CONTEMPORARY ECONOMIC GROWTH MODELS AND THEORIES: A LITERATURE REVIEW

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Abstract: *One of the most important aspects of human development is the ability to have a decent standard of living. The secret of the "economic miracle" of many countries that have high standard of living, in fact, is simple and quite obvious. All these countries are characterized by high and sustained development of national economy, low unemployed population rate, growth of income and consumption. There is no doubt that economic growth leads to an increase in the wealth of the country as a whole, extending its potential in the fight against poverty, unemployment and solving other social problems. That is why a high level of economic growth is one of the main targets of economic policy in many countries around the world. This brief literature review discusses main existing theories and models of economic growth, its endogenous and exogenous aspects. The main purpose of this paper is to determine the current state of development of the economic growth theories and to determine their future directions of development.*

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JEL Classification:O40; E11; E12; E13

Introduction

Since the beginning of economic science the problem of economic growth has been at the center of its attention. Searching for solutions for this problem supposed finding such factors for supporting economic development, which would provide higher living standards at a constant population growth. It is known that human needs are limitless: when people barely satisfy some, other appear, and so on, indefinitely. The essence of the problem of the expansion of needs is that they tend to be limitless in quantity and qualitative renewal comes up against the limitations of economic possibilities. However, the fact is that the Earth's population is continuously increasing - it took 10 thousand years for mankind to reach population of 1 billion (it happened in 1850). Number 2 billion was reached in 80 years (1930). Doubling this number took just 45 years (it happened in 1975). By 2000, in the world have lived 6 billion people, and by 2050 the population will be 9.5billion (U.S. Census Bureau, 2015). It is clear that such a population growth that began in the mid XIX had to be accompanied by advanced growth of aggregate product satisfying individual and social needs of people.

Nowadays, the issues of economic growth are very topical and an overview of these issues is necessary to start from the earliest concepts and theories that stood at the origins of the modern

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theories of economic growth. The main concepts and theories of economic growth are presented in chronological order in the following table (Table 1).

Table 1 – The Economic Growth Concepts and Theories

Growth Concepts and Theories	Emerged
Mercantilism	15th century
Physiocracy	2nd half of 18th century
Classical Theories	1776
Innovative Growth Theory of Schumpeter	1911
Keynesian Theories	1930s
Post-Keynesian (Neo-Keynesian) Theories	1950s
Neoclassical Theories and Exogenous Theory of Robert Solow	1950s-1960s
Endogenous Growth Theories	1980s-1990s

Source: Author's representation

1. Early concepts of growth

Growth theories originate from representatives of *mercantilism* (15th - 17th centuries). The term "mercantilism" was introduced into scientific circulation by the French economist Antoine de Montchrestien (Montchrestien and Billacois, 1999). Mercantilists considered the accumulation of wealth as the main source of economic growth and the main purpose of economic activities of traders and the state (McDermott, 1999).

While representatives of the early mercantilism preferred precious metals and coins, as absolute liquid materials, later mercantilists considered the economic power of the nation in terms of total amount of the goods produced and were in favor of a trade surplus. This trend is partly due to the development of manufacture and domestic markets.

According to the views of the mercantilists (Osipian, 2007), the opportunities to profit from the production of goods and access to credit contribute to the multiplication of wealth. The presence of a sufficient amount of metallic money, particularly of gold and silver coins, provided the necessary access to credit facilities and relatively low interest rates on loans in the country. For this reason, early mercantilists insisted on restricting the export of gold from the country. Thus, the presence of gold and silver coins in circulation was elevated to a necessary fundamental principle of the economic growth, while active trading activity was seen as a prerequisite for such growth. This approach can

be considered as historical pattern, based on the simple fact that all the capital at that time was presented as trade capital, while there wasn't any significant amount of industrial capital yet.

Based on the above position, the mercantilists welcomed the export of goods, as it is a source of metal money inflow into the country, and at the same time advocated for the restriction of imports of goods into the country. This policy was designed to ensure a trade surplus, a sufficient amount of metal money, and thus sustained economic growth (Osipian, 2007).

In the second half of the 18thcentury, physiocrats came to replace the mercantilists. *Physiocracy* (from the Greek for "Government of Nature") is an economic theory developed by a group of 18th century enlightened French economists, who believed that the wealth of nations was derived solely from the value of "land agriculture" or "land development" and that agricultural products should be highly priced. Their theories originated in France and were most popular during the second half of the 18th century. The most significant contribution of the Physiocrats was their emphasis on productive work as the source of national wealth. The Physiocratic school of economics was the first to see labor as the sole source of value. However, for the Physiocrats, only agricultural labor created this value in the products of society. All "industrial" and non-agricultural labor was "unproductive appendages" to agricultural labor (Marx, 2000).

