Impact of Fiscal, Monetary and Structural Economic Policies on the Growth Rates of Leading Economies: 2000-2016

V. Ponkratov[1], A. Karaev[2], S. Solyannikova[3], O. Gorlova[4],
D. Smirnov[5], O. Makashina[6]

Abstract:

The article analyzes the impact of measures and instruments of fiscal, monetary, and structural economic policies on the growth rates of the economies of many countries around the world from 2000 to 2016, considering the provisions of the structural theory of development.

The dynamics of the following indicators of national economies is analyzed: GDP growth rate; total tax rate, central government debt; domestic credit to the private sector; consumer price inflation; high-tech exports as a share of country industrial exports and in value terms. It was revealed that for balanced long-term growth of the economy, it is necessary that the structure of the national economy should include industries whose exported goods are characterized by high elasticity of demand, and goods imported by low elasticity of demand.

Selective tools of state stimulating economic policy should be aimed at industries that can generate innovations and promote the dissemination of the results of technological progress.

Keywords: Rates and factors of economic growth, the impact of state economic policies on the growth rate of the national economy, fiscal policy, monetary policy, structural policy.

JEL code: E52, E60, E62, F43, H30, H60, O10, O23, O40.

[1]Candidate of Sciences (Economics), Director of the Center for Financial Policy of the Department of Public Finance, Financial University under the Government of the Russian Federation, ponkratovvadim@yandex.ru
[2]Doctor of Sciences (Engineering), Chief Researcher of the Center for Financial Policy of the Department of Public Finance, Financial University under the Government of the Russian Federation.
[3]Candidate of Sciences (Economics), Head of the Department of Public Finance, Financial University under the Government of the Russian Federation.
[4]Candidate of Sciences (Economics), Deputy Head of the Department of Public Finance, Financial University under the Government of the Russian Federation.
[5]Doctor of Sciences (Economics), Professor of the Department of Tax Policy and Customs and Tariff Regulation, Financial University under the Government of the Russian Federation.
[6]Doctor of Sciences (Economics), Professor of the Department of Public Finance, Financial University under the Government of the Russian Federation.

1. Introduction

This study uses the theories by Prebisch, Kaldor, and Thirlwall to analyze the influence of various types of state economic policies on economic growth and structural changes in the economy. An important conclusion that emerges from the theories by Kaldor (1970) and Thirlwall (1979) is as follows: The balanced long-term growth of the economy requires that the structure of the economy should include industries whose exported goods are characterized by high elasticity of demand in the rest of the world. Also, the goods imported into the country are required to be characterized by the low elasticity of demand by the country's income, i.e., primarily raw materials and intermediate goods not produced in the country, and export is essential for growth as a direct source of import financing.

According to the theory by Prebisch (1950), since the "peripheral" countries specialize in the production of goods (mainly primary products) which have lower income elasticity of demand than the goods in the production of which the countries of the "center" (industrial goods) specialize, the static benefits of free trade in the long term, as a rule, go to the developed (center) countries. Conversely, since developing countries, especially Russia, specialize in world trade in goods with a low-income elasticity of demand (Slepov *et al.,* 2017); their long-term economic growth is constrained by the balance of payments. This is under Thirlwall's law, which states that the convergence of economic growth rates in a country (for example, a developing country such as Russia) with the growth rate of the world economy depends on the ratio of income elasticities of export demand and imports, respectively.

It should also be particularly noted that Kaldor was the first to realize the importance of having static and dynamic economies due to economies of scale, emphasizing the importance of a large and diversified manufacturing sector in the structure of the economies of developing countries. He was also one of those who drew attention to the fact that in developing countries, in some cases, "premature deindustrialization" occurs, because of a sharp change in course with excessive confidence in the possibilities of markets. In such cases, long periods of stagnation or decline in productivity coincided with a decrease in the share of value added and employment in the manufacturing industry, as well as a sharp drop in investment growth rates, especially in the public sector (Slepov *et al.,* 2017b).

