

ASSESSMENT OF THE SUSTAINABILITY OF GOVERNMENT DEBT IN A STOCHASTIC ECONOMY

Aura DRAKŠAITĖ

Kaunas University of Technology, LT-44309 Kaunas, Laisvės ave. 55,
E-mail: aura.draksaite@ktu.lt

Abstract. Recent abrupt increase of government debt and significant damage to the economy of the most countries in the worlds revealed the lack of efficient techniques to prevent the outcomes of economic recession caused by the stochastic changes of the economy. Therefore it is important to revise the process of assessment of government debt sustainability, taking the stochastic approach as the background for the projections of future extent of the government debt. The aim of the paper is to indicate the specific features of assessment of the sustainability of government debt in stochastic economy. The main finding of the paper is that assessment of government debt sustainability in stochastic economy requires focusing on the analysis of the contingency of economy.

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1. Introduction

If government spending is higher than its income, usually this gap is covered by borrowed funds, which in turn can become very pricey way to reduce the public deficit. It is evident that higher debt ratio leads to higher primary surpluses in most of the developed countries, such as USA or countries within EURO area. On the other hand, contemporary pattern of economy implicates the necessity to increase both internal and external government debt in order to meet economic needs of the state. Many economists agree that borrowing is not only necessary but even essential factor for development of the national economy. Over the several last decades, government debt has been one of the largest sources of capital flows to different countries. Given the opportunity to borrow capital outside the country, governments reallocate their budgets accordingly (Gwosc, Beek, 2003). Lately rates of the government debt growth

are eminently rapid all over the world. Therefore management of the government debt becomes one of the preferential issues for decision makers in both national and transnational government institutions.

Also, in recent years huge budget deficits in many countries have raised significant concerns about the sustainability of fiscal policy. Accordingly, the question of whether a given level of government debt is “sustainable” has become more significant. In their report on sustainability of global finances, presented in February of year 2010, officials of International Monetary Fund have declared that increase of government debt has significant impact on financial sustainability of the countries. In the report it is predicted that the need for borrowing will increase considerably, and subsequently this will lead to increase of budget deficits and government debts of the countries.

The problem of sustainability of the government debt gets even more escalated in case of stochastic economy as the macroeconomic and government debt variables in this case are of contingent nature.

Various aspects of government debt are widely analyzed in research papers of economists. Government's borrowing needs in correlation to its spending extent, impact of the borrowing strategies on country's economy etc. are analyzed by Z. Karazijiene (2008, 2009), A. Lakstutiene (2008), F. Relano (2008). Reasons for government borrowing and its after-effects are analyzed by A. V. Rutkauskas *et al.* (2008), F. C. Graham (2000), Z. Stuopyte and A. Guzavicius (2008), R. Ginevicius *et al.* (2008). Arnone and Presbiterio (2006) have analyzed structure of government debt and made a conclusion that structure of the government debt is the crucial factor for determination of solvency and risk index of the country. In his work V. Izák (2009) has demonstrated that there is substantial interdependency between inflation and GDP growth rate. Different methods for assessment of government debt sustainability have been analyzed by K. Thaeo (2004), J. D. Hamilton and M. A. Flavin (1986), C. S. Hakkio and M. Rush (1991), M. Uctum *et al.* (2000), F. Yusof *et al.* (2008), O. Vlasenko *et al.* (2009), Telatar and Bolatoglu (2004) (analysis of interdependency between government debt ratio, interest rates, primal surplus/deficit), M. Goldstein (2010). Different authors are using different approaches to the government debt sustainability issue and accordingly can reach not even similar results when analyzing the same countries.

However these and many other aspects of management of government debt and assessment of its sustainability are mostly of deterministic nature, which is hardly applicable in case of stochastic economy. Recently, awareness of the significance of achievement of the sustainable government debt in contingent economic environment has resulted in increase of research works on the issue. Stochastic approach has been applied in research works of R. Ginevicius *et al.* (2009), D. Dzemydiene (2008), V. Grybaite and M. Tvarovaviciene (2008), R. Ciegis *et al.* (2009), A. V. Rutkauskas (2008), D. Teresiene *et al.* (2008), P. Aniunas *et al.* (2009).