Physiocrats considered the economic life as a natural process that has its own internal laws, and established the principle of "natural order." They opposed to state's intervention in economic processes (Osipian, 2007).

2. The classical theory of economic growth

Adam Smith's "The Wealth of Nations" (1776) is usually considered to mark the beginning of classical economics. The most famous and outstanding representatives of classical school are: Adam Smith (1723-1790), David Ricardo (1772-1823), Thomas Malthus (1766-1834), Karl Marx (1818-1883), John Stuart Mill (1808-1873), Jean-Baptiste Say (1767-1832) and others.

The fundamental message in Smith's influential book was that the wealth of nations was based not on gold, but on trade: As when two parties freely agree to exchange things of value, because both see a profit in the exchange, total wealth increases.

Classical economists observe that markets generally regulate themselves, when free of coercion. Adam Smith referred to this as a metaphorical "invisible hand", which moves markets toward their natural equilibrium, when buyers are able to choose between various suppliers, and companies which do not successfully compete are allowed to fail. Smith warned repeatedly of the dangers of monopoly,

and stressed the importance of competition (Smith, 1776).

Adam Smith linked the increase in wealth of people with the improvement of the output of the factors of production (land, labor and capital), which is reflected in the growth of labor productivity and an increase in the size of functioning capital. Great attention was attached to population growth, to the increase in the share of workers in the sphere of material production, to investment and geographical discoveries, which contributed to extensive growth.

Smith believed that population growth is endogenous and depends on the available means of subsistence. Investment was also recognized as endogenous and depended on hardworking and savings of the capitalists, and by savings meant the sum of reserves used not for personal consumption, but for industrial purposes. The output growth from land was linked to geographical discoveries and technological improvements in existing land fertility (Lavrov and Kapoguzov, 2006).

The main driving force behind increased productivity by Smith was the division of labor and improvement of technology. Smith saw competition at the heart of economic sector and the national economy as a whole, and believed that the economy can grow rapidly thanks to technological advances, part of which is the division of labor. Smith considered competition as a factor of bringing the system to equilibrium, despite the fact that the results of the process of balancing systems are preferred and positive for society (Reid, 1989).

Views of *Thomas Malthus* (1766-1834) on the economic growth, describing the growth of population and the increase in production turned out to be pessimistic. From the standpoint of Malthus, in the case the proportions between population growth and means of subsistence remains, when the population is growing exponentially, and the means of subsistence grow - arithmetically, we will face the imminent depletion of the Earth, and therefore a bitter struggle for limited resources, the growth of wars, epidemics, hunger, mass disease and so on (Lavrov and Kapoguzov, 2006). As a way out of this problem, Malthus proposed to restrain the growth of the population by the "call to prudence", especially the poorest and the birth of children only if they were provided by the means of subsistence for a decent life. Despite the fact that the calculations of Malthus were not quite correct (he distributed data on the growth of the population in the United States as a global trend, without considering the obvious fact of a large migration of people from Europe to USA, and also failed to predict the degree of development of scientific and technical progress in the field of agriculture), his idea of diminishing returns of factors of production was actively used in the 20th century, in the frame of the theory of population growth endogenization (Lavrov and Kapoguzov, 2006).

David Ricardo (1772 – 1823) was a British political economist, was one of the most influential of the classical economists. Perhaps his most important legacy is his theory of comparative advantage,

which suggests that a nation should concentrate its resources solely in industries where it is most internationally competitive and trade with other countries to obtain products no longer produced nationally. David Ricardo argued the idea of the existence of a natural market wages and assumed that the introduction of new technologies leads to a decrease in labor demand, based on special forms of technological innovations. Just as Malthus, Ricardo stressed the need to respect the proportions and singled out the negative and the positive performance of the capital (Rostow and Kennedy, 1990).

The merit of *John Stuart Mill* (1808-1873) in systematization of the classical school, he largely summed up the previous studies in the framework of the "classics". In particular, he completed the classical theory of economic dynamics that considers the long-term economic trends. At the heart of this concept is the idea of the continuous accumulation of capital. According to the theory, the increase in capital leads to an increase in labor demand, that the stable population causes an increase in real wages, which stimulates long-term population growth. If the accumulation of capital is faster than the increase in the workforce, both of these processes can, in principle, last forever. Growth in the number of workers represents at the same time increasing the number of "mouths", thus the increase in demand for consumer goods and especially for food. Food produced in agriculture, which, as we know, characterized by decreasing returns to scale. As a result, problems of declining marginal productivity of capital arise and the fall of incentives to invest.

