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Miladin Kovačević
Statistical Office of the Republic of Serbia

Milena Stevović
University of Belgrade
Faculty of Agriculture
Institute of Agricultural Economics

SERBIA 2030: DEBT SUSTAINABILITY AND GROWTH PERFORMANCE TESTING

Srbija 2030 – testiranje održivosti duga i performansi rasta

Abstract

The aim of this paper is to examine the adequacy of the chosen growth model of the country through the lens of Serbia's external debt sustainability. For this purpose, an empirical model was developed for making long-term projections and testing the debt sustainability, which can be considered as an operational tool when compared to existing models developed by the International Monetary Fund and the World Bank. Unlike these models, the proposed model binds all macroeconomic balance tables so that the item of one table indicates the dynamics and levels of items from other tables, thus ensuring both internal and external validity of the model. The proposed model of macroeconomic projections, in fact, implies the development of simultaneous projections of individual macroeconomic aggregates and variables as well as their reconciliation. As a result, a complete system of interconnected long-term projections is obtained. On the basis of such macro-projections, it is possible to examine the movement of debt and in this regard to examine the sensitivity of projected debt values to various macroeconomic shocks. This is extremely important in the context of growing uncertainty in the world, both in terms of economic developments and security. The consequences of the COVID-19 pandemic are yet to be summed up, but it is quite obvious that due to increased market risks, investors will be increasingly cautious when investing in other countries, which can pose serious challenges for Serbia, as a small and open economy, to finance its chosen path of economic growth and development.

Keywords: *external debt sustainability, macroeconomic projections, growth model, model sensitivity*

Sažetak

Cilj ovog rada je da se ispita adekvatnost odabranog modela rasta zemlje kroz prizmu održivosti spoljnog duga Srbije. U tu svrhu razvijen je iskustveni model za izradu dugoročnih projekcija i testiranje održivosti duga zemlje, koji se može smatrati nekom vrstom operacionalizacije već postojećih modela razvijenih od strane Međunarodnog monetarnog fonda i Svetske banke. Za razliku od ovih modela, predloženi model uvezuje sve makroekonomske bilansne tabele tako što veličine iz jedne tabele postuliraju dinamiku i nivoe veličina iz drugih tabela čime se obezbeđuje kako interna, tako i eksterna validnost modela. Predloženi model makroekonomskih projekcija zapravo podrazumeva simultanu izradu projekcija pojedinačnih makroekonomskih agregata i veličina, kao i njihovo međusobno usaglašavanje. Rezultat toga je sistem međusobno uvezanih dugoročnih projekcija. Na osnovu tako izrađenih makroprojekcija moguće je ispitati kretanje duga i, u vezi sa tim, ispitati osetljivost projektovanih veličina duga na različite makroekonomske šokove. Ovo je posebno važno u uslovima sve veće nesigurnosti u svetu, kako u pogledu ekonomskih kretanja, tako i bezbednosti. Posledice pandemije kovida 19 će se tek sumirati, međutim, sasvim je izvesno da će, usled povećanih rizika na tržištima, investitori biti sve više oprezniji prilikom ulaganja u druge zemlje, što za Srbiju, kao malu i otvorenu ekonomiju, može da donese ozbiljne izazove u pogledu finansiranja njenog odabranog puta ekonomskog rasta i razvoja.

Ključne reči: *održivost spoljnog duga, makroekonomske projekcije, model rasta, senzitivnost modela*

Introduction

The level and dynamics of external indebtedness present one of the fundamental macroeconomic challenges faced by policymakers. According to the criteria of the International Monetary Fund and the World Bank, a country's over-indebtedness occurs when its debt exceeds the share of 80% in GDP, i.e. when the ratio of total debt to exports of goods and services exceeds the limit of 220%. Since borrowing policy is an integral part of macroeconomic policy, its success depends on how much the general macroeconomic policy is effective. To secure this, policymakers need an effective tool to analyze the current economy and to predict and understand the future state of the economy on a broad scale. In fact, they need to know whether the chosen growth model will reduce or increase the country's indebtedness.

However, the majority of available methods are based on the combination of conjunctive analysis and the application of complex econometric models. Applied to developing economies, facing both internal and external pressures, such models are generally less acceptable due to short and fragmented data series, difficulty in achieving the consistency of all projections, their neglecting of qualitative nature of the institutional factors, etc. Such limitation may be solved by using a set of macroeconomic balance equations, with a low share of behavioral equations. This approach is in the core of financial programming models used by the International Monetary Fund (IMF) and the World Bank (WB).

The first model of financial programming was developed by Polak (1957). In essence, the model can be regarded as a systematic attempt to integrate monetary policy with the balance of payments issues. Based on this model, it was developed an extended financial programming model that underlies the IMF stabilization programs designed for economies operating under a fixed exchange rate. In practice, the model has been modified several times.

In the early 1970s, the World Bank developed Revised Minimum Standard Model - RMSM. The main objective of the model is to determine what is necessary level of investments, imports, and external financing so as to achieve the targeted real growth rate of GDP and exports. In essence, the model relies on a two-gap accounting framework – investment-saving gap and external trade gap. If the level of savings is not sufficient to finance a targeted level of investment, then it must be financed from abroad in the form of net import. The clarity of the model is its main strength but also a source of weakness. The simplicity of the linkages in the model, the lack of prices and other key policy variables, and the number of exogenous variables pose numerous challenges [1, p. 28].

In order to explore more policy options, the model was extended so as to include multiple economic agents in a consistent flow-of-funds framework. This flow-of-funds version of the RMSM is known as the Revised Minimum Standard Model eXtended (RMSM-X). Namely, the basic version of the RMSM-X consists of four economic agents or sectors: Public (Central government), Monetary (Central bank and deposit money banks), Foreign (The balance of payments) and Private (Rest of the economy). Each sector consists of two accounts – a current account and a capital account.

Like the RMSM, the RMSM-X is based on the fundamental macroeconomic identity,

$$Y = Cg + Cp + Ig + Ip + X - M$$

where Y, Cg and Cp, Ig and Ip, X, and M stand for GDP at market prices, government and private consumption, government and private investments, export of goods and services, and imports of goods and services, respectively.

Essentially, RMSM-X integrates into the RMSM framework, the IMF's approach to economic stabilization, generally referred to as financial programming, which is extensively based on practical experiences obtained through beneficiary country work.

The model of macroeconomic projections presented in this paper is in line with this the IMF-WB RMSM-X framework. It is named the model of macroeconomic projections for testing long-term debt and growth performances sustainability.

Depending upon the selected scenario of economic growth and the respective model assumptions, once the model is executed, it provides the output results which are further used to calculate indicators of the country's external macroeconomic position. The indicators are

accompanied with the projection implementation risks. This is followed by an overview of alternative development scenario of lower economic growth in relation to the presented basic scenario.

Apart from technical part, the proposed model takes into account an expert analysis and knowledge on structural characteristics and the performance development of an economy. At the same time, the application of econometric models is avoided due to the above-mentioned issues associated with this kind of quantitative approaches. By doing so, in terms of the statistical-mathematical apparatus, the model is maximally simplified. Nevertheless, complexity is emphasized in the field of the balances connectivity (the nucleus of the model is the bridge between the expenditure side of GDP, "Balance of payments" and the state and envisaged repayment of public and commercial debt of the country).

Methodological framework

The model used in this paper is set up as a set of balanced accounts, without involving econometric estimations, with the use of certain approximate relations, acknowledged in practice. Thereby it is possible, in real time and as required to carry out actions in each time point and in each place in the related tables, following the changed model assumptions. This ensures the frame for carrying out the scenario analysis. In addition, it is possible to quantify the effects of certain policies and measures and to assess possible causes of an external shock on the country macroeconomic balance [7, p. 7].