The uncertainty factor should be concurrent component in development of contemporary strategies of government debt management. Especially this is applicable for countries with developing financial markets as the wrong borrowing strategy can result in crisis of economy or even bankruptcy of the country.

Furthermore, absence of explicit methods for estimation of sustainability of the government debt makes investment decisions much more complicated for both governments and investors. Unsustainable fiscal policy can be defined as one which violates the government's intertemporal budget constraint in the long run.

Therefore it is important to evaluate whether or not particular countries are pursuing sustainable or unsustainable fiscal policies, taking the stochastic approach as the background for the projections of future rate of the government debt. The *aim of the paper* is to indicate the specific features of assessment of the sustainability of government debt in stochastic economy.

The paper is organized as follows. First, the fundamental conception of the sustainable government debt is given. Then main techniques of assessment of the government debt sustainability are discussed. Brief characterization of the stochastic economy is presented next. Specific features of assessment of the sustainability of government debt in stochastic economy are indicated before the concluding part of the paper.

2. The concept of sustainable government debt

There are several definitions of the sustainable government debt, complementing one another quite well. In general, government's borrowing strategy is considered neither efficient nor sustainable if government is overspending and no additional value is created for the future generations, which will have to cover costs of the present borrowing (Miles, Scott 2002; Grundey 2008). Likewise, a level of debt is defined to be "sustainable" if a steady state with non-degenerate values of economic variables exists (Rankin *et al.* 1999).

Similarly, a sustainable government debt is considered to be one with debt ratio being stable or falling over time. In this case, a rising debt ratio denotes unsustainability of the government debt. In year 1992 three of the nine larger economies in Latin America had ratios of net public debt to GDP exceeding 40 percent. By 2001, that number had grown to nine. According to the International Monetary Fund, these rising debt ratios were symptomatic of deeper weaknesses in fiscal systems including narrow revenue bases, combined with weak collection mechanisms and frequent resort to tax amnesties, rigidities in current spending and inflexible arrangements with sub-national levels of government.

Also government has to satisfy an intertemporal budget constraint regardless of the level of safe interest rate. Policies that satisfy this constraint can be considered sustainable. In many cases government debt is seen as managed properly if budget deficit and surplus are balanced without adjusting the government's borrowing politics in the long run.

Some of the scientists point out the borrowing limit, i.e. government should borrow only for those expenditures which will generate income in the future and thus enable to pay up the debt (Ciburieni, Povilaitis 2005).

Therefore it is important to be able to measure government's ability to cover costs of borrowing and debt management. If government is not capable of this, the burden of debt can cause serious setbacks in economy or even result in bankruptcy of the coun-

try (Durbarry *et al.* 2008). Debt servicing ability should be evaluated very reservedly, because only proper management of the government debt allows gaining benefit from the borrowing.

Also, government debt is usually defined as sustainable if it is acceptable for both internal and external creditors. Similarly, and as mentioned above, government debt can be assumed to be sustainable if it can be considered as such from the perspective of future generations. Therefore ability to manage government's liabilities properly in long run can be described as ability to achieve sustainability of the government debt.

For the initial evaluation of the sustainability of government debt, debt ratio to GDP can be calculated. However, this indicator is quite abstract and can not be used alone for evaluation of sustainability of the government debt. Rather it is used to demonstrate the extent of government debt and enables comparison of government debts of different countries. Being of multipartite nature, evaluation of sustainability of government debt requires much more complex approach. First of all specific macroeconomic environment and economic heritage should be considered for every country in question. In addition, besides macroeconomic indicators, indicators directly affecting the government debt should be analyzed simultaneously. Basically, equation (1) can be used to demonstrate the fundamental concept of the sustainability of the government debt (Buiter, Willem 1985).

$$M_t^N - M_{t-1}^N + B_t^N - B_{t-1}^N = G_t^N + i B_{t-1}^N - T_t^N \quad (1)$$

where:

- M – cash flow;
- B – government debt;
- G – government spending;
- T – government income;
- i – nominal value of interest rate;
- t – time period;
- N – indicator of the nominal value.

