The Turning Points of the Economic Development

in the South American Countries*

Los puntos de inflexión de la evolución económica
De los países sudamericanos

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Summary

The study assesses the stability of the global economy and the economies of the countries of South America. In order to identify the turning points of economic development it is used theory of catastrophes - variance of the rate of economic growth. The turning points of global economic development, the economies of Brazil, Venezuela, Colombia and Chile are determined. It is ascertained that the economies of Brazil, Venezuela,

Colombia and Chile has been developing very quickly in recent years. The pace of economic growth of these countries exceeds the growth rate of the world economy. Growth rates of the economy of Chile, Colombia, Venezuela come to 4, 5 - 5,5 %, Brazilian – come to 3 %. The most steadily developing is the economy of Colombia, less steadily developing is the economy of Brazil. The development of the economy of Chile is even less stable. Venezuela's economy develops the least stable. These countries in South America might be promising business and trading partners. Taking into account growth rates of economy, degree of stability of growth, economy scales, Colombia and Brazil have the best prospects, Chile and Venezuela are a little less perspective.

Keywords: Economic dynamics, growth, instability, accident flag, rotary points, the dispersion, the accelerated growth.

Classification JEL: O1, O4, O5

Resumen

El estudio evalúa la estabilidad de la economía mundial y las economías de los países de América del Sur. La finalidad es identificar los puntos de inflexión del desarrollo económico que se utiliza en la teoría de las catástrofes - varianza de la tasa de crecimiento económico. En los puntos de inflexión del desarrollo económico global, se determinan las economías de Brasil, Venezuela, Colombia y Chile. Se comprobó que las economías de dichos países han venido desarrollándose muy rápidamente en los últimos años. El ritmo de crecimiento económico de estos países supera la tasa de crecimiento de la economía mundial. Las tasas de crecimiento de la economía de Chile, Colombia, y Venezuela ascienden al 4,5 y 5,5 % y Brasil crece al 3 %. El desarrollo de la mayor parte de manera constante es la economía de Colombia, menos desarrollo constante que la economía de Brasil. El desarrollo de la economía de Chile es mucho menos estable. La economía de Venezuela se desarrolla la menos estable. Estos países de América del Sur podrían ser prometedores socios de negocios y comerciales. Teniendo en cuenta las tasas de crecimiento de la economía, el grado de estabilidad del crecimiento y las escalas de la economía, Colombia y Brasil tienen las mejores perspectivas, Chile y Venezuela tienen menores perspectivas.

Palabras clave: Dinámica económica, el crecimiento, la inestabilidad, la bandera de accidentes, puntos rotativos, la dispersión, el crecimiento acelerado.

Clasificación JEL: O1, O4, O5

South American countries are important business and trade partners for Russia and European countries. In order to determine the prospects of cooperation with the countries of South America, we need to estimate the prospects of economical development of these countries. To obtain such an evaluation it is advisable to diagnose the turning points of the economical development of these countries and the economic growth rate compared with the world econ-omy growth rate.

L. Pritchett (2000) investigated the economic performance of countries. Pritchett found out that there are many types of economic development. They differ in the nature of economic dynamics. Pritchett outlined the main types of the economic development of countries, differing in the nature of economic dynamics. In-stability of the development trajectories can lead «rich» countries to poverty and the «poor» countries to wealth. Pritchett has shown that the transition from one type of economic development of the country to another is the result of the mani-festation of instability. These transitions Pritchett suggested to call the turning points. Turning points mark a shift to the development of a new type of economic dynamics.

T. Poston, I. Stewart (2012) in their book described in detail the changing nature of the complex systems development. They explained that the changes in the systems development cause the loss of stability. T. Poston, I. Stewart described, how the moment of the loss of stability can be detected by methods of the theory of catastrophes.

The rotary point of economic dynamics, according to L. Pritchett, can be defined on the basis of identification of the system stability loss. Research of economic dynamics after loss of stability affords to establish dynamics type after passing of a rotary point. Definition of the economic dynamics is necessary for forecast-ing of economic development prospects.

Sign of stability loss, according to T. Poston and I. Stewart, can be pointed out by the accident "flag" –abnormally big dispersion of the indicators reflecting functioning of system. Dispersion characterizes fluctuations, volatility of indicators. It is possible to consider dispersion which significantly exceeds average value of dispersion for the long-term period.

E.N. Basovskaya, L.E. Basovskiy (2013) and L.E. Basovskiy (2013) successfully used esti-mators of dispersion of growth rates and gross domestic product for definition of rotary points of economic development in Russia and developed countries.