This model of macroeconomic projections builds upon simultaneous projections of the following components:

- Projections of prices and exchange rate;
- Projection of GDP ("Gross Domestic Product") and its expenditure side components in current prices;
- Projections of BOP ("Balance of Payments");
- Projections of saving and investment balance;
- Plan of external indebtedness and repayment and plan of budget income, expenditure and deficit.

When reconciled, all these projected components make a system of long-term projections, similar to the system of communicating vessels.

The core of the projections model is the bridge between GDP from the expenditure side and balance of payments – the so-called external economic relations balance.

The selected development scenario is usually created on five-year or ten-year basis. In particular case, the paper deals with 10-year interval, namely the projection period from 2021-2030.

Projections of the BOP and GDP by expenditure side start from setting up the goals of a certain development scenario, which are specified as exogenous variables. This means that the so-called target variables are to be stated. In terms of their nature, the distinction is made between the development dynamics values, the GDP expenditure side structure and so-called parameters of financial and real market stability. In this respect, the target value of development dynamics is GDP growth rate, while the target values for the GDP expenditure side are the share of external trade balance (goods and services) in GDP, share of gross fixed investments in GDP, and the share of the general government consumption in GDP (the sum of collective and individual consumption alimented from the budget sources, i.e. net earnings in public health service and public education). As the target variables for balance of payments are taken the share of exports of goods and services in GDP (set to 70% in 2030) and the minimum coverage of imports of goods and services by foreign exchange reserves according to the reduced external liquidity risk. Finally, the target parameters of financial and commodity market stability are consumer price index (CPI), foreign exchange rate, and target share of exports of goods and services in GDP.

Regarding the control variables for the model, they are – real index of household consumption excluding individual consumption alimented from the budget sources, gross fixed capital formation real index, and general government consumption real index. All these trends in the real and financial sector are reflected in the fiscal results, i.e. in the public consumption balance. However, when deriving fiscal projections certain limitations are imposed – the target values are defined taking into account the prescribed fiscal rules. This primarily concerns the dynamics and share of compensation of employees and pensions in GDP. In addition, the aim is to increase the share of fixed

investments in GDP. Therefore, on fiscal projections side, the target values are the share of salaries and wages and pensions in GDP, including their dynamics related to the GDP real growth and the share of capital investments.

Following the assumed relations as well as the target and control variables, a set of the external macroeconomic position indicators are compiled, namely:

- Share of current balance account in GDP;
- Share of imports of goods and services in GDP;
- Foreign exchange reserves as equivalent in the number of import months;
- External debt service ratio (capital and interest repayment in relation to exports of goods and services);
- External debt in relation to exports of goods and services;
- External debt in relation to GDP;
- Share of foreign direct investment in GDP;
- External trade volume (exports + imports) in relation to GDP;

In addition, indicators related to the fiscal accounts are derived, such as:

- Share of total income in GDP;
- Share of total expenditure in GDP;
- Share of capital investments in GDP;
- Share of fiscal deficit/sufficiency in GDP.

The major indicators for estimating the scenario sustainability, i.e. external macroeconomic position (called also: debt sustainability) are foreign exchange reserves expressed by import months and debt service ratio. When the volume of available foreign exchange reserves is below three-month imports value, or debt service ratio is above 25%, the scenario sustainability is critical and the assumptions, i.e. objectives are not sufficiently progressive. High growth rates of GDP and investments may make the scenario seem acceptable from the point of external position indicators. However, it ought to be acceptable from the aspect of given limits to growth and development, such as e.g. reform agenda or external restrictions. Therefore, the issue of calibrating growth dynamics is necessarily related to the assessment of circumstances and policies, as well as the time required to achieve accelerated reindustrialization process [7, p. 8].

Projection of GDP from the expenditure side

The model of GDP projection and its aggregates from the expenditure side, at current prices follow the combined methodological framework of the IMF's financial planning model and the Revised Minimum Standard Model of the World's Bank (RMSM).

In essence, the model can be regarded as the method-model, or heuristic one, since it does not rely on any theoretical concept of modelling macroeconomic balance but assumes relying on experience, i.e. expertise concerning structural characteristics of economy and knowledge, i.e. following policies, strategic documents, plans and their implementation.

The motivation to develop such an "empirical" model originated from a series of objective restrictions in econometric modelling of a small and open economy such as the Serbian economy, and they are the following:

- Inherited transition processes from the previous three decades;
- Market imperfections;
- Ad hoc and asynchronous, however also conflict policy, etc. [7, p. 9].

Compilation of the GDP aggregates from the expenditure side in 2020. The compilation of GDP from the expenditure side for the year 2020 was implemented in accordance with the methodology of annual national accounts[1]. The results are obtained from detailed annual calculations made of available data from administrative sources such as financial statements – balance sheet, income statement and statistical annex of enterprises, cooperatives, unincorporated enterprises, banks and other financial institutions, insurance companies, stock exchanges and brokers, budget beneficiaries and other legal entities, data of the National Bank of Serbia, Ministry of Finance, Tax Authority and other institutions, as well as regular statistical surveys and data available from the statistical system.

Estimation of the GDP aggregates from the expenditure side in 2021. The estimation of GDP in 2021 was carried

1 Data on GDP and its aggregates are downloaded from the SORS dissemination database. https://data.stat.gov.rs/Home/Result/09020104?languageCode=sr-Cyrl

out on the basis of the model starting from the equation of macroeconomic balance:

$$GDP = C + I + G + X - M,$$

where C stands for individual consumption; I for investments (gross fixed capital formation + changes in inventories); G for public consumption; X for exports of goods and services; M for imports of goods and services;

The starting point is certain target ratios and values in the stated equation. Namely, the following target parameters of dynamics and shares are combined:

- Target dynamics parameters:
  - Real GDP growth rate
- Target parameters of financial and non-financial market stability:
  - Consumer price index, COICOP
  - Foreign exchange index
- Target parameters of share in the structure of GDP use:
  - Share of external trade balance in GDP (goods and services)
  - Share of gross fixed capital formation in GDP
  - Share of public consumption in GDP (general government consumption, NPISH and collective consumption).

The Framework for this estimation includes also control variables whose role is to secure validity of the model: (i) real trend index of household consumption excluding individual consumption alimented from the budget sources, (ii) real trend index of gross fixed investments, and (iii) real trend index of general government consumption.

In other words, the projections of nominal GDP (for 2021 – estimate) and of GDP components from expenditure side were derived by defining GDP real growth rate, the share of investments, general government consumption and net exports in GDP, while applying the account of prices and deflators and derived real trend rates.

Calculation procedure for deflators of GDP aggregates from expenditure side, item by item. Before any calculation of the nominal values and real trends in the GDP aggregates from the expenditure side, it is necessary to derive the deflators for the forthcoming years (in our case – 2021 and further).

Firstly, we have derived GDP deflator for the first projection year, i.e. 2021. To this effect, as inputs for the calculation of this deflator, we take GDP real growth rate (k), share of net exports in GDP (d), coefficient of consumer prices trends (ic) and external trade deflator (id).

In formal expression, GDP deflator (k) is derived using the following equation:

$$k \approx i_c + d_0 \times \frac{r_1}{v_1} \times (i_c - i_d) \quad (1)$$

where:

d_0 – share of net exports in GDP, previous year ($d_0 = \frac{|\Delta X_0|}{GDP_0}$, where $|\Delta X_0|$ – absolute value of previous year net exports; GDP_0 – previous year GDP)

i_c – coefficient of consumer prices trends (current year average to previous year average);

i_d – coefficient of external trade deflator trend (current year average to previous year average);

r_1 – net exports real growth rate, current year;

v_1 – GDP real growth rate, current year.