Prebisch's structuralist development approach focuses on maintaining active industrial and technological policies in developing countries in order to accelerate their catch-up process. The main argument is that companies, sectors, and countries differ in their technological capabilities and innovative capabilities in the global economy. In addition, given that technologies have specific features, such as trajectory dependence (historicity), in the country (for example, in the USA), which specializes in the production of goods with a high contribution to their production engineering and fundamental knowledge, the trend will appear and to further

strengthen this model of specialization, while in another country (for example, developing Russia), whose activities are focused on the production of goods based on the use of natural resources, with a lack of the necessary industrial and technological policy, will also have a tendency to maintain its production structure and the nature of specialization of its activities.

The role of government intervention and, accordingly, its structural and investment policy, is to combine the necessary set of tools and measures of its policy, such as moderate trade protectionism; production subsidies; R&D subsidies; state loan; necessary measures to promote technological change and structural change to stimulate economic development (Miller and Choi, 2014; Thalassinos *et al.,* 2015).

2. Methodology

Countries will be stratified by economic growth rates for 1970–2016. Besides, they will undergo a factor analysis of economic growth sources.

In most cases, the World Agencies and International Financial Institutions, such as the World Bank, the International Monetary Fund, decompose GDP growth rates by a neoclassical approach using the Cobb-Douglas-Tinbergen multiplicative production function (György, 2010):

$$Y_t = A_0 \cdot K_t^{\alpha} \cdot L_t^{\beta} \cdot e^{\lambda \cdot \Delta t} \tag{1}$$

where: Yt is the output (GDP); A0 - efficiency multiplier; K - capital factor (fixed assets); L is a labor factor; t is time, and the parameters α, β, λ characterize the elasticity of output relative to capital, labor, and time.

In the neoclassical approach, GDP growth depends on large factors — the capital factor and the labor factor and the intensive factor — total factor productivity (Badwan et al., 2017). Following the neoclassical theory of growth, the main factor of economic development is the increase in productivity due to technical progress and better organization of production. This is because neoclassical models show long-term growth due to diminishing marginal productivity of labor, and capital does not depend on the accumulation of these factors but is determined exogenously by the specified technical progress, which partially determines the level of total factor productivity (TFP stands for total factor productivity) (Diewert and Nakamura, 2002).

On the other hand, the new growth theory and another direction of the neoclassical theory - the theory of capital and investment - give the leading role to the growth of investment in human capital, knowledge, fixed capital (Safonova *et al.,* 2016).

In order to obtain an expression for the dependence of the growth rate of the economy on the growth rate of the factors, it is first necessary to prologuize both parts of the Cobb-Douglas-Tinbergen production function and then differentiate the resulting expression:

$$\ln Y_t = \ln A_0 + \alpha \ln K_t + \beta \ln L + \lambda \cdot \Delta t \tag{2}$$

$$\Delta \frac{\dot{Y}}{Y} = \alpha \cdot \Delta \frac{\dot{K}}{K} + \beta \cdot \Delta \frac{\dot{L}}{L} + \Delta \frac{\dot{A}}{A} \tag{3}$$

where: $\Delta \dfrac{\dot{A}}{A}$ can be interpreted as the R&D deliverables growth rate, or total factor productivity (hereinafter referred to as TFP). The collection and processing of information by country will be conducted from information and analytical systems and databases (OECD iLibrary, Bloomberg, Tomas Reuters, World Bank) on the following indicators of national economies:

a) GDP growth rate (%);
b) Fiscal policy: the total tax rate dynamics by country, % of GDP; central government debt dynamics by country, % of GDP; net lending (+)/borrowing (-), dynamics by countries, % of GDP;
c) Monetary policy: domestic credit to the private sector, % of GDP; dynamics of consumer price inflation, %;
d) Export and import: dynamics of high-tech exports by country, % of industrial exports; dynamics of high-tech exports by country, USD billions.

3. **Results and discussion**

In order to simplify data visualization and further analysis, let us create a common legend for all the following graphs.