Dispersion in the real work was counted according to the known theorem of mathemati-cal statistics:

$$D_i = \frac{1}{2}((y_{i-1} - \overline{y_i})^2 + (y_i - \overline{y_i})^2 + (y_{i+1} - \overline{y_i})^2),$$

Where D_i – indicator dispersion in i-ty the period;

y_{i-1}, y_i, y_{i+1} – value of an indicator during the periods with serial numbers, and;

y_i – average value of an indicator for three periods.

For an assessment of stability of world economy development there were used the data on dynamics of the world gross product (WGP) during 1969-2012[1]. Dynamics of growth rates dispersion for this period is presented in figure 1. The average size of annual growth rates dispersion during 1970-2012 was about 2 units. The data presented in figure 1, show that the abnormal – abnormally big dispersion of rates of economic growth was observed in the mid-seventies and in 1983, and also 2007-2011. During these periods dispersion of world economy growth rates significantly exceeded the average level.

The results show that in the middle of the 1970s, in 1983, in 2007-2011 there was a loss of stability of the global economy. Developments in the world economy in the mid-1970s and 1983 are known as the global economic crisis developed in two stages. Developments in the global economy in 2007-2010 also represent the global economic crisis. In the mid-1970s and in 1983 there was a significant reduction in the rate of the world economy growth. 2009 year was marked by the economic downturn. The level of the economic growth dispersion in the mid-1970s and in 1983 was significantly lower than the dispersion of growth rates observed in 2008-2010.

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1   Real Historical Gross Domestic Product (GDP) and Growth Rates of GDP for Baseline Countries/Regions (in billions of 2005 dollars) 1969-2012. URL: http://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx

Figure 1. The dispersion of global economic growth
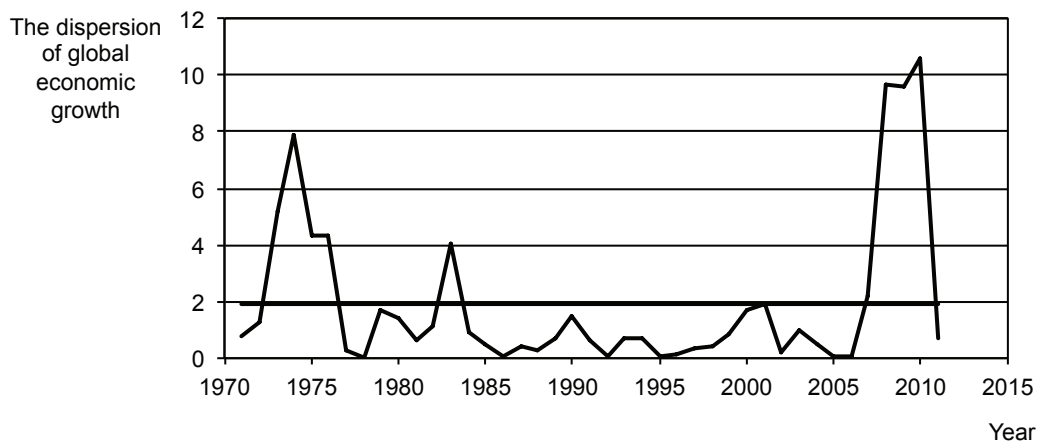
Thus, loss of the world economy stability diagnosed with the help of "an accident flag" –abnormal dispersion, can note crises of world economy. For definition of the South American countries economical prospects there were received esti-mates of dynamics in economic growth rates dispersion of Brazil, Venezuela, Colombia and Chile.

In figura 2, dynamics in economic growth rates dispersion of Brazil is presented. The shaped line in figure 2, shows the average level of economic growth rates disper-sion. Dynamics in economic growth dispersion of Brazil in nature is simi-lar to dy-namics of world economy dispersion. During the period from 1985 to 2007 growth rates dispersion in Brazilian economy was insignificant in comparison with the aver-age level. The average size of the growth rates in Brazilian economy came to 2,95 % for this period. Average growth rate of world economy during this period made up 3,1 %. This period in economy of Brazil can be characterized after L. Pritchett as the period of the slowed-down growth.

During the period from 2008 to 2010 dispersion of Brazilian economy growth rates was great in comparison with the average level. It is the period of the world economic crisis. In 2011-2012 the average size of Brazilian economy growth rates made up 3,01 %. World economy average growth rate during this period made up 2,53 %. This period in the economy of Brazil can be characterized after L. Pritchett as the period of the ac-celerated growth.

Dynamics of Venezuela economic growth rates dispersion is presented in figure 3. The shaped line in figure 3, shows the average level of economic growth rates dispersion. It considerably surpasses the average level of Brazilian economic growth rates dispersion. It testifies to the increased instability of Venezuela economy.