When deriving the relation for calculating GDP deflator (k), as a starting point, it is used the following macroeconomic relation: $GDP = T - |\Delta X|$

where T – total domestic demands; ΔX – net exports of goods and services, i.e. the difference between exports and imports of goods and services that in the case of Serbia bears negative mark, therefore its absolute value is added to GDP in order to get the value of total domestic demands.

By transforming this relation into structural expression (GDP %) and introducing deflator, the following relation is obtained in the GDP deflator account:

$$\frac{1}{k} \approx \frac{(1+d_1)}{i_c} - \frac{d_1}{i_d} \quad (2)$$

where d_1 – share of net exports in GDP, current year, namely

$$d_1 = \frac{|\Delta X_1|}{GDP_1} = \frac{|\Delta X_0| \times r_1 \times i_d}{GDP_0 \times v_1 \times k} \quad (3)$$

where

$|\Delta X_1|$ – absolute value of net exports in current year;

GDP_1 – GDP, current year;

ΔX_0 – net exports in previous year;

GDP_0 – GDP, previous year;

r_1 – net exports real growth rate, current year;

v_1 – GDP real growth rate, current year;

k – GDP deflator.

By introducing formula (3) into expression (2), the final relation for calculating GDP deflator is obtained as follows:

$$k \approx i_c + d_0 \times \frac{r_1}{v_1} \times (i_c - i_d) \quad (4)$$

By applying the formula (4), it is assumed that the inputs were given in advance, i.e. they are free or derived according to projection, i.e. forecasts.

In this manner, GDP real growth rate (v_1) was previously derived from the projected, i.e. estimated GDP components on production side (GVA by activities, at current prices). In our case, for the year 2021, GDP real growth rate was estimated to equal 7.4% based on the SORS forecasting methods, applied within the framework of the Quarterly national accounts.

For the next year (2020), the projection of the GDP real growth was taken, which was presented in the IMF press release – IMF Staff Completes Review Mission to Serbia[2].

Taking into account the given restrictions to growth and development, such as the dynamics of economic structural changes and the restrictions imposed from the environment, projected was GDP growth rate of 4% in the last years of the projection period. The forecasted growth of consumer prices (i_c) for 2021 equals 4.0%, and it was calculated by applying ARIMA model of time series analysis. In the forthcoming years of the projection period, as regards the basic model, no changes are forecasted concerning the consumer prices growth.

External trade deflator (i_d) for the current year was derived on the basis of the previously estimated RSD to EUR exchange rate and the inflation rate in the EU countries in 2021 as follows:

External trade deflator =
[(Average exchange rate for calculation of external trade's deflators_current year) /
(Average exchange rate for calculation of external trade's deflators _previous year)]
* (external prices growth). (5)

2 This document is available at the IMF site: https://www.imf.org/en/News/Articles/2019/10/15/pr19375-IMF-Staff-Completes-Review-Mission-to-Serbia

However, the deflator calculations do not stop here. The deflator for collective consumption is identified with the GDP deflator (k) and the deflator for household consumption with inflation (i_c).

For the purpose of calculating the real trends of investments, deflator of investments is derived, as residual, according to the following relation:

$$k \approx \frac{\bar{C}}{i_c} + \frac{\bar{I}}{i_n} + \frac{\bar{G}}{k} + \frac{\overline{\Delta X}}{i_d} \quad (6)$$

where

$\bar{C}$ – share of individual consumption in GDP (current year);
$\bar{I}$ – share of investments in GDP (current year);
$\bar{G}$ – share of public consumption in GDP (current year);
$\overline{\Delta X}$ – share of net exports in GDP (current year);
i_n - unknown deflator of investments.

The key assumption for the basic scenario is to anchor the deficit in external trade in goods and services and to reduce the share of deficit of balance of payments current transactions in GDP, where from restrained growth of domestic demand and consumption will result.

Results

Basic (real) development scenario – assumptions and related indicators

Since Serbia belongs to the group of small and open economies, its economic policy is significantly influenced by the development of the economic and political situation in the world, especially the trading partner-countries. The importance of investments and credit capital inflow from abroad are an essential part of the chosen growth model of the country. Unfortunately, the current global situation related to COVID-19 threatens to produce the overspill of world economic crises and its emergence as a BOP crisis in Serbia, given how severely the virus hit Serbia's main trade partners. However, Serbia has had a fiscal room for maneuver, which was pivotal in allowing the government to respond to the crisis. Also, it is recognized that the relative stability of the financial sector (capital adequacy of the banking sector, high exchange reserves etc.) may become an asset for post-COVID-19 recovery.

However, potential escalation of Russian-Ukraine crisis can jeopardize further adjustments and following recovery of the economy.

On the grounds of this, the presented model anticipates that the average GDP growth rate for the period 2021-2030 is equal to 4.4% (see Figure 1).

In 2021 GDP growth rate equals 7.4%, while in 2022 it would equal 4.3%. From 2023 onwards it would remain unchanged, with 4.0% all the way until the end of the projection period. According to this growth dynamics, until 2030 the GDP value would reach EUR 94.8 billion.

Available amount for GDP use (i.e. Gross National Expenditure) depends upon the sum of GDP and deficit of goods and services values. In the observed projection period, the share of external trade deficit in GDP increases from 8.3% as estimated in 2021, to 8.9% in 2025. The next year records a slight increase of 0.1 pp. and from that year on, the share remains at the level of 9.0% all the way until 2030.

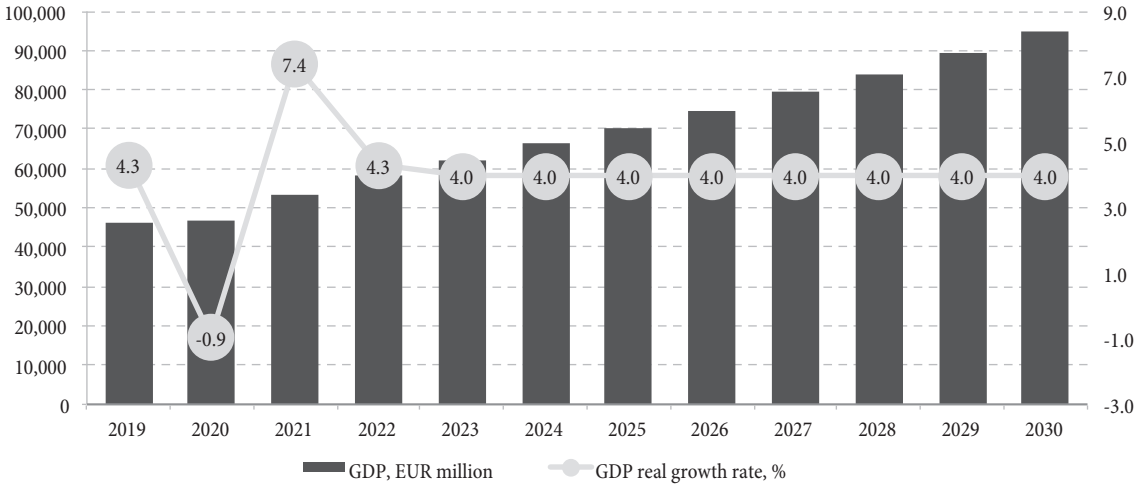
The dynamics of the share of deficit of goods and services (negative net exports) in GDP are the major factor influencing movements of the share of the balance of payments current transactions deficit in GDP. With net exports target shares (of 9% until the end of the projection period), the current transactions deficit is estimated to express the share of 4.3% of GDP on average in the first five years of the projection period, i.e. from 2021 to 2025. This share of current transactions deficit in GDP is caused by payments coming due as regards the credits from the period before and an early purchase of eurosecurities from 2011 and 2013 in June 2019[3] as well as other financial arrangements with international institutions such as the EIB which provided EUR 200 million to the Development Fund of Serbia to support a faster COVID-19 recovery of Serbian SMEs and mid-caps in 2020, etc. After 2026 it falls from 4.2% to 3.7% in 2030. It should be noted that the share of current transactions deficit is decreasing slowly due to considerable influence of the due obligations on the basis of eurosecurities issue from 2019[4], with maturity date in 2029 (capital payment). Therefore, after the eurosecurities issue in 2019 and partially buying debt on the basis of previous eurosecurities issue, Serbia continues to issue new eurosecurities in order to get protected from the hedging risk of the excessive foreign exchange outflow on the basis of due capital settlement as well as COVID-19 and energy crisis. Moreover, on Sep 3, 2021 Fitch rating agency affirmed the Serbia credit rating at "BB+" with a stable perspective of further improvement.