Thus it can also be argued that sustainable government debt is one, which is affordable for the government. Therefore government's solvency can be considered as a measure to estimate potential of the government to manage its debt properly, i.e. to keep it sustainable.

Other very important aspect of management of government debt is evaluation of risk. It is necessary to be performed in order to evaluate probable changes in debt servicing costs. These and other important peculiarities of the achievement of sustainability of government debt are discussed next.

3. Assessment of sustainability of the government debt

Primarily, extent of government debt depends on stability of economy and the ability of government to maintain sustainable debt. Those capabilities in turn are sub-

ject to specific characteristics of the country, i.e. country size, its economic policy etc. For example, what is advantageous to one country is not necessary applicable in country with different economy policy.

As discussed, focusing solely on gross or net government debt as a share of the country's GDP for evaluating debt sustainability is not the best practice. In opinion of many economists, management of government debt should be based on minimization of debt and limiting the spending as well as on constant control of budget and trade deficits (Stuopyte 2008; Ciburiene, Povilaitis 2005; Holzmann, Nec 2004; Durberry *et al.* 2008)

As an example, International Monetary Fund, in one of the suggested methods for the assessment of sustainability of the external government debt, has presented the following model, which is based on assumption that nominal external debt is increasing because of financing of the budget (Mellander *et al.* 1992):

$$D_t = C_t - NFDI_t + (1 + r_{t-1})D_{t-1} + Z_t \quad (2)$$

where:

- D_t – nominal external debt in period t ;
- C_t – stock of foreign exchange in the budget;
- $NFDI_t$ – net foreign direct investment;
- r_t – nominal interest rate (of nominal external debt);
- Z_t – other factors.

In evaluation of the debt growth rate, variables in equation (2) can be adjusted as follows (Mellander *et al.* 1992):

$$d_t - d_{t-1} = c_t - nfdi_t + \frac{r_t d_{t-1}}{1 + g_t + p_t + g_t p_t} - \frac{g_t d_{t-1}}{1 + g_t + p_t + g_t p_t} - \frac{p_t(1 + g_t)d_{t-1}}{1 + g_t + p_t + g_t p_t} + z_t \quad (3)$$

where:

- g_t – real growth rate;
- p_t – GDP deflator growth rate.

Thus this formula can be used for the assessment of sustainability of external government debt.

Moreover, comparative indicators should be analyzed. Some of such indicators are common for assessment of sustainability of government debt in different countries, i.e. ratio between the debt and GDP, ratio between interest rate and GDP etc. Some of the indicator are used not so often, i.e. stock of debt in relation to personal spending extent (personal savings decrease if government raise the taxes in order to pay up the debt). In any case these indicators should be analyzed integrally. Contemporary analysis, mea-

surement and management of government debt require an appropriate complex set of concepts and tools, especially the ones taking the contingency of economy into the account (Snieska; Draksaite 2010). This is especially applicable for assessment of the sustainability of government debt.

To determine what the debt ratio will be next year, the analysts usually make projections for the economy's real growth rate, the real interest on the debt, and the non-interest component of the government budget, expressed as a share of GDP (the so-called "primary surplus" or primary deficit). The debt ratio will be higher next year, *ceteris paribus*, the higher the debt ratio in current year, the lower the growth rate, the higher the real interest rate on the debt, and the lower the primary surplus (Goldstein 2003).

One of the ways to evaluate sustainability of the government debt is to analyze the structure of the debt itself. This can be performed in regard to the currency (national and foreign) or in respect of time (short term and long term debt). For example, period of redemption of the debt is different for the short term and long term debts. In case of long term debt, usually refinancing takes place and is one of the crucial factors in estimation of government's ability to pay up its debts in the long run. It is also important to monitor the extent of the refinancing, which should not exceed running need for borrowing and the cost of outstanding debt (Karazijene 2009).