Figure 1. *The legend for the graphs in Figures 2 - 7*

Australia	Azerbaijan	Argentina
Belarus	Brazil	The United Kingdom
Hungary	Germany	India
Italy	Canada	China
Korea	Malaysia	Mexico
Norway	Poland	Russian Federation
Singapore	USA	Turkmenistan
France	The Czech Republic	South Africa
Japan		

Let us assess the GDP growth rate in the world. Figure 2 shows the dynamics of the GDP growth rates by country (%) for 1990 to 2016. Figure 2 analysis shows that over the past six years, only a few countries have shown growth rates of the national economy higher than the growth rates of the world economy. These are such countries as China, Turkmenistan, India, Malaysia, and Singapore, in which over the past ten years the growth rate of the national economy has steadily exceeded 5% per year.

Figure 2. *Dynamics of the GDP economic growth rate by countries in 1990-2016, % per year*
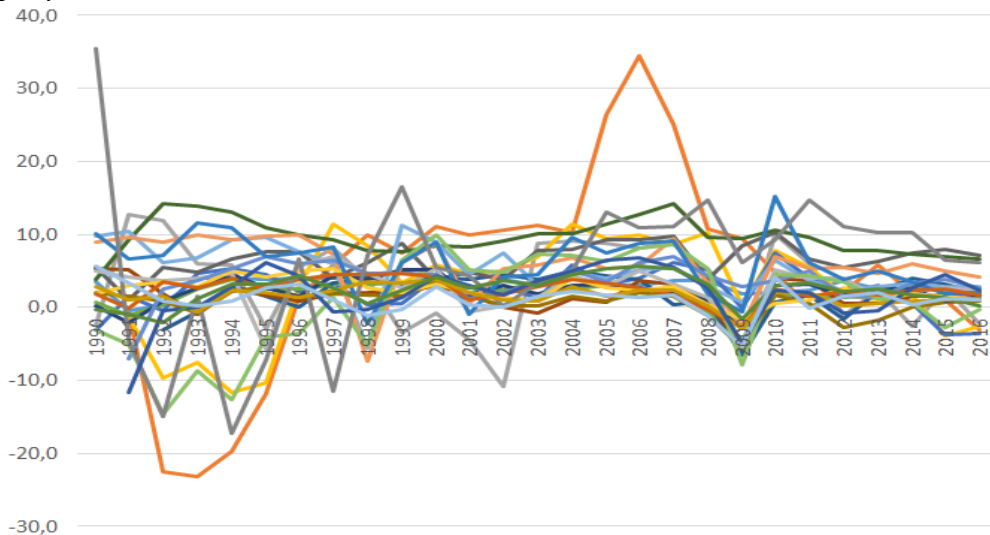
Let us assess the impact of fiscal policy on the growth rate of the national economies of selected countries.

A significant indicator of the country's fiscal policy is the level of central government debt (Kutsuri *et al.,* 2018) in % of GDP. Figure 3 shows the dynamics of central government debt in % of GDP for 1990 to 2015 for different countries. Analysis of Figure 3 allows for ranking the selected countries by indicator — the central government debt accumulated by 2016 in % of GDP in the following order (in accordance with the growth of this indicator): Russia (13.5%), Norway (22.8%), Belarus (36%), Czech Republic (36.8%), Korea (39.7%), Germany (50.5%), Poland (53%), Brazil (67.5%), USA (96.6% in 2013), France (98%), Singapore (107%), United Kingdom (108%), Italy (150%), and Japan (198%).

Let us analyze the impact of monetary policy on economic growth. The following indicators were chosen as a characteristic of the monetary policy conducted in the country: the volume of domestic loans to the private sector (in % of GDP); consumer price inflation (% per year).