The target parameters of the basic development scenario are the following:

3 On 26 June 2019, the Republic of Serbia issued euro expressed government bonds in the international capital market, whereby insured were the funds for the partly refinancing of earlier issued debt securities, i.e. eurosecurities coming to maturity date in 2020 and 2021, amounting to USD 1.1 billion. It is worthwhile noting that this is the first issue of euro expressed government bonds in the international capital market. The issue nominal value amounted to EUR 1 billion, while the yield based on the issues price is 1.619%. The maturity date for this issue is 26 June 2029.

4 See the footnote above.

Figure 1: GDP trends, 2019-2030



- Increased share of gross fixed capital formation/ investments in fixed assets to 25% in 2025 and 28% in 2030 (anticipating average annual growth of 7.3%),
- Reduced share of general government consumption[5] in GDP, from 17.8% in 2021 to 14.5% in 2030,
- Upgraded share of exports of goods and services in GDP, from 53.6% in 2021 to 70% in 2030,
- Reduced deficit of balance of payments current transactions, from 4.4% in 2021 to 3.7% of GDP in 2030.

Inflation was estimated at 4.0% in 2021, while for 2022 it was projected at 4.5%. In 2023 inflation rate would equal 3.5%, and from 2024 to the end of the projection period it would equal 3.0%. Until 2022 the RSD exchange rate was estimated to remain almost unchanged, whereupon its depreciation would equal 1.0% until the end of the projection period.

The target share of gross fixed capital formation will be realized in case its average annual real growth equals 7.3%. Thereby the share of gross domestic savings in gross investments, from the estimated 52.8% in 2021, would fall to 51.8% in 2023. From 2024 it would remain on upward trend reaching 61.2% in 2030 (see Figure 2).

5 General government consumption was expressed as the sum of government collective consumption (component of expenditure side GDP according to SNA) and government individual consumption (also a component of expenditure side GDP as a part of total individual consumption – education, human health, etc.). This means that household consumption, as an aggregate of individual consumption, was subtracted for the amount of general government individual consumption.

With target shares of net exports (9% until the end of the projected period), final demand is rising at a slower pace than GDP. The average annual growth rates for the period 2021-2030 are the following: Gross domestic product (4.4%); Final consumption (4.0%); Gross fixed capital formation (7.2%)

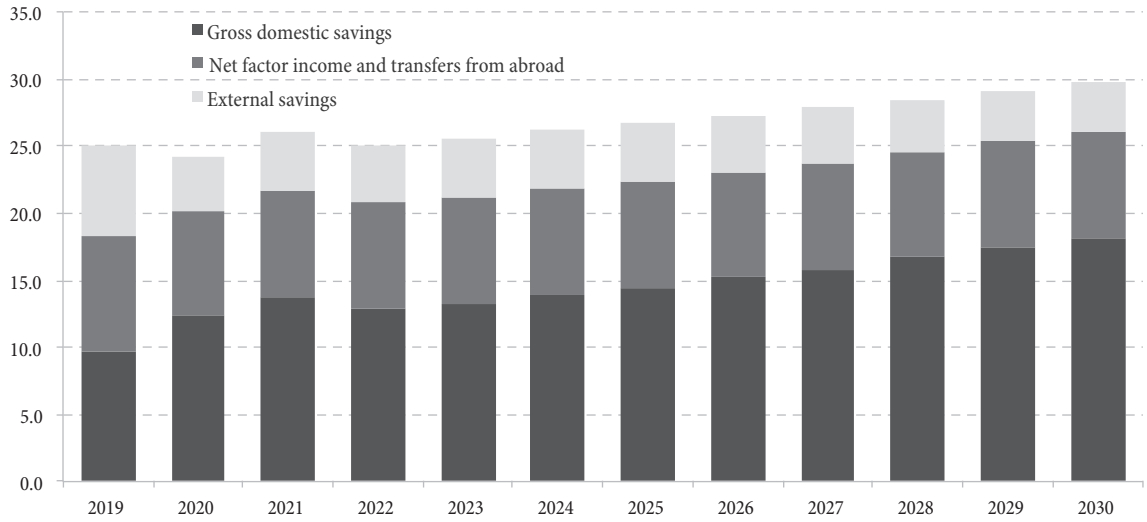
When net exports and investments are targeted, household consumption is a residual item within final demand. Its share in GDP, is estimated at 64.5% in 2021. After an increase in 2022 and 2023 (65.9%), it continues to fall positioning at 64.8%.On the other side, the target share of general government consumption in GDP, from 17.67% in 2021, falls to 14.5% in 2030 (see Figure 3).

The explained changes of the GDP use structure demands high rates of imports growth and therefore highly positioned level of target exports – from 53.6% in 2021 to 70.0% in 2030. In the structure like this, the dominating growth of consumption is replaced by the dominating investment growth (see Figure 4).

Concerning the balance of payments, the main target parameters are the following: upgrading the share of exports of goods and services in GDP to 70% in 2030 (see Figure 5) and limiting the decrease in coverage of imports of goods and services by foreign exchange reserves to about 4.0 months at the end of the period observed.

In addition, for the period 2021-2030 the FDI/Foreign direct investment net inflow is projected to amount to EUR 47.8 billion. In the same period, the cumulative deficit of current transactions would amount to about EUR 30.0

Figure 2: Gross domestic investments – financing sources, GDP %



billion, while donations that could possibly relax the situation have not been taken into account.

In accordance with the given macroeconomic projections of the GDP expenditure side and balance of payments, the projections of the fiscal frame for the period 2021-2030 were derived.

