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THE FUNDAMENTAL CONSIDERATIONS OF THE PUBLIC DEBT

Abstract

Recent financial and economic crises in 2010 produce serious negative consequences for the fiscal stability and economic sovereignty in the most of the countries in the world. The most intimidating are the increased public debts. The paper explains some of the fundamentals considerations of the public debt, with the focus on the determination and definition of the public debt. Especially important contribution of this paper is the elaboration of the methodology of calculation and estimation of the level and state of the public debt and distinguishing of the main differences among the applied methodology.

Key words: Public debt, Methodology, EFF methodology, ESA 95 methodology, ESA 2010 methodology

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Introduction

There is no generally accepted stance on budget deficit, although the presence of the public debt is evident. The debate among the scientist

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according to this problem considers and elaborates how big the problem is and should the balancing of the government budget be the main priority.

Most of the world countries are faced with the problem of high deficit and increasing public debt. Statistical evidence confirms that the level of public debt is above the highest register after the Second World War. Thus, in Japan, the USA and several European countries (Greece, Portugal, and Ireland) the debt exceeds the 100% of the GDP[1].

Economies faced with the situation of low economic growth rates, budget deficits, increased expenditures arising from aging population, and unstable financial sector represent additional pressure on the sustainability of public finances. Such concerns reflect the ratings of the economies and raise borrowing costs. Therefore, achieving fiscal balance and reducing the public debt are targets with the highest priorities.

The importance of this paper is seen thru the systematic review of the public debt methodology. First of all determination of total amount of the public debt in the economy is an objective that has to be fulfilled, because it presents the basis for preparing the appropriate policies and measures for managing public debt. These activities are crucial for solving the problem of public debt. Therefore the knowledge of the methodology for calculating and allocating the public debt and different modes and scope of the calculating methods give a clearer view of the debt burden.

1. PUBLIC DEBT CONCEPT AND METHODOLOGY

Economic and financial crisis in 2010 caused a serious distortion on economic sovereignty and a large fiscal burden of countries in Europe and worldwide. State borrowing measured by the public debt-to-GDP ratio increased sharply due to economic contraction and acyclic fiscal measures. The increased level of public borrowing in the world caused an increase in financial costs to governments borrowing. Increased borrowing caused further financial problems for countries that decreased economic activity, economic growth and crowding out effect of the private sector. Also, the increased borrowing of states causes a reduction in their liquidity and solvency off the capital market.

[1] World Economic and Financial Surveys, World Economic Outlook, Coping with Hight Debt and Sluggish Growth, IMF, October 2012

The State borrows as a result of previous fiscal deficits or when state expenditure exceeds state revenue. But the relationship between public debt and budget deficit is far more complex and is influenced by many other factors, such as additional requirements and criteria for borrowing, the difference between the nominal and market value of debt, adjustment of debt in convertible currencies and other statistical adjustments and methodology for calculating the public debt.

Public debt can be represented as nominal value of total public debt, debt per capita and the ratio between public debt and GDP. The ratio public debt/ GDP in fact represent the size of public debt in the relation of the size of economic activity. This is a key factor in determining the capacity of the economy for servicing the public debt. The indicator shows whether the capacity for tax collection is sufficient to service the debt.

The ratio between public debt and deficit (as the ratio public debt/ GDP) can be represented by the following:

$$\frac{D_t - D_{t-1}}{GDP_t} = \frac{EXP_t - REV_t}{GDP_t} + \frac{DDA_t}{GDP_t}$$

In equation D_{t-1} denotes the debt in period t-1, which together with the difference between budget expenditures $\mathrm{EXP_t}$ budget revenues REV_t and indicator adjustment of debt and deficit DDA_t representing cumulative public debt (D_t) at the end of period t.

Public debt with the high level and with the increasing trend changes the nominal and real interest rate. Further increase in public debt leads to increase of the debt servicing cost, primarily costs for interest. Despite the opportunity cost and crowding out effect of the private sector, debt may contribute to creating a snowball effect. The effect assumes that the increase in public debt causes an increase in the cost of interest and is financed by additional borrowing that decline the sustainability of public finances. This causes increase in interest rates. Due to the limited supply of money, borrowing from the private bank reduces the possibility of financing the private sector. This restriction causes the increased expenses for cash and loans that banks are issuing to private sector. Reduced possibility of lending to the private sector leads to a reduction in investment and consumption in the private sector. In some cases, high public indebtedness may cause capital outflow from the country, thereby causing a crisis in the banking sector or changes in exchange rates.