Figure 3. *Dynamics of central government debt by country, % of GDP, 1990-2016*
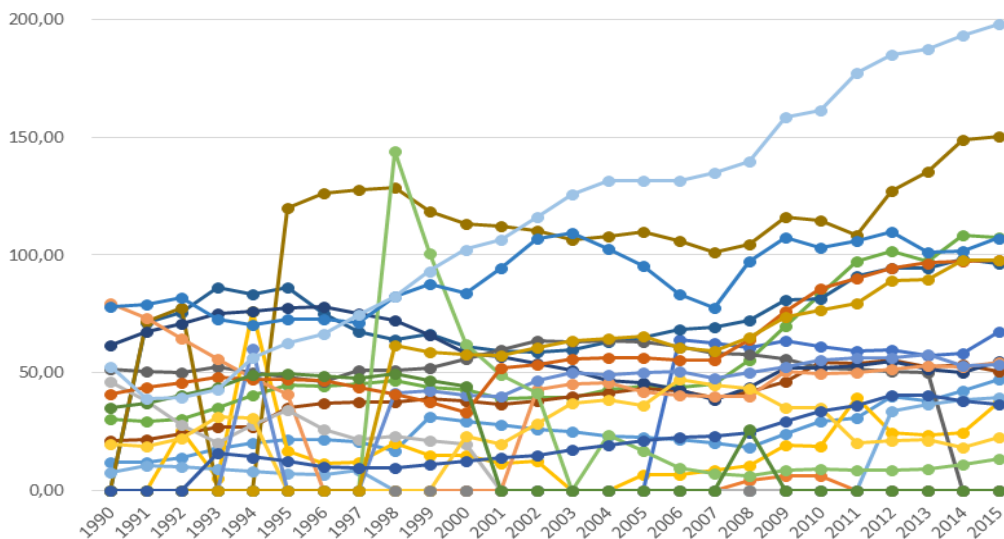

Figure 4 shows the dynamics of domestic loans to the private sector (in % of GDP), 1990-2016. It should be noted that there is a direct relationship between the growth of the volume of domestic loans to the private sector and economic growth (Silvestrov *et al.,* 2018). Analysis of the figure allows for grouping countries by this indicator in the following form:

a) Countries with a low value of this indicator (less than 70% of GDP) - Argentina, Belarus, Mexico, Hungary, Russia, Czech Republic, Poland, and Brazil;

b) Countries with an average value of this indicator (more than 70% of GDP, but less than 100%) - Germany, Italy, and France;

c) Countries with a high value of this indicator (more than 100% of GDP) - Malaysia, Singapore, Great Britain, Norway, Korea, South Africa, China, Japan, and the USA.

Let us analyze the impact of structural policies on economic growth. The primary indicator of the completion of structural changes in the national economy following the Thirlwall theory is the indicator - the high-tech exports share in industrial exports (Thirlwall, 2002) and the size of high-tech exports (Nassif *et al.,* 2015) (USD billion).

Figure 5 shows the dynamics of the share of high-tech exports, in the form of industrial exports %, by country over 1990-2016. Analysis of Figure 6 allows for distributing the selected countries by indicator - the share of high-tech exports (as % of industrial exports) to the indicator (at the end of 2016) as follows:

Figure 4. *Dynamics of domestic loans to the private sector, % of GDP, 1990-2016*
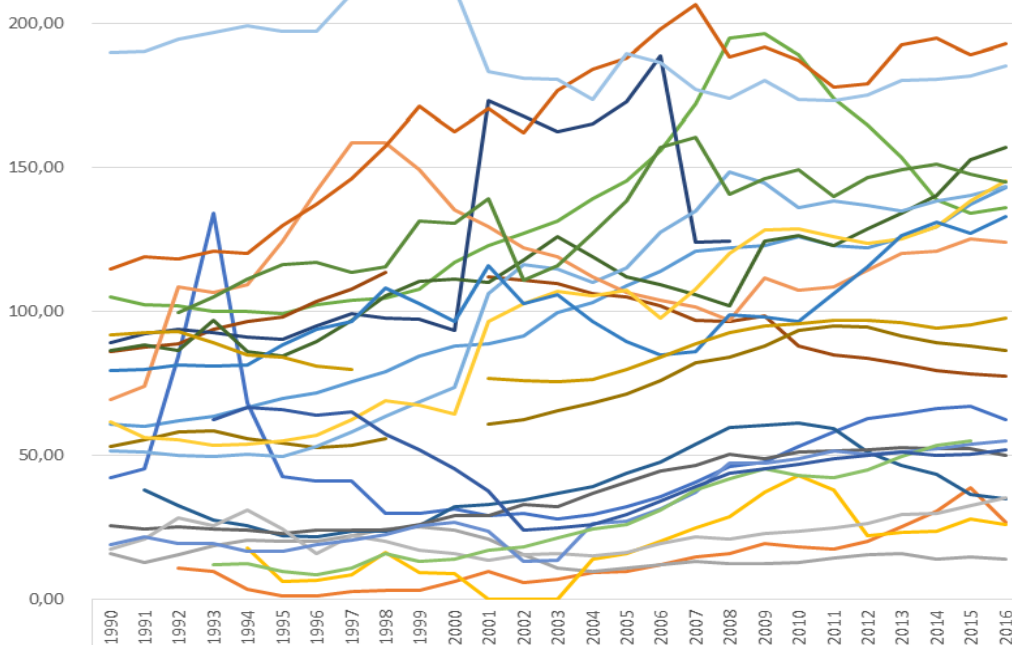
a) Countries with a low value of this indicator (less than 10% of the industrial exports share) - Azerbaijan, Belarus, South Africa, and Poland;
b) Countries with an average value of this indicator (more than 10%, but less than 20% of industrial exports) - Russia, Brazil, Czech Republic, Japan, USA, and Norway;
c) Countries with a high value of this indicator (more than 20%) - Great Britain, France, China, Korea, Malaysia, and Singapore.