Figura 2. Dispersion of growth rates of economy of Brazil
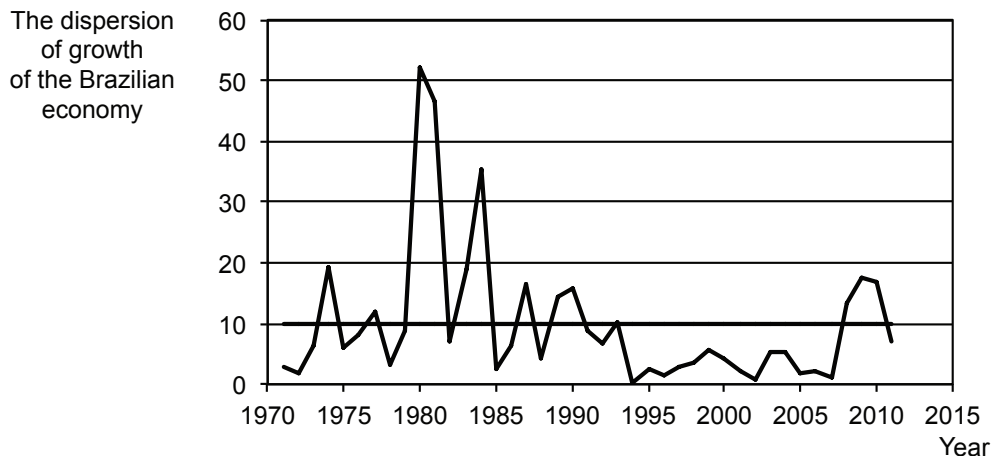
Abnormal dispersion of Venezuela economic growth rates was observed in 1988-1990 and in 2002-2003. During the period from 1991 to 2001 economic growth rates dispersion was insignificant in comparison with the average level. The average size of Venezuela economic growth rates made up 2,29 % for this period. Average growth rate of world economy during this period made up 2,67 %. This period in economy of Venezuela can be characterized after L. Pritchett as the period of the slowed-down growth.

During the period from 2002 to 2004 Venezuela economic growth rates dis-persion was great in comparison with the average level. In 2005-2012 the average size of Venezuela economic growth rates made up 4,50 %. Average growth rate of world economy during this period made up 2,48 %. It is possible to characterize this period in economy of Venezuela after L. Pritchett as the period of the accelerated growth.

Dynamics of Colombia economic growth rates dispersion is presented in figure 4. The shaped line in figure 4, shows the average level of economic growth rates dispersion. It is much less than the average level of economic growth rates dis-persion in Brazil and Venezuela. It testifies the stability of Colombia economical development.

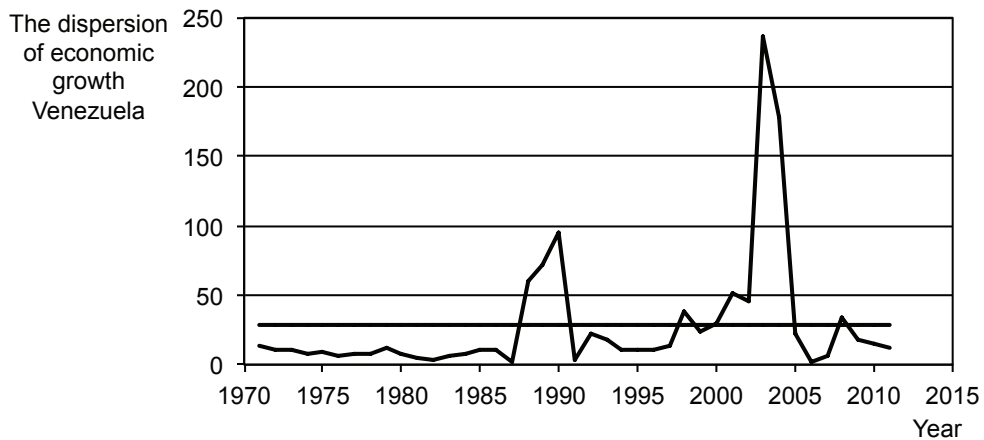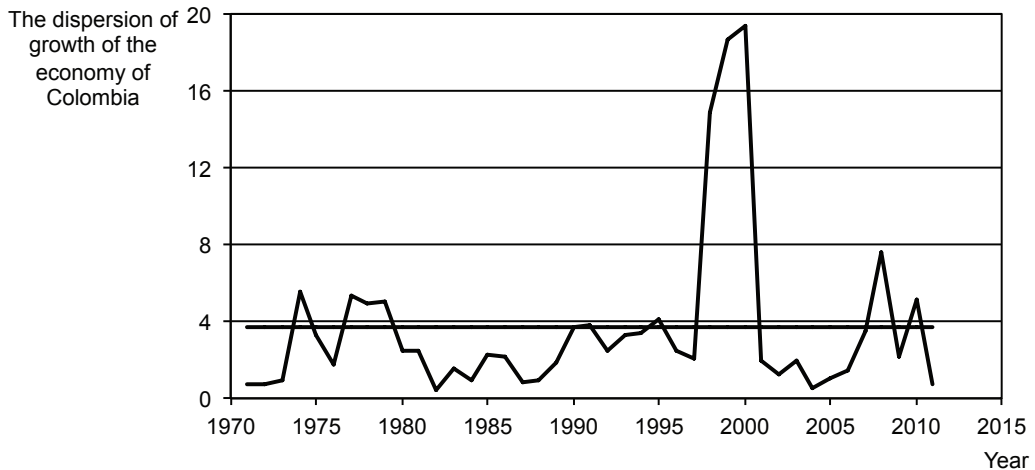Figure 3. The dispersion of growth of the economy of Venezuela

