2.5 percent of GDP in 2011. The government's renewed stimulus beginning in 2012 steadily increased the fiscal deficit to 4.2 percent by 2014. As a result, public debt has risen from 23 percent of GDP in 2008, to 30 percent of GDP in 2011, and further to 44 percent in 2014.

Republic of Macedonia must take into account the principles of portfolio management and its compliance with macroeconomic policy and restricting and eliminating the impact of risks to the sustainability of public debt in the medium and long term. In that respect of objectives of the risk management of the public debt of the Republic of Macedonia such as: the financing the needs of the state with the lowest possible cost, on average and long term, and with sustainable level of risk; identifying, monitoring and managing risks to which it is treats public debt portfolio; and development and maintenance of efficient domestic financial market are relatively successfully realized.

In the Republic of Macedonia are identifying and managing refinancing, operating and market risks as a crucial for the portfolio of public debt of the reason that it is determined mainly by external factors, turn of variations in interest rates in the international financial markets, due to their constant fluctuation, so it is difficult to predict the trend in the medium and long term. The projected debt path in the absence of adequate measures shows that public debt would continue trending upward and reach 54 percent of GDP by 2020. Owing to there is a need to intensify the work of the strategy for managing the risk of public debt to a sustainable manner in the medium and long term.

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UPRAVLJANJE RIZIKOM JAVNOG DUGA U REPUBLICI MAKEDONIJI

Apstrakt: Glavni cilj upravljanja rizikom javnog duga je da obezbedi da se potrebe finansiranja vlade i obaveze plaćanja ispunjavaju po najnižim mogućim troškovima na srednji i dugi rok, u skladu sa sa pažljivim posmatranjem stepena rizika. Osnovno i fundamentalno pitanje koje se postavlja pred menadžere duga je stvarno ono koje se odnosi na to kakav bi bio sastav i profil duga kojem vlada treba da teži. Republika Makedonija mora da uzme u obzir principe upravljanja portfeljem i njegovu usklađenost sa makroekonomskom politikom i ograničavanje i uklanjanje uticaja rizika na održivost javnog duga na srednjoročni i dugoročni rok. Zbog toga postoji potreba za intenziviranjem rada na strategiji za upravljanje rizikom javnog duga na održiv način u srednjoročnom i dugoročnom periodu.

Ključne reči: upravljanje rizikom javnog duga.