Figure 6 shows the dynamics of high-tech exports in USD billions by country for 1990-2016. The analysis of Figure 7 allows for distributing the selected countries by the size of high-tech exports (in USD billions) (at the end of 2016) as follows:

a) Countries with a low value of this indicator (less than USD 100 billion) - South Africa, the Czech Republic, Canada, Mexico, Malaysia, and the United Kingdom;
b) Countries with an average value of this indicator (more than USD 100 billion, but less than USD 200 billion) - Japan, France, Singapore, USA, and Germany;
c) Countries with a high value of this indicator (more than USD 200 billion) - China.

Figure 5. *Dynamics of the high-tech exports share, % of industrial exports, 1990-2016*
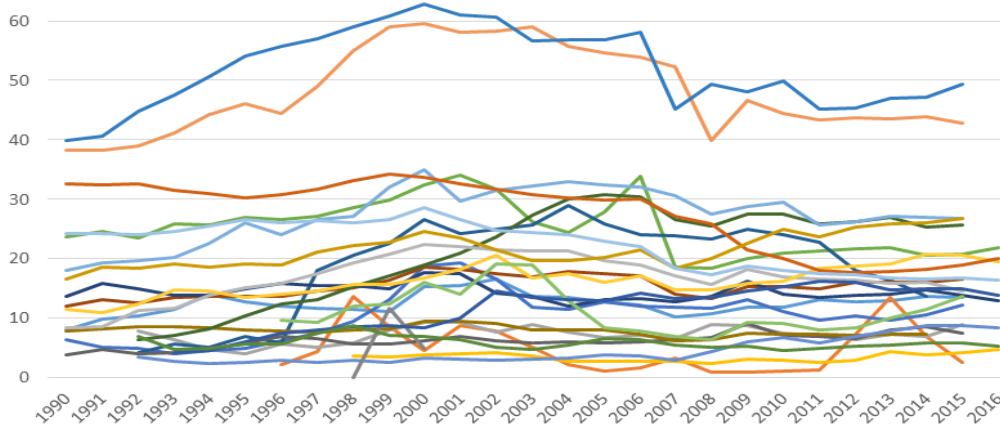
Of particular note is the rapid growth (almost nine times) in the volume of high-tech exports from China, from 2002 to 2016, when the size of high-tech exports from China grew from USD 60 billion in 2002 to USD 560 billion in 2016.