3. Innovative growth theory of Schumpeter

A significant contribution to growth theory was introduced by *Joseph Alois Schumpeter* (1883-1950), primarily due to his work "Theory of Economic Development», first published in 1911. Schumpeter introduced into the economics the term "innovation" and in a new way considered the significance of the entrepreneur in terms of economic growth (Lavrov and Kapoguzov, 2006).

The starting point, according to Schumpeter, was condition of pure equilibrium or steady state of economy. According to his view, the engine of «development» was the changes in the economic sphere. They were due to various reasons (for example sudden discovery of new sources of supply), but the main was entrepreneurial innovation, which caused the development.

The driving force of development in Schumpeter's theory is the businessman and entrepreneur, innovator, a creative person. He is characterized as being initiative, foresight and risky.

Monopoly, from the point of view of Schumpeter, is a positive thing, as it is achieved by the implementation of new combinations of factors of production, revolutionary changes in technology,

in production technology, creation of new products, entering new markets, and so on (Lavrov and Kapoguzov, 2006).

Schumpeter described the nature of economic development as the "carrying out of new combinations", which he defined rather widely as follows (Maddison, 1982):

1. Introduction of new goods;
2. Introduction of new methods of production;
3. Opening a new market;
4. Conquest of a new supply of raw materials;
5. New organization of an industry.

These specific forms of economic changes he viewed as development.

4. Keynesian and Post-Keynesian (neo-Keynesian) growth theories

Keynesian and neo-Keynesian growth theories have a considerable list of representatives, which includes *John Maynard Keynes* (1993-1946), *Roy Harrod* (1900-1978), *Evsey Domar* (1914-1997), Joan Robinson (1903-1983), Nicholas Kaldor (1908-1986), Luigi Pasinetti (1930 – till now), James Meade (1907-1995). "The General Theory of Employment, Interest and Money" of Keynes was in the basis of all the following Keynesian growth theories.

A key factor in the Keynesian model is the effective demand, specifically that the expansion of aggregate effective demand should contribute to economic growth.

These theories have arisen as a result of development and critical processing of Keynesian macroeconomic equilibrium. Based on economic values such as national income, consumption, savings and investments, J. Keynes developed a theory designed to explain changes in the level of economic activity. He proved that during the recession and rising of unemployment, reduction of income causes decrease in consumption, savings and investments. Therefore, according to John Keynes, in an environment where there is no market leverage to increase the aggregate demand for reviving business activity in the economy, the government should intervene by implementing macroeconomic, namely, fiscal policy, using measures such as: tax cuts or increases in government spending (UN, 2011).

Keynes argued that the solution to the Great Depression was to stimulate the economy ("inducement to invest") through some combination of two approaches:

- A reduction in interest rates (monetary policy), and
- Government investment in infrastructure (fiscal policy).

By reducing the interest rate at which the central bank lends money to commercial banks, the government sends a signal to commercial banks that they should do the same for their customers.

Investment by government in infrastructure injects income into the economy by creating business opportunities, employment and demand and reversing the effects of the aforementioned imbalance.

What is the essence of Keynesian growth theories?

1. All of them are based on the main postulate by John Keynes - aggregate demand. The decisive condition for balanced economic growth in these theories is the increase in aggregate demand.

2. Investment is considered as the main factor of economic growth that increases income (multiplier effect) or increases under the influence of the accelerator together with income growth. All other production factors, such as increased employment, the degree of equipment use, better organization of production are not taken into account.

Keynesian approach considers short-term periods and the specific situation of a depressive economy. However, the followers of Keynes expanded his approach for the long term.

Post-Keynesian (Neo-Keynesian) theory of economic growth has been formulated by American economist of Polish origin Evsey Domar and the British economist Roy Harrod. Their results were so close to each other that they subsequently became known in science as the theory of Harrod-Domar.

Evsey Domar clarified and supplemented the theory of John Keynes - in his theory, investment is a factor not only of income, but also a factor in creation of production capacities, and therefore, the factor of development within production and supply of goods. Domar's theory determines the tempo at which investment should grow in order to ensure growth of revenue. This tempo is directly dependent on share of savings in national income (the marginal propensity to savings) and the average efficiency of investments.