The projections of the major items of income, i.e. expenditure side – the items with the largest share in the

Figure 3: Household and general government consumption, and gross fixed investments, 2019–2030, %

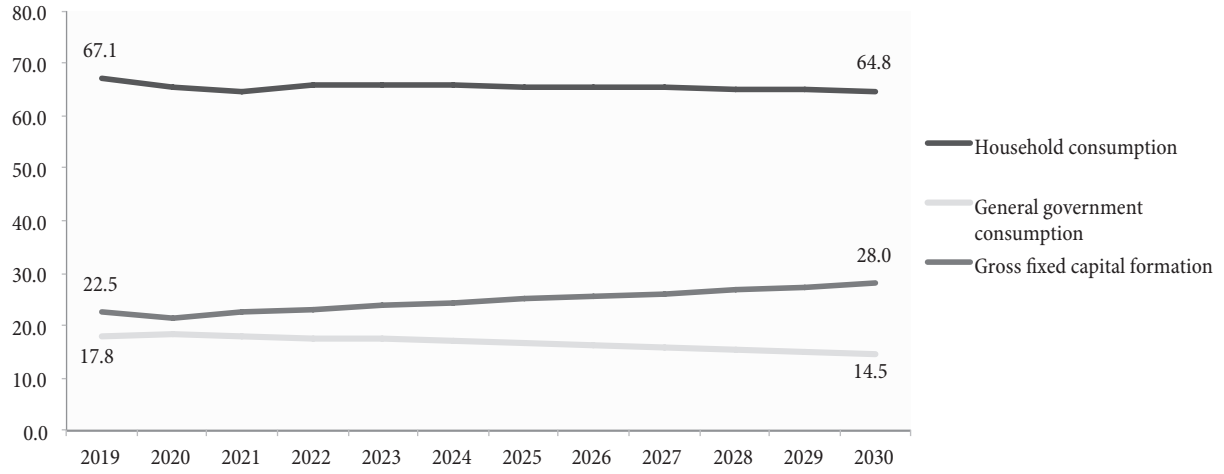


Figure 4: Inter-annual real growth of GDP, investments and consumption, 2019-2030, %

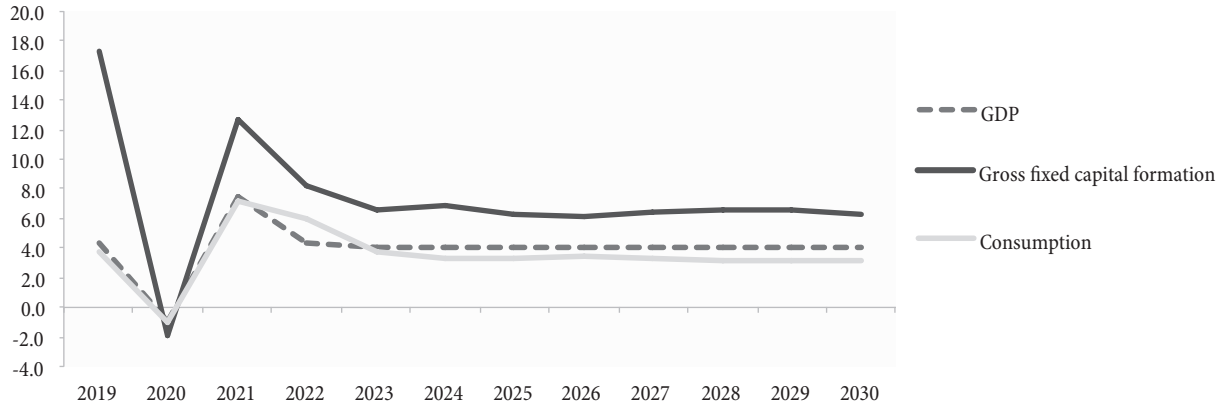
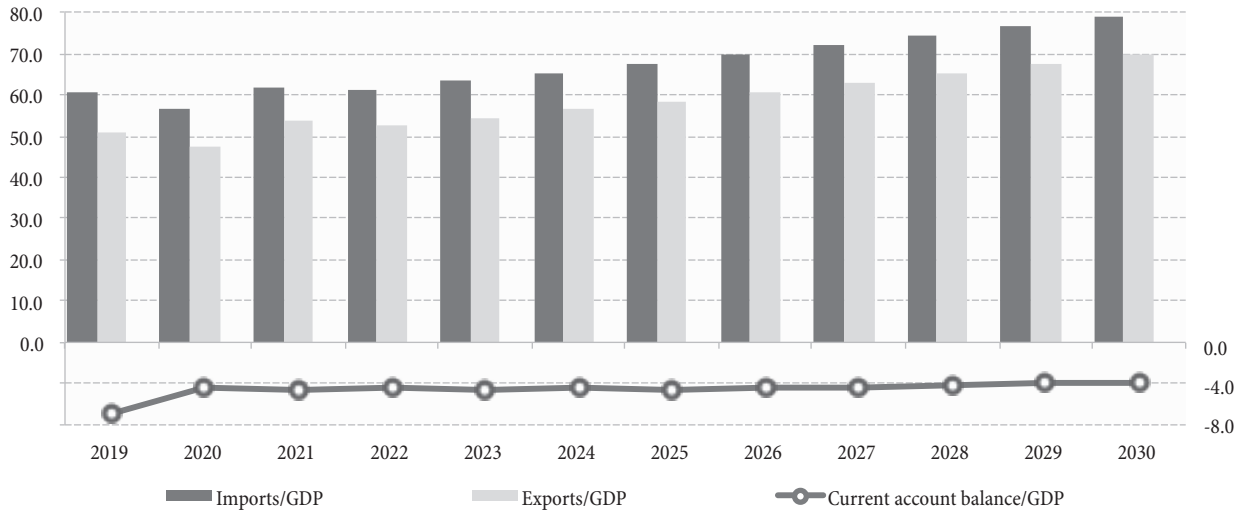


Figure 5: Current transactions deficit, 2019-2030, GDP %



budget income, i.e. expenditure – were handled with the utmost care. So, on income side it was necessary to make the most precise forecasts as regards the movements of income from VAT/ Value added taxes, taking into account that this item holds the top share in total income. Since these taxes actually belong to taxes on consumption, we may suppose that they will move in accordance with domestic demand. Also, the total VAT based income consists of VAT from imports and VAT in domestic market. Therefore, in our projections we supposed that VAT based income from imports will follow the import trends (the corrective element here is the coefficient reflecting the export – import dynamics ratio, since exported goods are subject to VAT refund). VAT based income in domestic market is calculated as the difference between the total VAT based income and VAT based income from imports. Also income from customs duties was forecasted on the basis of imports growth rate; however, all other items on the budget income side are assumed to move in accordance with the GDP trends.

As far as the budget expenditure side is concerned, for the expenditures mostly going to consumption (remuneration for employees, budgetary transfers, of which the largest item is transfers to the Pension and disablement fund, as well as social benefits from the budget), the projections were made on the basis of the estimated growth rates of the general government consumption, while the capital expenditures were anticipated according to the target share of capital expenditures in GDP equaling 6.5%.

For the purpose of projecting expenditures for pensions, Swiss formula was applied, which means that pension amounts were 50% made in accordance with the inflation rate, and 50% in accordance with the salaries and wages growth.

Apart from the basic formula for harmonizing pensions, introduced was the assumption on the top limit for the total amount of paid pensions, taking into account the specific fiscal rules defined by the Budget system law that are expected to ensure the reduced fiscal deficit in relation to GDP. The current provisions of this Law stipulate that 11% of GDP shall be assumed as the top limit for the total amount of paid pensions. In addition, it is a firm intention that the share of S&W of the general government level in GDP should be limited to 7%. This is actually a form of macroeconomic automatic stabilization. These intentions shall be implemented with the aim to ensure the fiscal sustainability of the pension system.

In case the existing tax rates remain unchanged, the share of consolidated public revenues in GDP will stabilize at about 41%. Besides, the share of public expenditure in GDP would be decreased – from the estimated 47.4% for 2021, it would equal about 40% of GDP in 2030, which would mean the realized budget surplus in relative amount of about 1.9% of GDP at the end of the projection period. By considerably increasing the public investment in infrastructure, a higher economic growth rate should be ensured, both by direct investment and, more importantly, through indirect effects of the new infrastructure on the private investment growth. To this effect, the target share of public investment equaling 6.5% GDP was determined. In 2021, the relative volume of public investment equaled 7.5% GDP.