The other important component of the complex assessment of the sustainability of the government debt is evaluation of risks. Usually interest rate and currency risks are measured. Also government's solvency should be estimated as well. Likewise, ability to achieve sustainability of the government debt is usually defined as government's ability to sustain intertemporal budget in the long run. The intertemporal budget constraint can be commonly explained as the requirement that the total spending of a government must be within the funds available to it over the long period.

Generally, the evaluation methods used for the assessment of sustainability of the government debt can be grouped in two broad groups—quantitative and qualitative evaluations. Econometric calculations are mostly used in quantitative measurements and contingent variables are analyzed in qualitative evaluations. The latter is especially important for the sustainability of the government debt and the economy on the whole, because it allows taking the stochastic aspects of the economy into account. However, these methods can be very different considering the chosen variables, assessment approach, time span etc. Nevertheless, most of these methods have one common feature—they are evaluating more than twenty variables as a complex.

While separate countries make efforts to define the sustainability of their government debt, international institutions and organizations are constructing their own methods for assessment of the sustainability of government debt in different countries. For example, World Bank and International Monetary Fund have created a debt sustainability framework (abr. DSF) which is used for assessment of the debt sustainability and allows forecasting of extent and structure of the future government debt. The framework is based on creation of sample of assessment of the government debt sustainability, which can be used by the countries. Similar frameworks are used by such

organizations as United Nations Conference on Trade and Development, share trading platforms etc. The aim of creation of such sample debt sustainability evaluations is to help governments to develop effective, i.e. sustainable and less costly, strategy of government debt management. Various macroeconomic variables, government's borrowing policy, budget variables are evaluated using the framework. Possibility of simulations of different scenarios of the debt restructurization and its impact on the national economy is provided by the framework as well.

In summary, there are two main ways to assess the sustainability of government debt. One of them is to analyze comparative indicators, such as ratio of government debt to its income, ratio of debt servicing costs to GDP, ratio of debt servicing costs to government income, ratio of external debt to export, ratio of short term debt to long term debt, ratio of domestic debt to external debt, ratio of debt servicing costs to aggregated debt. The other way is to use models with complex variables, describing both macroeconomic indicators and directly debt describing indicators. However, there are a few techniques taking into account the contingency of the economy, which is essential to consider in case of stochastic economy.

4. Characteristics of sustainability of government debt in stochastic economy

The extent of the government debts is directly dependent on the economic performance of the country. In economic retention period government's debt can increase significantly. And in recovery period government's debt can be minimized or even eliminated (which is not likely the case in the contemporary global economic environment). Recent economic downturn has explicitly demonstrated that most of the countries round the world are quite vulnerable to the economic shocks. Because of the economic setback, government debts have increased considerably. This was caused mostly by the increase of unemployment and social transfers, decreased consumption and government income from tax. All this aggravates the burden of government debt, especially for the countries which have no effective remedies against sudden unfavourable changes of economy. Therefore, estimation of sustainability of the government debt should be always complemented by the analysis of stochastic factors of the economic environment.

However, in any case problem of the government debt's sustainability is escalated if economy is undergoing an economic shock. For example, Reinhart and Rogoff (2009) have analyzed economic indicators in several countries and made a conclusion that in period of 3 years after the typical economic crisis overall debts mean increases by 86% to compare it with the situation before the economic crisis. Other example is government debt of Ireland, which has increased by 98% to compare it with the debt in year 2007. It is also calculated that by the next year government debt in UK will increase by 111%, in USA—by 75% and in Spain—by 78% (Cecchetti *et al.* 2010.). It is widely agreed that increase of short term debts will be continuous and of a considerable rate, which will make future borrowing even more costly.

Traditionally, review of secular growth as a deterministic process and focusing on the fluctuations around the trends, i.e. on business cycles, has been most common approach for analyzing macroeconomic fluctuations. However, the trend component of many time-series can be characterized as a random walk with drift, i.e. as a stochastic trend. This raises new important questions about the sources of aggregate fluctuations. In the traditional frameworks, all unpredictable fluctuations are transitory, but in case of stochastic trends such fluctuations may also arise from shocks to growth.