Hence an important conclusion was made for economic policy: only ever-growing accumulation of capital, i.e. investment growth, provides economy with dynamic balance between aggregate demand and aggregate supply. In order to maintain balanced growth of investments, the state can influence the share of savings in national income or the rate of technological progress, thus determining the productivity of capital.

Roy Harrod's theory is devoted to the study of the growth trajectory of the economy. Therefore, it is based on the theory of the accelerator, which allowed to determine the ratio of investment growth to growth in income. R.Harrod's theory describes the mechanism of balanced growth, based not only

on the functional relationship between income, savings and investments, but also on the analysis of the expectations of entrepreneurs.

The actual growth rate in R. Harrod's theory is determined by the growth rates of labor and capital productivity. If the actual growth rate coincided with a guaranteed (guaranteed growth by Harrod - growth with full utilization of existing capital resources), the economy would have a sustainable continuous development.

The maximum possible rate of economic growth with full utilization of labor force is called in the R.Harrod's theory a natural pace (rate). Stable dynamic equilibrium of the economic system is achieved with equality of guaranteed and natural growth rate in condition of full employment. However, maintaining such equality is possible only with active state intervention.

Thus, during the analysis, R. Harrod arrived at conclusions similar to those obtained by E. Domar. Often their theories, as already noted, are combined into a single theory entitled Harrod-Domar. It implies that, in the technical conditions of production, economic growth is determined by the marginal propensity to save, and the dynamic equilibrium in the market system is inherently unstable, so that maintaining it at full employment requires active and purposeful actions of the state.

The limitations of the theory of Harrod-Domar are as follows:

Firstly, they require a prerequisite for building the analysis within the theory:

- economic growth depends on the growth of investment, and this dependence is a linear function;
- economic growth does not depend on the growth in the use of labor;
- Theory does not take into account technological progress.

Secondly, the limitations of the theory are explained by historical conditions. This theory could adequately describe the actual processes of economic growth in the 1930th and the post-war period, when economic growth really mainly depended on growth of production capacities utilization. However, in the 50th-70th production development prospects depended mainly on qualitative and technological changes, which is reflected in neoclassical theories of economic growth.

5. Neoclassical growth theories and the exogenous theory of Robert Solow

The first neoclassical growth theories emerged in 1950s – 1960s, when attention to the problems of dynamic equilibrium weakened and to the fore came the problem of achieving potential growth not so much due to unused capacity, as through the introduction of new technology, improving productivity and improving the organization of production.

The main representatives of this school are *Alfred Marshall* (1842-1924), Carl Menger (1840-1921), Friedrich von Wieser (1851-1926), Leon Walras (1834-1910), John Bates Clark (1847 –1938), William Stanley Jevons (1835-1882), Irving Fisher (1867-1947) and others.

The American economist Robert Solow (1924-present) together with other scholars opposed the state's intervention in the economy and were up for allowing large firms to achieve their growth potential in a competitive market, by using most of the resources available to them.

The methodological basis of their theories was based on the classical theory of the factors of production, regarding labor, capital and land as independent factors of the formation of national product, as well as on the theory of marginal productivity, according to which, the income derived by owners of the factors of production are determined by the marginal products of these factors.

Neoclassical theorists criticized the neo-Keynesian growth theory on three points (UN, 2011):

Firstly, because they are focused on only one growth factor - capital accumulation, (i.e. investment growth), ignoring all other factors, and in particular those associated with technological progress: the growth of education, skills, improving the organization of production, etc;

Secondly, because they originate from the immutability of the capitals share in income. Neoclassical model, taking into account capital and labor, and assuming their interchangeability, allow the possibility of change in the coefficient of capital. Hence, even in current technical equipment of production it is possible to achieve certain output volume just by applying different combinations of resources;

Thirdly, because the Neo-Keynesians underestimated the ability of the market mechanism for automatic rebalancing. Neoclassical economists, on the other hand, believed that the only competitive market system is able to provide balanced economic growth. This condition also applies to stable monetary system. So they opposed inflationary government spending, considering state intervention to the economy as a factor of stability violations.

The Theory of Robert Solow

Solow's theory was outlined for the first time in an article entitled "A Contribution to the Theory of Economic Growth" (1956), and then developed in the "Technical Change and Aggregate Production Function"(1957). In 1987, for its development, the author was awarded with the Nobel Prize in Economics.