The starting position in the year 2021 makes the fiscal deficit of 4.1% GDP, which in the next five year is diminishing into the surplus of 0.4% GDP in 2027, which will be maintained until the end of the projection period. Likewise, in 2030 the budget surplus would equal 1.9% GDP. This result comes out from the assumptions built into the projections of the GDP expenditure side elements, namely those concerning the public consumption adjustments, i.e. the relative fall of the current public consumption when related to GDP. [7, p. 18]

Basic (real) development scenario: Results and implementation risks

The highest risk to the sustainability of macroeconomic growth and development scenario as a whole is closely related to the issue of external debt sustainability and external liquidity. In the relevant macroeconomic literature, there are variety of indicators defined and used for the analysis of external debt sustainability – for the purpose of this paper, the following indicators are chosen: (i) external liquidity indicators, (ii) external solvency indicators and (iii) indicators of national economic openness.

(i) External liquidity indicators

1. *Total external debt service ratio* (share of capital and interest repayment in exports of goods and services). In 2021 the estimated external debt service ratio equals 18.2%. Then the growth of 1.9 p.p. in 2022 (20.1%) is followed by a fall of 5 p.p. (15.1%). These high rates are seen as a consequence of obligations (interests and capital) that come due based on the country indebtedness in the earlier period. Afterwards, from year to year, this ratio tends to fall, with the exception of years 2027 and 2029 when it increases by 3.5 p.p. and 2.3 p.p. from the previous years respectively. In the last year of the projection period, the ratio equals 7.0%.

In the first years of the projection period, as well as 2027 and 2029, notable is the risk of high external debt repayment burdens, which indicates the necessity of stronger investment activity grounded on significant growth of domestic savings share in financing investments, and then foreign direct investment.

2. *Foreign exchange reserves by months of imports (of goods and services)* – adequacy of foreign exchange reserves indicates the period in months when a country can maintain the existing level of imports in case all inflows are stopped.

Imports of goods and services coverage by foreign exchange reserves is reduced from the estimated 5.9 months in 2021, to 4.0 months in 2030, in accordance with the decreased risk as regards external liquidity (see Figure 6).

These movements in the foreign exchange reserves to imports ratio assume high external liquidity and the achieved investment rank in the country's credit rating, and thereby the possibility of less expensive borrowing (lower capital price). In accordance with Standard and Poor's methodology, the actual Serbia's credit rating for long-term borrowing in foreign currency is BB/positive outlook.

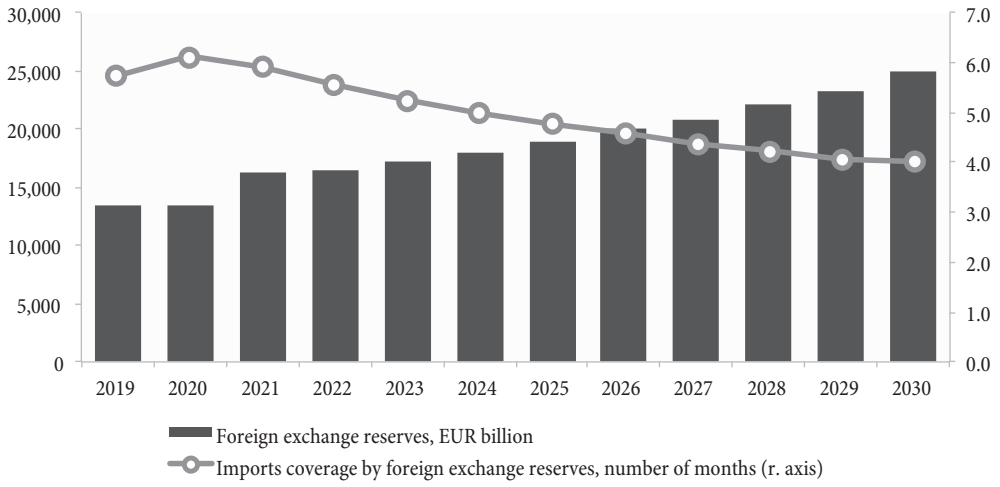
Under the unchanged conditions – ceteris paribus, the substitution of consumption development scenario with pro-investment one (basic scenario) and the transferring of investment focus towards exchangeable goods, as well as the adjustments in macroeconomic policy and sectorial policies can ensure that Serbia achieves investment rank in the country's credit rating, and thereby the access to less expensive capital for financing the selected model of growth and development. On the other side, due to a sharp rise of inflation in some leading economies of the world, it is to expect that the central banks will increase their reference interest rates.

(ii) External solvency indicators

3. *Share of total external debt in exports of goods and services.* In 2021 the estimated ratio external debt to exports of goods and services equals 123.0%, which is within sustainability limits (220%). From year to year this share records fall, and in 2030 it would equal 46.3%.

4. *Total external debt share in GDP.* In 2021 the estimated external debt amounts to 65.9% GDP. From year

Figure 6: Foreign exchange reserves and imports coverage, 2019-2030, GDP %



to year, external debt is growing in absolute expression, but in relative expression the share of external debt in GDP falls to 32.4% (see Figure 7).

(iii) Indicators of national economic openness

5. *Share of foreign direct investment/FDI in GDP.* In 2021 the estimated share of foreign direct investment/FDI in GDP equals 6.8%, while in 2022 it will fall to 6.5% and remains at that level until the end of the projection period. The reduced FDI share in the last projection years is expected to come as a consequence of the possible profit outflow.

According to the projection, in the period 2021-2030 the net FDI inflow would amount to EUR 47.8 billion. The cumulative deficit of current transactions in the referent period amounts to almost EUR 30.0 billion.

The degree of economic openness is also measured by the external trade to GDP ratio (share of summed exports and imports in GDP), which notes growth from the estimated 115.6% in 2021 to 149.0% in 2030; namely, indicated is a high degree of economic openness in the projection period.

In terms of implementation risks, the distinction is made between international environment risks and internal risks. In the first case, the country may face deepening global economic crisis, migrant crisis, slower economic growth in the Serbian external trade partner countries, withdrawal of investors – capital outflow, energy crisis, more severe crediting conditions, etc. and climate changes. When it comes to internal risks, these may refer to further consumption growth instead of investments, problem of economic illiquidity/liquidity, fall of FDI inflow, unfavorable demographic trends – birth rate fall, demographic aging and aging of working-age population, political risks, etc.

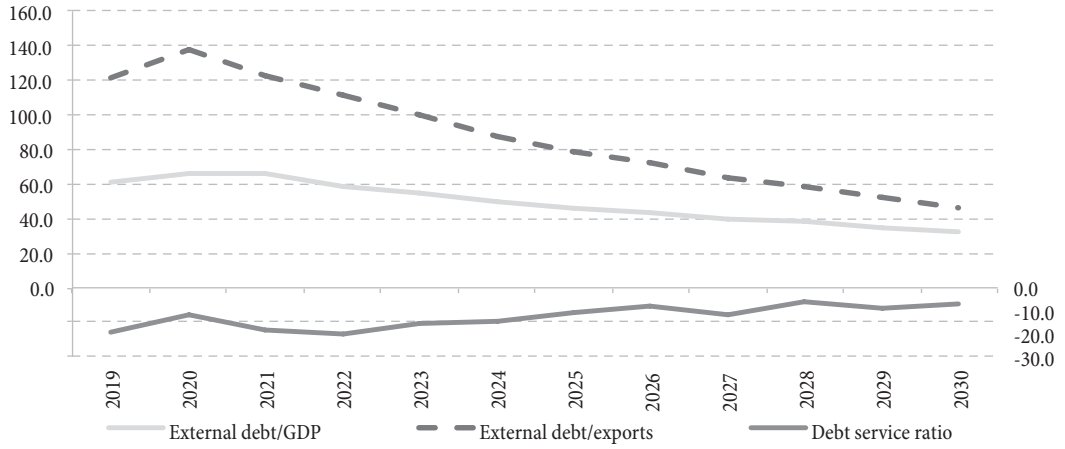
Alternative scenario of economic growth: Instead of the conclusion

When related to the presented basic scenario, the alternative, pessimistic scenario envisages a lower economic growth. So, the average annual growth in the period 2021-2030 equals 2.6%; however, the maximum growth rate (estimated 7.4%) would be achieved in 2021, thereafter it tends to fall and equals 1.4% in 2024. Then follows a period of 2% growth in the forthcoming projection period, i.e. until 2030 (see Figure 8). In addition, assumed is a growing share of current transactions deficit in GDP, from the estimated 4.4% in 2021 to 5.4% in 2030.