Appropriate methodology for public debt always should take into consideration the solvency of the government that borrows. The government is solvent when in the period t discounted value of all revenues is greater than the accumulated public debt and the discounted value of future budget deficits. However the state should be able to service its debt timely, in order not to fall in indebtedness. Government can service existing and future public debt by setting higher taxes to boost budget revenues, sale of assets that are owned or reduction of state expenditures. However the provision of funds for servicing the public debt through one of the ways previously shown can be accompanied by serious economic and political pressures. The increase in taxes could lead to a deepening crisis, by adding a larger tax burden and increased pressure for citizens.

Another criteria that is important for the selecting the method of calculation and analysis of public debt is the indicator of the liquidity of the state. Government that borrows is considered liquid for the period t, if all available funds and liquid assets of the state denominated in a particular currency can service all due liabilities for the same period t. Therefore, the knowledge of the assets and debt structure is crucial in managing and servicing the debt. The structure and liquidity of the government assets have great importance in determining the interest rate and debt cost.

The solvency and liquidity of the government in terms of public debt have a major impact on the sustainability of public finances and fiscal policy in the economy. Sustainability of the finances and debt considers the government's ability to manage debt through payment of liabilities arising from it and at the same time providing public facilities and services. So, the sustainability of the public debt should be seen through the liquidity indicator i.e. the ability of the governments to service the due debt timely. Long term sustainability of the public debt defines the solvency and the budgets constraints of the economy. Budget limit represents the difference between total public debts of the country with the discounted total future public expenditures and revenues. Increased public debt, assumes future increase of the revenues for debt servicing. The formula is as follows:

$$D_0 - \sum_{t=1}^{\infty} \frac{pb_t}{(1+r)^t} = 0$$

In the equation of budget constraint D_0 represents the public debt ratio to GDP at the beginning of time t=0, pb_t, t represents the budget bal-

ance in period t and r represents the differential gap between the nominal interest rate and the nominal growth rate of GDP.

The definition for the public debt in the European Union Countries and the most of the Europe countries takes into account the debt of the government sector.[2] Public debt includes the sum of all budget deficits. The most important for understanding the concept of public debt is to distinguish the main difference between the concept of public debt and budget deficit. The budget deficit represent flow and public debt state. Therefore, budget deficit is measured by changes over a period of time, while the total amount of the public debt is determined at one moment or on a certain day.[3] The overall public debt (gross debt) in any period of time reflects the debt of all government liabilities, debt with the Central Bank, state agencies, social funds, private investors and other financial institutions. Government debt to private investors (except the debt with the central bank and government agencies) is net public debt.

The concept of calculation of public debt in the European Union is based on the methodology established in accordance with the Maastricht Treaty, so this method of calculation is called Maastricht debt. Maastricht debt is defined as gross public debt of the central government expressed in nominal value at the end of the fiscal year and consolidated debt of all level of central government. Maastricht debt consist of all government obligations in a currency including deposits, loans and securities (excluding shares). It excludes certain financial instruments precisely financial derivatives and trade credits. The methodology for the calculation of public debt is applied in the European Fiscal Framework (EFF). It is used for all fiscal procedural processes of calculation and determination of public debt in the European Union. Thus the estimated public debt is used for fiscal monitoring of countries in the European Union, in particular for overseeing the cri-

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[2] The general government sector by convention includes all the public corporations that are not able to cover at least 50 percent of their costs by sales and, therefore, are considered non-market producers. The general government sector has four subsectors: central government, state government, local government and social security funds. In the European System of Accounts (ESA95), paragraph 2.68, the sector "general government" has been defined as containing: *"All institutional units which are other non-market producers whose output is intended for individual and collective consumption, and mainly financed by compulsory payments made by units belonging to other sectors and/or all institutional units principally engaged in the redistribution of national income and wealth."*

[3] Atanasovski Zivko, Public Finances, Faculty of Economics – Skopje, 2004, p. 297

teria set by the European Union, public debt not exceeding 60% of GDP.[4]

The advantage of this methodology for the calculation of public debt is in the exemption of the effects related to prices, market changes, liquidity of government funds and changes in exchange rates. Applying the Maastricht debt indicator simplify the methodology of calculation of gross public debt and facilitate control, comparison and management of the public debt.

The second concept for the calculation of gross public debt is based on national accounts of the Member States of the European Union in accordance with the European System of Accounts (ESA 95), and are therefore called ESA debt. The concept of ESA public debt includes all obligations of the government in a given period of time in a particular currency. Despite further lease obligations and instruments which are included in the calculation of EFF debt, ESA methodology for calculating the public debt include other financial instruments, namely financial derivatives, due liabilities and insurance reserves. The additional difference between ESA and the EFF methodology for calculating the public debt is the proposition that according to ESA methodology public debt is calculated at market prices. Therefore, the estimated public debt reflects the impact of changes in market prices and exchange rates, as well as the liquidity of the assets of the central government.[5]

Starting from the 1 September 2014 the ESA 2010 are established as the new methodology for measurements the general government debt. In ESA 2010, the core equivalent concept is total financial liabilities, which involve a wider list of financial instruments than included in government debt. The relevant ESA 2010 paragraphs on valuation of government liabilities are: [6]

- 1.94: "Flows and stocks shall be measured according to their exchange value, i.e. the value at which flows and stocks are in fact, or could be exchanged for cash. Market prices are ESA's basic reference for valuation."