R. Solow proceeds from the assumption that a necessary condition for equilibrium of the economic system is the equality of aggregate demand and aggregate supply. In his theory, aggregate supply is determined on the basis of the production function of Cobb-Douglas, which expresses the functional dependence between production volumes on the one hand, and the factors used and their

combinations, on the other. Solow's theory can reveal interconnections between three sources of economic growth - investments, workforce and technological progress.

The theory shows that the savings rate is a key factor in determining the level of capital intensity. A higher savings rate provides a greater stock of capital (i.e., growth of investments), and hence a higher level of production.

Population growth in the Solow's theory is also one of the reasons for continued economic growth in the stable condition of the economy. However, if population growth is not accompanied by an increase in investments, this leads to a reduction in the capital stock per worker. Thus, the theory of R. Solow explains that countries with higher population growth rates have lower capital-labor ratio, and hence - lower incomes.

The third source of economic growth after investments and increase in the number of employees is technical progress. It should be noted that in neoclassical theory by technological progress they do not mean the replacement of human labor by machines, but qualitative changes in the production, such as: increasing the educational level of workers, the improvement of the organization, growth of production scales and so on.

It should be emphasized that R. Solow, out of all his contemporaries-economists came to a closer and better understanding of the economic efficiency of production as a relatively independent factor of economic growth and material source of social progress in the last quarter of the 20thcentury. In the theory of Solow, the technical progress is the only condition for continuous growth of living standards, measured as per capita income. Moreover, R. Solow proposed a formula of "golden rule of accumulation", which determines the optimal level of capital intensity. An equilibrated economic growth is compatible with various norms of savings, but the optimal one will be that norm, which provides economic growth with the highest level of consumption. Unlike traditional approaches, the highest consumption is not determined by the largest possible amount of capital, but by its optimum size and cost effectiveness - capital productivity per unit of product (marginal productivity).

Thus, the theory of R.Solow highlights technological progress as the sole basis for sustainable growth of welfare and allows you to find the optimal variant of growth, providing maximum consumption.

6. Theory of endogenous economic growth

A new stage in the development of the theory of economic growth occurred in the 80-90s., which allowed to talk about the "new growth theory". It reflects the impact of imperfect competition

and the role of possible changes in the profit rate. And most importantly - the scientific and technical progress has been considered as an endogenous, growth factor generated by internal causes. For the first time, in formal mathematical and economic models, the American economists *Paul Romer* (1955-till now) and *Robert Lucas* (1937- till now) hypothesized about the endogenous character of the most important technological innovations based on investment (contribution) in technological development and in human capital. Endogenous growth models look similar to the neo-classical ones, but they differ significantly in initial assumptions and conclusions (UN, 2011). On the basis of the Solow model, the state with the help of economic policy instruments (such as changes in taxation, government spending) is not able to provide long-term impact on the growth rate. The impact of the state on economic growth is only possible through the impact on the savings rate. As noted by P. Romer: "In terms of advice to politicians, the growth theory had little to offer. In theory, with exogenous technological change and exogenous population growth did not matter what the government does" (Romer, 1989a, p.51). Endogenous growth theory overcomes this shortcoming of neoclassical theory. First of all, they reject the neoclassical premise of diminishing marginal productivity of capital, assume the possibility of production scale effect throughout the economy, and often focus on the impact of external effects on the profitability of investments. Positive externalities act as an important prerequisite.

In the theories of endogenous growth, technological progress is not the only possible cause of economic growth in the long term. The value of intensive, high-quality determinants of economic growth (parameter A in neoclassical theory) is defined in the theories of endogenous growth with the following factors:

- The quality of human capital, which depends on investment in human development (education, health);

- Creation of the necessary conditions and prerequisites for the protection of intellectual property rights in the conditions of imperfect competition;

- State support for the development of science and technology;

- The role of government in creating a favorable investment climate and attracting new technologies.

Therefore, the theories of endogenous growth in contrast to neoclassical ones are in favor of state's intervention in the development process. These theories can be divided into two groups. *The first group* includes theories in which human capital emerges as an important determinant of economic growth. These are the theories of *P. Romer* (1989b) and *R. Lucas* (1988).