Figure 6. *Dynamics of high-tech exports, USD billion, 1990-2016*
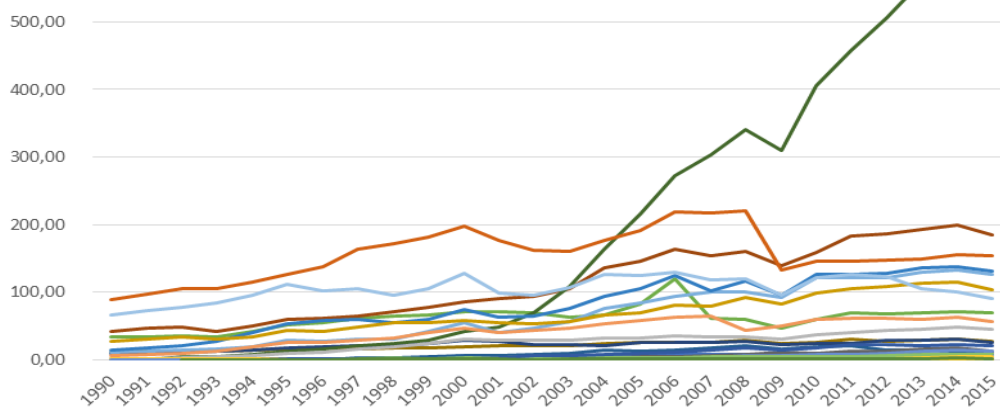
4. Conclusion

Based on the structuralist approach and the Kaldor and Thirlwall theory, balanced long-term economic growth requires that the structure of the economy include industries whose exported goods are characterized by high elasticity of demand for the rest of the world, and goods imported into the country are characterized by low elasticity of demand for the country's income, that is, import is necessary for domestic production, which requires primary raw materials and intermediate goods

not produced in the country, and export is essential for growth but as a direct source of financing imports (Ponkratov, 2015).

Since developing countries specialize in world trade in goods with low-income elasticity on demand, their long-term economic growth is constrained by the balance of payments, in accordance with the Thirlwall law, which shows that the convergence of economic growth rates in a given country (for example, a developing country of Russia) to the growth rate of the world economy depends on the ratio of elasticity of income coefficients for export demand to imports (McCombie, 2011). In other words, if the structure of a country's trade specialization is such that the elasticity of income on export demand grows at a slower pace than on import demand, then with such an export structure it will not be possible to achieve a long-term growth trajectory, as there are conditions for limiting the balance of payments that lead to a slowing of the economic growth trajectory (Akhmadeev *et al.,* 2016).

Since most of the most dynamic sectors of the economy are part of the manufacturing sector, the selective tools of state structural and investment policy should be primarily aimed at those industries that have a greater ability to generate innovations and contribute to the dissemination of the results of technological progress throughout the economic system.

In addition to the argument in favor of the manufacturing sector as a driver of economic growth, it is also necessary to pay attention to the composition of the production structure, since the economy can fully take advantage of the economies of scale of its production sector only when it has completed the industrialization process, that is, when production reached its "maturity". Kaldor argued that the maturation of the "immature" economy is based on the growth of aggregate demand. From this point of view, the accumulation of capital, which occurs in the process of industrialization, is a crucial variable of economic development, as it accelerates technological changes, benefiting the entire economy, which is reflected in lower unit costs in the production of higher quality products that allow domestic manufacturers to compete in foreign markets (Bashkirova and Lessovaia, 2018). Based on the Kaldor theory, the growth trajectory of an immature economy largely depends on the space for the implementation of long-term development policy (Kaldor, 1966).

In the case of countries with developing economies, a significant part of the observed differences like economic growth can be explained by how and to what extent its policies changed in each country to use short-term liberal economic policies with their excessive confidence in market opportunities. The consequence of this rate change is "premature deindustrialization", which is characterized in that in this case long periods of stagnation or decline in productivity coincided with a decrease in the share of value added and employment in the manufacturing industry, as well as a sharp drop in investment growth rates, especially in the public sector.

References:

Akhmadeev, R.G., Kosov, M.E., Bykanova, O.A., Frumina, S.V., Philippova, N.V. 2016. Impact of the tax burden on the country's investments. Journal of Applied Economic Sciences, 11(5).

Badwan, N.L., Blazhenkova, N.M., Klicheva, E.V., Karaev, A.K., Yarullin, R.R. 2017. Increasing the efficiency of the state fiscal and budgetary policy in modern conditions. International Journal of Applied Business and Economic Research, 15(23), 125-138.