[4] Publications Office of the European Union, "*Manuel on Government Deficit and Debt – Implementation of ESA 2010"*, Luxemburg, 2014, pg. 383

[5] Ibid pg. 403

[6] EUROSTAT, Manuals and guidelines, Manual on Government Deficit and Debt - Implementation of ESA 2010, 2014

- 7.33: "Assets and liabilities are valued at the market prices on the date to which the balance sheet relates".
- The stock of government liabilities should be recorded in national accounts at their market value, at the end of the accounting period, in the closing balance sheet of the general government sector.

The main revenue of general government consists of taxes, social contributions, sales and property income. It is defined in ESA 2010 by reference to a list of categories: market output, output for own final use, payments for non-market output, taxes on production and imports, other subsidies on production, property income, current taxes on income, wealth, etc., net social contributions, other current transfers and capital transfers.

The main expenditure items consist of the compensation of (government) employees, social benefits (social benefits and social transfers in kind for market production purchased by general government and NPISHs), interest on the public debt, subsidies, and gross fixed capital formation. Total general government expenditure is defined in ESA 2010 by reference to a list of categories: intermediate consumption, gross capital formation, compensation of employees, other taxes on production, subsidies, property income, current taxes on income, wealth, etc., social benefits other than social transfers in kind, social transfers in kind - purchased market production, other current transfers, adjustments for the change in pension entitlements, capital transfers, and transactions in non-produced assets.

Table 1 Methodology for public debt

Sector	EFF methodology	ESA 95 methodology	ESA 2010 methodology
Gross concept	Central Government		
	Gross public debt		
Financial instruments	loans; deposits; other securities than shares	financial derivatives; liabilities from loans and other past due payments; insurance reserves	Currency and deposits (AF2), debt securities (AF.3), loans (AF.4)

Value	nominal price	market price	market price
Consolidation	Consolidated (Included sub-levels of the central government sector)	Dual consolidation (calculation include all levels of the central government and calculation only of the central government debt)	Dual consolidation (calculation include all levels of the central government and calculation only of the central government debt)
Advantages	The calculations are on nominal prices and the impact of the market fluctuations is not included Simplicity of calculating the public debt (excluding all obligations that are difficult to measure in practice) The methodology allows direct application with the EU principles and comparison with EU countries	Comprehensive overview of government duties Calculation of net public debt of the central government at market prices Methodology that allows comparison with other countries of the world	Calculation of net public debt of the central government at market prices Methodology that allows comparison with other countries of the world

Source: Dagmar Hartwig Lojsch, Marta Rodriguez-Vives and Michal Slavik, "The Size and Composition of Government debt in the Euro Area", European central bank, Occasional paper series, October 2011, pg. 14

The European System of Accounts 1995 (the ESA 95), was published in 1996. The ESA 2010 methodology has the same structure as the ESA 95 publication for the first 13 chapters. But, it is expanded with the 11 new chapters elaborating aspects of the system which reflect develop-

ments in measuring modern economies. In order to establish a balance between data needs and data possibilities, the concepts in the ESA 2010 have several important characteristics. The characteristics are that the accounts are: (a) internationally compatible; (b) harmonized with other social and economic statistical systems; (c) consistent; (d) operational, meaning that they can be measured in practice; (e) different from most administrative concepts; (f) well-established and fixed over a long period; (g) focused on describing the economic process in monetary and readily observable terms and (h) capable of applying in different situations and for different purposes.

According to the ESA 2010 system, for the government deficit and debt it is important to depart several things:

- The classification of units: the government deficit and debt are primarily affected by units classified to the government sector. This is determined by considering whether or not a unit is controlled by government and whether it is a non-market or market (financed mainly by its own sales) unit. Privately controlled market institutional units are not included in the government sector.
- The timing of transactions: ESA 2010 records transactions on an accrual basis, i.e. when the economic activity takes place, rather than when the cash is paid. Such differences may be large, and therefore significant for the government deficit/surplus.
- The nature of a transaction: ESA 2010 distinguishes non-financial transactions such as consumption, wages and salary, subsidies or grants to cover losses, which directly affect the government deficit; and financial transactions as e.g. the acquisition of financial assets or the repayment of debts, which do not.