Similarly, time-series models such as vector auto-regressions (abr. VARs) have been usually used to describe business cycle fluctuations. Multivariate time-series models depict the long run correlations between the variables, while there is no consideration of a short run data. Specifically, the time-series are assumed to be co-integrated, i.e. to have common stochastic trends.

For example, the data-generating process (abr. DGP) can be described by a vector moving average (VMA) or a VAR model. In the model an “impulse response function” gives the response of a variable in the system to an unpredicted impulse in some component of the residual vector. In the reduced form time-series models, impulse responses associated with structural (independent) shocks can be derived from the impulses and propagation mechanisms.

The data-generating process is defined by the equation (4). It demonstrates that the time-series consists of cyclical and secular components, which are both stochastic (Greiner 2007).

$$x_t = x_0 + \gamma \tau_t + \Phi(L)v_t \quad (4)$$

where:

- x_t – n-dimensional real valued vector (discrete) time-series;
- x_0 – a constant vector containing the initial values of x ;
- $\gamma \tau$ – permanent component of x_t ;
- $\Phi(L)v_t$ – stationary (transitory) component of x_t ;
- L – lag operator, i.e. $L^j v_t = v_{t-j}$;
- v_t – n-dimensional sequence, assumed to be white noise.

The linearly stochastic trends can be demonstrated by modeling τ_t as a vector of random walks with drift:

$$\tau_t = \mu + \tau_{t-1} + \varphi_t \quad (5)$$

where:

- φ – dimensional vector of structural (independent) shocks with permanent effects on x ;
- φ_t – a white noise sequence.

Such permanent shocks may cause transitory fluctuations about the trends, i.e. that v_t may contain elements of φ_t .

Already discussed intertemporal budget constraint implies that a government which has initial debt must run a primary surplus (excluding interest payments) in at least some periods. However, the stochastic model imposes almost no restrictions on the average level of primary deficits, because governments can trade off primary deficits in some states of borrowing against surpluses in other states.

5. Peculiarities of the government debt assessment in stochastic economy

Recent economic setback demonstrated that government's ability to sustain management of sovereign debt in desirable level of economic development is mainly based on the ability to plan for unforeseen contingencies.

In general, stock of the government debt is predictable if ratio of government debt to its income is stable. This is not the case for stochastic economy environment. Thus in case of sudden random setback of economy significant and hardly controlled increase of the extent of government debt is witnessed in different countries all over the world. International Monetary Fund has estimated that in year 2010 growth rate of government debt of G20 will exceed the rate of economy growth and will result in ill-affected international economy. Also it is obvious that countries with massive extent of external debt are eminently vulnerable, because they are of high dependency on the foreign investors. Greece is an example which underwent the crisis of government debt.

One of the problems for development of strategy of government debt sustainability, which could be optimal in respect to stochastic economy environment, is the lack of quantitative and especially qualitative data (of stochastic effect on the economy) and ability to generate such data. Also, as already discussed, many economists tend to evaluate the sustainability of government debt based on historic information and deterministic variables of both the macroeconomics and debt itself. Thus assessment of sustainability of government debt is not reflecting the real level of un-/sustainability and is quite risky to be relied on. As an example, equations (6) and (7) are presented next. Primary budget can be calculated using the following formula (Svaljek 1999):

$$s^0 = \frac{b_0(r-n)}{1+r} \quad (6)$$

where:

s^0 – ratio of primary surplus to GDP in time period $t=0$;

b_0 – ratio of government debt to GDP in time period $t=0$;

r – interest rate for long run;

n – GDP growth rate.

Difference between s^0 and s is the indicator of sustainability of government debt.

Other equation used for the assessment of the government debt sustainability is following (Stoian 2007):

$$d_t = \frac{1+r_t}{1+g_t} * d_{t-1} - p_t \quad (7)$$

where:

- d_t – government debt in time period t ;
- r_t – real interest rate in time period t ;
- g_t – real GDP growth rate in time period t ;
- p_t – primary deficit/surplus in time period t .