The target parameters envisaged by the alternative development scenario are the following:

- After the estimated 22.5% in 2021, the share of fixed investments in GDP remains at this level until 2023. In 2024 and the following years it is projected to be 22% all the way until 2030 (with the average annual growth of 3.1%);
- Maintained share of general government consumption in GDP of 17.0% during the whole projection period;
- Decreased share of exports of goods and services in GDP, from the estimated 53.6% in 2021 at 40.0% in 2030;

Figure 7: External indebtedness indicators, 2019-2030, %



- Growing deficit of current transaction in the balance of payments, from 4.4% in 2021 to 5.4% GDP in 2030.

With the target shares of net exports (7% until the end of the projection period), final demand is growing at a faster pace than GDP. Following are the average annual growth rates for the period 202-2030: GDP (2.6%); Final consumption (2.8%); Investments (3.1%).

The projected low average annual growth rate of 2.6% combined with the increased all forms of consumption inevitably leads to the rising inflation rate and the RSD depreciation. Such a scenario could not ensure long-term sustainability, and as early as in 2022 foreign exchange reserves would start to fall, and this trend would be resumed until the end of the projected period. Therefore, the foreign exchange level would fall from the starting 5.9 months of imports coverage to 3.3 months. An alternative to spending foreign exchange reserves to cover the missing inflow is seen in borrowing at high price. As a result, external liquidity would "break" due to high interest rates. On a long-term basis, the external solvency of the country would deteriorate. Precisely, in the case of alternative scenario, the external debt to exports of goods and services ratio would reach the level of 107.0% in 2030. In the same year, the share of external debt in GDP would equal 42.8%.

Taking into account the reduced share of exports of goods and services in GDP, from estimated 53.6% in 2021 to 40.0% in 2030, which would also affect the imports, the deteriorated economic openness level is to be seen. Therefore, the openness of the economy would fall – from estimated 115.6% in 2021 to 87.0% in 2030.

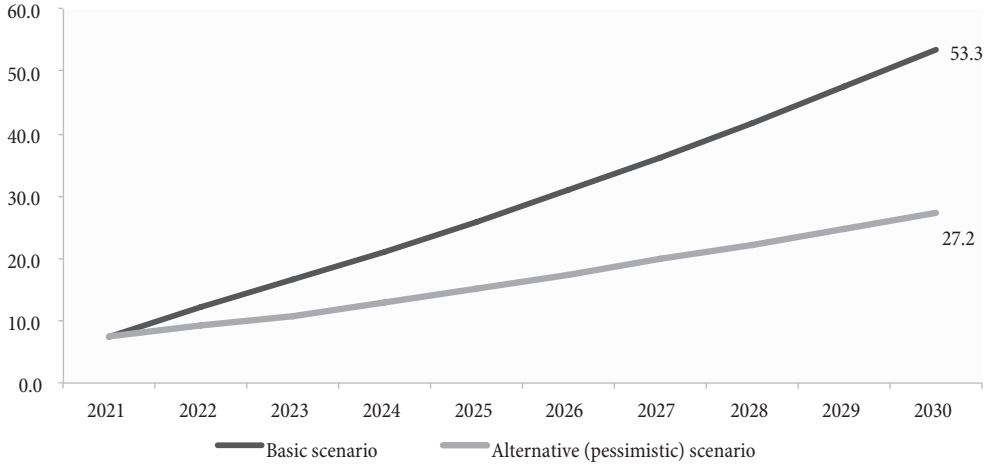
Relatively lower influence of the external component on GDP at the end of the projection period is made in the circumstances of increased deficit, which may indicate the problems in economic structure, i.e. its problematic competitiveness.

Effects on external balance – Using the alternative scenario of economic growth, it is possible to identify the dangers and risks associated with the forthcoming period of lower economic growth in the projected period. In this manner, due to the decreased average annual GDP real growth rate – from 4.4% to 2.6% – in the period until 2030, the possibilities of increasing consumption would be limited to 2.8% annually, instead of 4.0%.

Namely, according to the basic scenario, GDP expressed in real terms (at constant prices, 2021=100) in the period 2021-2030 would be increased for EUR 17.7 billion, while according to the alternative scenario the decrease would amount to EUR 1.6 billion[6].

6 For calculations at constant prices we applied the method of calculation at previous year prices, which assumes that for each year its previous year is taken as base year. The concept 'base year' means that this is year the values of which at current prices are applied as weights for calculations at constant prices.
GDP calculation at previous year prices assumes that each previous year is regarded as base year, and that the weights are changed every year. According to this method, comparable are only two years that are expressed at same prices. The series of value data calculated at previous year prices cannot be used for real growth rates calculation, as the data are not comparable by years (each year is valued at previous year prices). In order to obtain the series of comparable data for calculating growth rates, it is necessary to apply the method of chain-linking, whereby the data are reduced to one, selected referent year. Referent year is the year used for presenting time series at constant prices. In the series of index numbers, it is the year having the value 100. In our case, this is the year 2018.

Figure 8: Cumulative GDP growth, 2021-2030, %



As far as investments are concerned (see Figure 9), according to the alternative scenario their growth is lower – on average it equals about 3.0% annually, which is by 4.2 p.p. less than envisaged by the basic scenario (7.2%). Consequently, the total investments for all projection years (cumulative) would amount less for EUR 40.5 billion. As regards FDI cumulative, they amount less for about EUR 16 billion.

The projected low average annual growth rate of 1.9%, combined with the increased all forms of consumption, inevitably leads to the rising inflation rate as well as RSD depreciation. Such scenario could not ensure long-term sustainability – high constraints are put on consumption of foreign exchange reserves as well as on debt service ratio.

Expressed on cumulative basis, the foreign exchange reserves would be reduced for about EUR 64.0 billion when related to the basic scenario. At the same time, according to the alternative scenario the coverage of imports of goods and services by foreign exchange reserves at the end of the projection period would equal about 3.3 months, in contrast to 4.0 months as envisaged by the basic scenario (see Figure 10).