Figure 4. Dispersion of Colombia economic growth rates

Abnormal dispersion of Colombia economic growth rates was observed in 1998-2001. During the period from 1980 to 1997 the dispersion was insignificant in comparison with the average level. The average size of Colombia economic growth rates made up 3,68 % for this period. Average growth rate of world economy during this period made up 2,80 %. This period in economy of Colombia can be characterized after L. Pritchett as the period of the accelerated growth.

During the period since 2002-2007 the dispersion of Colombia economic growth rates was insignificant in comparison with the average level. In 2002-2007 the average size of Colombia economic growth rates made up 5,01 %. Average growth rate of world economy during this period made 3,40 %. This period in economy of Colombia after L. Pritchett can be characterized as the period of the accelerated growth.

During the period from 2010 to 2012 the dispersion of Colombia economic growth rates was small in comparison with the average level. In 2010-2012 the average size of Colombia economic growth rates made up 4,91 %. Average growth rate of world economy during this period made 3,00 %. This period in the economy of Colombia after L. Pritchett can be characterized as the period of the accelerated growth.

Dynamics of Chile economic growth rates dispersion is presented in figure 5.

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Figure 5. The dispersion of growth rates of the Chilean economy
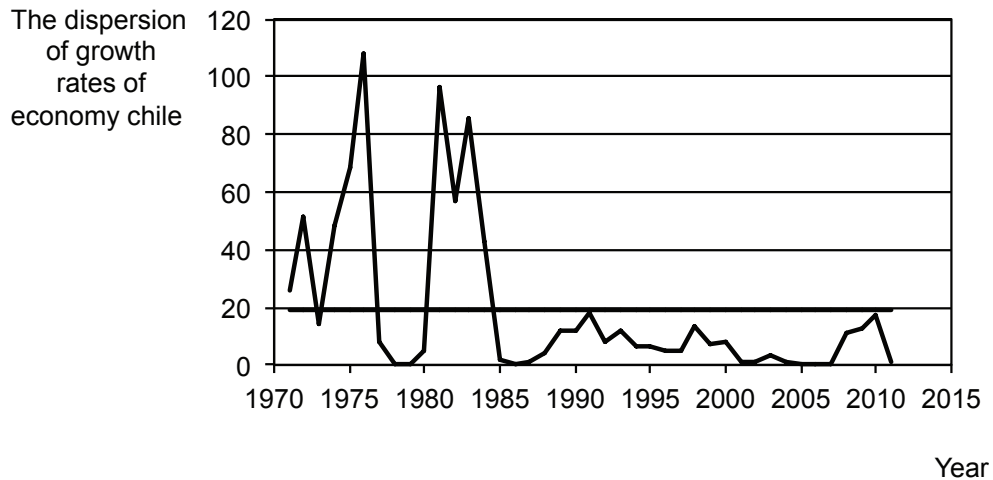
The dashed line in figure 5, shows the average dispersion of economic growth rates. The dynamics of Chile economic growth dispersion is similar in nature of the global economy dispersion dynamics. But in the period from 1985 to 2012, the variance of the growth rate of the Chilean economy is small compared to the average level. The average value of the growth rate of the Chilean economy during this period was 5,46 %. The average growth rate of the world economy during this period was 2,84 %. This period in the Chilean economy can be after L. Pritchett characterized as a period of accelerated growth.

The study revealed that Brazil, Venezuela, Colombia and Chile are developing in the accelerated pace. The growth rates of the economy of these countries exceed the world economy growth rate. The pace of economic growth in Chile, Colombia, Venezuela ranges from 4,5 to 5,5 %, Brazil - 3 %. The most stable eco-nomic growth is observed in Colombia, less stable growth – in the Brazilian economy and in the economical development of Chile. Venezuela's economy is developing the least stable. Thus, these countries in South America can be a promising business and trading partners. Taking into account growth rates of economy, degree of stability of growth, economy scales, Colombia and Brazil have the best prospects, Chile and Venezuela are a little less perspective.

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