The lack of evaluation of the contingency factors is obvious. One of the solutions for this problem is suggested in the model of Croce, E. and Juan-Ramon (2003) which allows creation of trends for the future debt extent. However, trends are based on the more or less deterministic data as well. Therefore, for assessment of the sustainability of the government debt, and specifically the ability to maintain the government debt in sustainable level, preference should be given for the models, based on stochastic simulations. That kind of models allows simulation of different possible scenarios and the impact on economy in case of various economic environments and changes of it. Garcia and Rigabon (2004), Hostland and Karam (2005), Celasun et al. (2006), Taner and Samake (2006) have made calculations based on stochastic nature of the economy. They argue that properly constructed stress tests take into account the interdependence among the variables. Such correlations—which may be positive or negative—allows for a better appraisal of the probability of the shocks that are considered. Therefore, assessment of the sustainability of government debt should involve the contingency factor and variables even much more specific as the ones given in equations (4) and (5).

Employment of contingency factor is one of the essential steps of the assessment of sustainability of government debt, suggested by IMF (Wyplosz 2007). According to IMF, as historical correlations are not necessary to be relevant in the future, it is reasonable to take into account all the estimated correlations and to generate all the possible combinations of shocks. The procedure can be automated to randomly generate a very large number of shocks, literally thousands of them, small and big, isolated and combining many events. Crucially, the method associates each shock with a probability of occurrence. It provides association of each shock with the corresponding evolution of the debt and calculates the probability of its occurrences (Monte Carlo simulations). In addition, IMF also suggests stress testing.

Other tool for assessment of government debt sustainability under stochastic environment is the MTDS (Medium Term Debt Management Strategy). It provides a framework for formulating and implementing a debt management strategy for the medium term. It is primarily focused on determining the appropriate composition of the debt portfolio, taking into account macroeconomic indicators and market environment. MTDS is useful for illustrating government's cost and risk tradeoffs associated with different debt management strategies and for managing the risk exposure embedded in a debt portfolio, in particular the potential variation in debt servicing costs and its budgetary impact.

The MTDS has been developed by the World Bank's Treasury Department in partnership with IMF. Technical assistance on the MTDS is driven by country demand and is generally implemented through a baseline and a follow-up mission as well as a wide range of training activities.

Also, considering the evaluation of the future stock of the government debt and its servicing cost, usually the factor of credibility of the country is neglected (Goldstein 2010). For example, if borrowing cost increases significantly, the credibility of the country can be affected negatively in the international financial market. Therefore there should be made a simulation taking into account the assumption that no external re-financing is possible, i.e. no funds for debt refinancing are available from the external sources such as foreign countries or foreign/international institutions.

One more difficulty in forecasting the stock of the government debt is related to unforeseen/contingent liabilities of the government. These liabilities usually are not included in the structure of the government debt. For example, if considerably large part of credit is taken with the government's guaranties, in case of downturn of economy this can cause massive shock of the economy.

In summary, assessment of the government debt sustainability in stochastic economy requires the main focus to be set on the analysis of the contingency of the economy. Furthermore, systematic approach should be applied to the assessment of sustainability of the government debt in order to keep the integrity of the evaluation of different contingent factors and enhance effectiveness of management of the government debt and accuracy of the economic forecasts made.

6. Conclusions

In many countries government debt is considered to be one of the main sources of the capital inflows. Lately rates of the government debt growth are eminently rapid all over the world. Therefore management of the government debt becomes one of the preferential issues for decision makers in both national and transnational government institutions.

Furthermore, unsustainable fiscal policy can be defined as one which violates the government's intertemporal budget constraint in the long run. Sudden increase of the debt servicing cost can even cause economic shock. Thus achievement of sustainability of the government debt is a goal of many governments.

Absence of explicit methods for estimation of sustainability of the government debt makes investment decisions much more complicated for both governments and investors. The problem of sustainability of the government debt gets even more escalated in case of stochastic economy as the macroeconomic and government debt variables in this case are purely of contingent nature. Therefore it is important to evaluate whether or not particular countries are pursuing sustainable or unsustainable fiscal policies, taking the stochastic approach as the background for the projections of future stock of the government debt.