Bashkirova, N.N., Lessovaia, S.N. 2018. State and business co-operation in settling socio-economic issues: Forward to the sustainable development of ecologically unfavorable regions. IOP Conference Series: Earth and Environmental Science, 107(1), 121-128.

Diewert, W.E., Nakamura, A.O. 2002. A Survey of Empirical Methods of Productivity Measurements.

György, S.Jr. 2010. Technical progress and its factors in Russia's economy. Economic Annals, LV(186).

Kaldor, N. 1970. The case for regional policies. Scottish Journal of Political Economy, 17(3), 337-348.

Kaldor, N. 1966. Causes of the Slow Rate of Economic Growth in the United Kingdom. An Inaugural Lecture. Cambridge: Cambridge University Press.

Kutsuri, G.N., Shanin, S.A., Frumina, S.V., Gardapkhadze, T., Ivanova, E.V. 2018. Russian practice of identifying and assessing budget risks. Journal of Applied Economic Sciences, 13(3), 711-719.

McCombie, J.S.L. 2011. Criticisms and defenses of the balance-of-payments-constrained growth model, some old, some new. PSI (Paolo Sylos Labini) Quarterly Review, 64(259), 353-392.

Miller, S.M., Choi, W.J. 2014. The Effectiveness of the Federal Funds Rate as the U.S. Monetary Policy Tool Before, During and After the Great Recession. European Research Studies Journal, 17(3), 37-58.

Nassif, A., Feijo, C., Araujo, E. 2015. The BRICS Long-Term Economic Performance: Comparative Analysis. 19th Annual Conference of the Research Network Macroeconomics and Macroeconomic Policies, Berlin, Germany, 22-24 October.

Ponkratov, V. 2015. Oil production taxation in Russia and the impact of the tax maneuver. Journal of Tax Reform, 1(1), 100-112.

Prebisch, R. 1950. The Economic Development of Latin America and its Principal Problems. New York: Economic Commission for Latin America, United Nations Department of Economic Affairs.

Safonova, M.F., Reznichenko, D.S., Melnichuk, M.V., Karaev, A.K., Litvinova, S.F. 2016. Taxes harmonization features in the European Union countries. International Journal of Economics and Financial Issues, 6(8S), 154-159.

Silvestrov, S.N., Kuznetsov, N.V., Ponkratov, V.V., Smirnov, D.A., Kotova, N.E. 2018. Investment development of Russian regions backed up by natural monopolies. European Research Studies Journal, 21(3), 90-103.

Slepov, V.A., Burlachkov, V.K., Danko, T.P., Kosov, M.E., Volkov, I.I., Ivolgina, N.V., Sekerin, V.D. 2017. Model for integrating monetary and fiscal policies to stimulate economic growth and sustainable debt dynamics. European Research Studies Journal, 20(4), 488-500.

Slepov, V.A., Burlachkov, V.K., Danko, T.P., Kosov, M.E., Volkov, I.I., Grishina, O.A., Sekerin, V.D. 2017b. The country's economic growth models and the potential for budgetary, monetary, and private financing of gross domestic product growth. European Research Studies Journal, 20(4), 457-470.

Thalassinos, I.E., Stamatopoulos, D.T. and Thalassinos, E.P. 2015. The European Sovereign Debt Crisis and the Role of Credit Swaps. Chapter book in The WSPC Handbook of Futures Markets (eds) W. T. Ziemba and A.G. Malliaris, in memory of Late Milton Miller (Nobel 1990) World Scientific Handbook in Financial Economic Series Vol. 5, Chapter 20, pp. 605-639, ISBN: 978-981-4566-91-9, (doi: 10.1142/9789814566926_0020).

Thirlwall A.P. 2002. Trade, the Balance of Payments and Exchange Rate Policy in Developing Countries. Cheltenham and Northampton, MA, Edward Elgar.

Thirlwall, A.P. 1979. The balance of payments constraint as an explanation of international growth rates differences. Banca Nazionale del Lavoro Quarterly Review, 128.