The introduction of ESA 2010 outweigh the negatives and the obstacles from the methodological aspect that contained EFF and ESA 95 methodology. The application of the ESA 2010 in the calculation of public debt over time will manifest failure, so, in the future will indicate what changes should be made.

2. THE CONCEPT OF PUBLIC DEBT IN THE REPUBLIC OF MACEDONIA

According to the Law on Public Debt of the Republic of Macedonia[7] public and government debt are separate concepts and are separately defined. „Government debt is the sum of financial liabilities created by borrowing by the Republic of Macedonia, public institutions established by the Republic of Macedonia and the municipalities in the City and the City of Skopje, excluding the debt of public enterprises and companies being fully or predominantly owned by the state municipalities and the National Bank of the Republic of Macedonia."[8]

The public debt „is the sum of government debt and the debt of public enterprises established by the state or the municipalities in the City and the City of Skopje, as well as companies being fully or a dominant ownership of the state or the municipalities in Skopje and Skopje for which the state has issued a state guarantee. The debt of the National Bank of the Republic of Macedonia is not a public debt."[9]

Management of the public debt include set of activities and measurements that the Ministry of the Finance of the Republic of Macedonia is obligated to implement according to the specified competencies in the Law on Public Debt.

The main goals of the management of the public debt are:

- Financing the needs of the state apparatus with the lowest possible cost and sustainable risk, in the medium and long term;
- Identifying, monitoring and managing the risks to which the portfolio is subject to the public debt;
- Development and maintenance of efficient domestic financial market

[7] Law on Public Debt (Official Gazette No. 165/2014), Act on Amendments of the Law of Public Debt, (Official Gazette no. 139/2014), Act on Amendments of the Law of Public Debt (Official Gazette No. 35/2011), Act on Amendments of the Law of Public Debt (Official Gazette No. 88/2008),), Decision of the Constitutional Court U.Br.49 / 2006-0-0 of 13.12.2006, (Official Gazette No.137/06) and the Unofficial Consolidation Law on Public Debt include: the Public Debt Law (Official Gazette no.62/05)

[8] Law on Public Debt (Official Gazette No. 165/2014)

[9] Ibid

Public debt policy management is determined for a period of three years and is part of the fiscal strategy of the Ministry of Finance in the Republic of Macedonia. It include a set of activities among them are:

- determination of the public debt limit in the medium term;
- setting the amount of sovereign guarantees on average medium term;
- the maximum amount of new borrowing in the current year;
- the maximum amount of newly issued sovereign guarantees in the current year;

The most important questions is to determine the public debt limit. Public debt limit in the Republic of Macedonia is determined based on the ratio of public debt and GDP in denars according to the average exchange rate at the official rate of the National Bank of the Republic of Macedonia valid on the date of calculation.

Public borrowing in the country may be accompanied in the following forms:

1. Borrowing by concluding loan
2. Borrowing by issuing government securities
3. Issuing state guarantees

The Republic of Macedonia accepted the ESA 2010 methodology for calculation of general government debt. Thus the calculations of government liabilities are made in accordance with the principles and criteria of the ESA 2010 and the Law on Public Debt of the Republic of Macedonia.

Conclusion

Public debt is present in both developed and developing countries. The most important relevant question for its management is the appropriate definition and scope of public debt.

Public debt is defined according to the different approaches about the structure and coverage of economic sectors, liabilities and assets of the country. The definition for the public debt in the European Union Countries

and the most of the Europe countries takes into account the debt of the government sector. Public debt includes the sum of all budget deficits.

The concept of calculation of public debt in the European Union is based on the methodology established in accordance with the Maastricht Treaty. The methodology for the calculation of public debt considered in this paper is the EFF methodology, ESA 95 and ESA 2010. All of them use the concept of gross debt. The difference among methodologies is in the proposition that according to ESA debt is calculated at market prices. Therefore, the estimated public debt with the ESA Methodology (95 and 2010) reflect the impact of changes in market prices and exchange rates, as well as the liquidity of the assets of the central government.

Also, there are differences in the scopes of the included financial instruments. The ESA methodology includes wider financial instruments than EFF methodology like, currency and deposits, debt securities, loans, insurance reserves, pensions and standardized guarantee schemes.

The main advantage of the ESA methodology is in the comprehensive overview of government duties and that allows comparison among the countries all over the world and not only among the EU countries.

The Republic of Macedonia accepted the ESA 2010 methodology for calculation of general government debt. Thus the calculations of government liabilities are made in accordance with the principles and criteria of the ESA 2010 and the Law on Public Debt of the Republic of Macedonia.

A methodology should not be considered right or wrong until each country evaluates its pros and cons. Thus, countries should classify debt in ways that reflect their perception of the associated risk, which would be related to their macroeconomic policies and perspectives for the future, as well as the difficulties involved in generating quality statistics based on the chosen criterion.

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