Because of the contingency factor, assessment of sustainability of the government debt in stochastic environment is rather complex and deterministic methods for prediction of the variation of the debt stock are of little use. Thus, the uncertainty factor should be concurrent component in development of contemporary strategies of government debt management.

Primarily, extent of government debt depends on stability of economy and the ability of government to maintain sustainable debt, considering the specific characteristics of the country. For assessment of sustainability many countries usually use the historic data. Although the trend component of many time-series can be characterized as a random walk with drift, i.e. as a stochastic trend, and have the advantage over current values of providing some stability, debt assessment methods based on historical trends ignore contingency factor, which is one of the most significant features of the stochastic economy.

Therefore, assessment of sustainability of government debt based solely on analysis of comparative indicators can not be used in stochastic economy. Instead models with complex variables, describing both macroeconomic indicators and debt indicators, and using techniques, which take into account the contingency of the economy, should be employed. Stochastic nature of the economy requires employment of model that allows simulation of simultaneous scenarios of development of the economy. Association of economic shock with the corresponding evolution of the debt and calculation of the probability of its occurrences should be provided. This approach of assessment of future extent of the government debt could help governments to develop effective, i.e. sustainable and less costly, strategy of government debt management. Similarly, qualitative as well as stochastic evaluations should be preferential.

Moreover, there are several parameters which are usually underestimated when assessing the sustainability of the government debt. Usually the factor of credibility of the country is neglected and the probability of suspension of any external financing is not considered. Also the after effects of unfunded/contingent liabilities of the government on the economy of the country are usually not considered. Failure to estimate those parameters can result in less accurate evaluation of the future extent of the government debt and subsequently in increase of the debt servicing cost. In addition, in order to keep the consistency in effective debt management, governments should also revise their formal policy making procedures and introduce the necessary changes to meet the specifics of the stochastic economy.

In summary, the assessment of government debt sustainability in stochastic economy requires focusing on the analysis of the contingency of economy. Furthermore, systematic approach should be applied to the assessment of sustainability of the government debt in order to keep the integrity of the evaluation of different contingent factors and enhance the effectiveness of management of the government debt as well as the accuracy of the economic forecasts.

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VALSTYBĖS SKOLOS TVARUMO ĮVERTINIMAS STOCHASTINĖJE EKONOMIKOJE

Aura DRAKŠAITĖ

Kauno technologijos universitetas, Lietuva

Santrauka. Pastarasis staigus daugelio pasaulio valstybių vyriausybių skolos padidėjimas ir akivaizdus nei-giamas šios skolos padidėjimo poveikis atskirų šalių bei pasaulio ekonomiškai parodė akivaizdų efektyvių priemonių, skirtų apsisaugoti nuo pražūtingų stochastinės prigimties ekonomikos pokyčių sukeltos ekonomikos recesijos padarinių, trūkumą. Todėl svarbu peržiūrėti vyriausybės skolos tvarumo vertinimo ir vyriausybės skolos dydžio prognozavimo procesą, atsižvelgiant į stochastinę ekonomikos prigimtį, kaip vieną pagrindinių skolos tvarumo pokyčius lemiančių veiksnių. Straipsnio tikslas yra atskleisti vyriausybės skolos tvarumo vertinimo stochastinės ekonomikos sąlygomis bruožus. Pagrindinė straipsnio išvada – tvarios vyriausybės skolos formavimas stochastinės ekonomikos sąlygomis turi remtis ekonomikos pokyčių atsitiktinumo analize.

Aura Drakšaitė – Master of social sciences (economics) at Department of International Economics and Trade, Faculty of Economics and Management, Kaunas University of Technology.

Aura Drakšaitė – Kauno technologijos universiteto Ekonomikos ir vadybos fakulteto Ekonomikos ir tarptautinės prekybos katedros socialinių (ekonomikos) mokslų magistrė.