An alternative to spending foreign exchange reserves to cover the missing inflow is seen in borrowing at high price. As a result, external liquidity would "break" due to high interest rates. On a long-term basis, the external solvency of the country would deteriorate. Precisely, in the case of alternative scenario, the external debt to exports of goods and services ratio would reach the level of 107.0%

Figure 9: Gross fixed investments – cumulative and average annual growth rate, 2021-2030

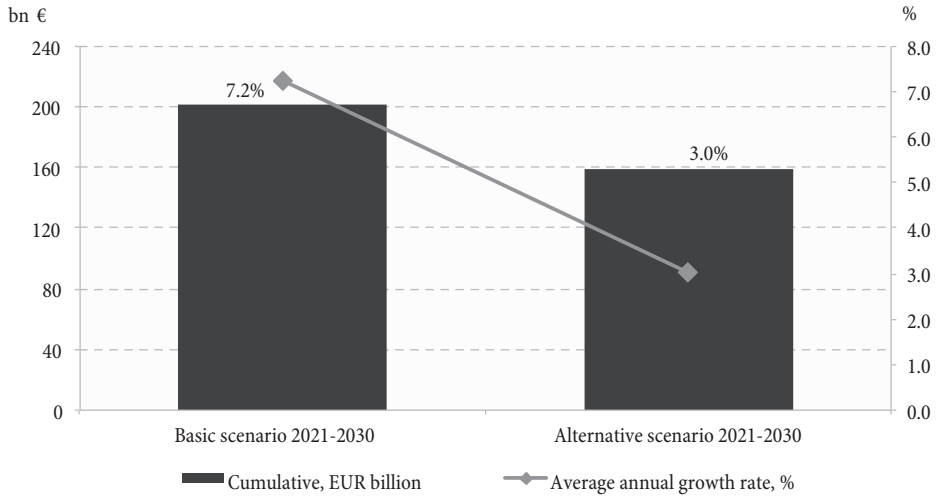
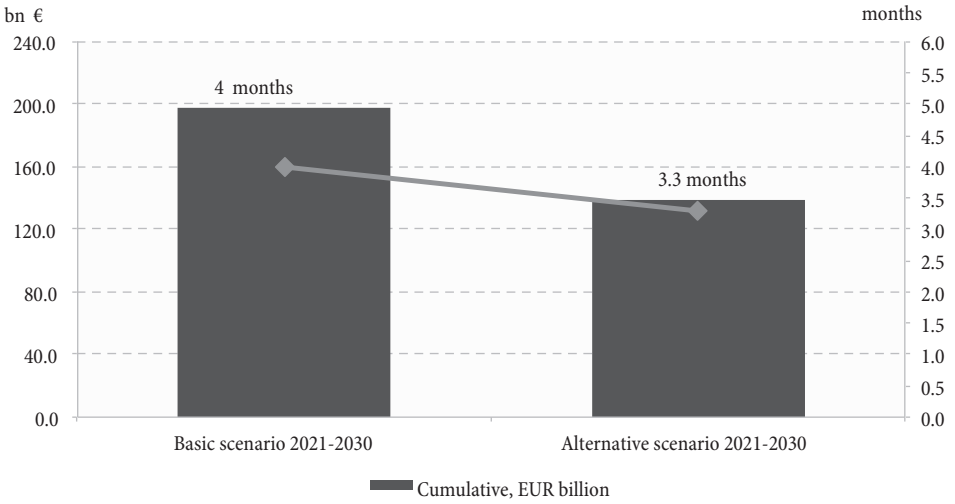


Figure 10: Foreign exchange reserves – cumulative and imports of goods and services, 2021-2030



in 2030. In the same year, the share of external debt in GDP would equal 42.8%.

Taking into account the reduced share of exports of goods and services in GDP, from estimated 53.6% in 2021 to 40.0% in 2030, which would also affect the imports, the deteriorated economic openness level is to be seen. Therefore, the share of exports of goods and services in GDP would fall – from estimated 115.6% in 2021 to 87.0% in 2030. According to the basic scenario, in the last year of the projection scenario this share equals 149.0%.

Relatively lower influence of the external component on GDP at the end of the projection period is made in the circumstances of increased deficit, which may indicate the problems in the economic structure, in the first place, low competitiveness.

Since Serbia is in the midway of reforms, the new model of economic growth and development in the forthcoming decade requires two mutually related U-turns. The first one assumes a U-turn from consumption to pro-investment and export-oriented economic growth. The second turn is indispensable to the domain of accelerated reforms and European integration and the respective macroeconomic and structural policies. Essentially, these are mutually dependent turns, however in the direction from the second to the first one. Without resuming and successfully completing the reforms and the EU integration process, the implementation of the new model of growth and development in not possible [7, p. 25].

References

1. Addison, D. (1989). *The World Bank revised minimum standard model (RMSM): concepts and issues* (Policy Research Working Paper Series. No 231). Washington, DC: The World Bank.
2. Eurostat. (2013). *European System of Accounts – ESA 2010*. Luxembourg: European Commission.
3. Grupa autora. (2011). *Postkrizni model ekonomskog rasta i razvoja Srbije 2011-2020*. Beograd: USAID-SEGA.
4. IMF Institute for Capacity Development. (2013). *Financial programming and policies* (Volume I). Washington, DC: International Monetary Fund.
5. International Monetary Fund. (2009). *Balance of payments manual (BPM6)* (Sixth edition).Washington, DC: International Monetary Fund.
6. Kovačević, M., & Stamenković, S. (2010). Methodological basis for macroeconomic projections in countries exposed to pressures and shocks: Example of Serbia. *Panoeconomicus*, *57*(2), 225-243.
7. Kovačević, M., & Stevović, M. (2019). Model of macroeconomic projections for testing long-term debt and growth performances sustainability, 2019-2030. *Trends*. Belgrade: Statistical Office of the Republic of Serbia.
8. Kovačević, M. i sar. (2018). *Ekonomski, demografski i socijalni efekti različitih scenarija normalizacije odnosa između Beograda i Prištine*. Beograd: Fondacija za otvoreno društvo.
9. United Nations Statistical Commission. (2009). *System of National Accounts 2008*. New York: United Nations.

Miladin Kovačević

is presently holding the post of the Director of the Statistical Office of the Republic of Serbia and a member of the Council of the Governor of the National Bank of Serbia. He graduated from the Faculty of Mathematics, University of Belgrade and got his BSc Degree in Theoretical mathematics in 1976, then his master's degree in Statistics from the Faculty of Economics, University of Zagreb in 1978 and finally he received his PhD in Statistics from the Faculty of Economics of Belgrade in 1983. He was teaching at both the Faculty of Economics and the Faculty of Mathematics of Belgrade, where he is still engaged as a scientific adviser. He is a member of the International Statistical Institute. In the last decade most of his work was in the area of macroeconomic analysis and he is a member of several editorial boards of the main publications dealing with current economic trends and economic policy analysis ("Macroeconomic analyses and trends" issued by the Serbian Chamber of Commerce, "Trends" issued by the Statistical Office of the Republic Serbia, "Panoeconomicus" issued by the Association of Economists of Vojvodina). Presently Mr. Kovacević is a leading expert for the reform of the national accounts, statistical system and integration of macroeconomic frame. Since 2016 he has been devoted mainly to the creation and maintenance of so-called Decision Making Support System as a prerequisite for economic policies in different fields.

Milena Stevović

is a full-time doctoral researcher and a teaching assistant at the Institute of Agricultural Economics in Belgrade. After earning her graduate degree in Agricultural Economics at the Faculty of Agriculture, University of Belgrade in 2008, she started working as a statistical analyst at the Statistical Office of the Republic of Serbia. In January 2020, she was appointed a teaching assistant for BSc and MSc-level courses in Agricultural Economics and Policy, Agricultural Extension Service and Co-operative Economics, organized at the Faculty of Agriculture, University of Belgrade. Ms. Stevović is also involved in scientific research work in the field of economics of agriculture, agricultural policy and rural development, rural economy, market research and food supply chains analysis, global agriculture and food security. During her professional career, she participated in international projects in the field of official statistics as well as rural development and agricultural policy.