A key factor in the endogenous growth theory of Paul Romer is the variable called "knowledge" or "information". It assumes that the information contained in the inventions and discoveries are available to everyone and can be used at the same time. The Romer's theory assumes that the total amount of human capital remains constant during the considered time interval. It is only possible its redistribution between the sphere of production and R & D (research and development activities) in accordance with the function of consumer preferences. The basic idea of the theory of Romer is as follows: "there is an exchange between consumption today and knowledge that can be used for the expansion of consumption tomorrow." He formulates the idea as "research technology," which produces "knowledge" from the past consumption. Thus, the rate of economic growth is in theory of Romer directly dependent on the value of human capital, focused in obtaining new knowledge. In reality, this means that the sphere of research affects the economy not only directly through the application and development of new ideas. Its existence is a necessary (but not sufficient) condition for economic growth, because it provides human capital accumulation. The theory of Romer implies that countries with greater accumulation of human capital will have higher rates of economic growth. Therefore, according to this theory, the development of free international trade will also contribute to higher growth, since the exchange of products expands the boundaries of the economic system and thus leads to an increase in the total human capital.

In contrast to the Romer's theory, in the theory of Robert Lucas, accumulation of human capital is a strong economic process that requires certain resources, and is the cause of alternative costs. Lucas suggests that people can choose one of two ways to spend the time: to participate in current production or to accumulate human capital. In fact, the allocation of time between these alternative ways determines the rate of economic growth. For example, a decrease in time spent on production, leads to a reduction in the current product output, but at the same time with accelerated investment in human resources increases the product output growth. Thus, the distinguishing feature of theories of this group is the inclusion of the education factor and human capital in the production function.

In *the second group* of theories, R&D is a key factor of growth. So, the theory of *J.Grossman* (1953 – till now) and *E.Helpman* (1946 – till now) describes the effect of endogenous high-tech innovations to economic growth rates (UN, 2011). On the example of two countries trading with each other, these authors, in particular, have shown that subsidies for R&D in a country that has a relatively scientific and technical excellence, there will be recorded an increase in the overall rate of economic growth. Protectionist trade policy can contribute to economic growth of countries with a lower level of R & D, however, has the opposite effect if it is carried out in the country with a high scientific and technical potential. The theory takes into account the possibility of inflow/outflow of capital for R &

D funding and predicts under certain conditions, the formation of transnational corporations. This group also includes the theory of endogenous technological progress of *P.Aghion* (1956 – till now) and *P.Howitt* (1946 – till now). According to this theory, economic growth is driven by technological progress, which in turn is ensured by competition between firms, generating and implementing long-term products and technological innovation. Each innovation brings to market new interim goods (product, technology), which can be used in a more effective production of goods than it was before. The main motivation for the firms within the research sector is the prospect of monopoly rents in the case of successful patenting of innovations. This rent covers costs associated with the development and implementation of innovations. Thus, a critical role in determining the rate of economic growth plays the arising endogenously flow of professionals between the sector of interim goods production and the R & D sector.

Thus, endogenous growth theories allowed formalizing the relationship between the mechanisms of economic growth and the process of obtaining and accumulating new knowledge, which is materialized in technological innovations. These theories examine the reasons for the differences in growth rates of different countries, the effectiveness of various measures of the state's scientific, technical and industrial policies, as well as the impact of the processes of international integration and trade on economic growth.

Final remarks

Having reviewed the basic theories of economic growth, we can conclude that the current theoretical analysis of economic growth is carried out in three main directions: post-Keynesian, neoclassical (exogenous) and endogenous.

Post-Keynesian (neo-Keynesian) theory of growth emerged on the theoretical and methodological basis of the teachings of John Keynes's macroeconomic balance. They are characterized by an approach towards: growth from the part of aggregate demand; the key role of investment in the economic growth and the active role of economic policy. Within the neo-Keynesian direction stands out above all the growth theory of E.Domar and R.Harrod.

Neoclassical growth theories built on the premise of achieving a stable equilibrium without government interference. Exogenous theory of R. Solow can reveal the relationship of three sources of economic growth - investment, workforce and technological progress. The theory is based on the "golden rule" of accumulation, according to which an outflow of capital should not exceed the marginal product of capital.

In his theory, Robert Solow highlights technological advances as the only basis for sustainable growth of welfare and allows to find the optimal variant of growth, providing a maximum consumption. However, technological advance in the theory of R. Solow is regarded as exogenous factor, and therefore does not explain it.

A new milestone in the development of the theory of economic growth began in 80s – 90s, which allowed us to talk about the "new growth theories". In these theories, technological progress came to be regarded as an endogenous factor of economic growth, generated by internal causes. For the first time, the American economists Paul Romer and Robert Lucas advanced the hypothesis on the endogenous nature of the most important technological innovations, based on investment in technological development and in human capital.

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