

## ECONOMIC GROWTH MODELS, THEIR COMPARATIVE ANALYSIS AND FOREIGN PRACTICE

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### Abstract:

This article describes and compares various models related to macroeconomic equilibrium and economic growth based on various graphs, formulas and tables. In addition, the specific characteristics of the models and their application, in which period and for which economic systems, are covered in detail.

**Keywords:** economic growth, capital, labor, commodity market (IS), money market (LM), balance of payments (BP), interest rate, return on capital, technology, capital accumulation, level of accumulation.

### Introduction

Throughout the history of economics, from the transition from natural economy to modern market economy, various economic theories have emerged that were specific to each period. These economic ideas were influential at the time they were developed, but as economic management structures changed, new theories took their place. Alongside overarching economic theories, individual economists have also put forth their own ideas on economic growth, which have evolved over time and varied significantly in their focus and components. This article delves into the diverse definitions of economic growth proposed by different researchers, addresses key questions regarding the sources of economic growth, examines various models related to economic growth and their constituent elements, and explores reasons for disparities in economic performance among countries. By exploring these topics in detail, readers will gain a comprehensive understanding of the complexities surrounding economic growth and activity across different contexts. The exploration of questions pertaining to economic theories is crucial not just for understanding the intricacies of the economy, but also for conducting in-depth analysis in the fields of macroeconomics and social science. This article delves into the distinct characteristics and disparities among various economic models such as the Harrod-Domar model, the Robert Solow economic growth model, the IS-LM-BP model, and the AD-AS model, all of which are fundamental in shaping economic policies and predicting market behaviors. Furthermore, it examines the innovative economic growth perspectives put forth by contemporary economist Daron Acemoglu, shedding light on his contributions to modern economic thought.

## 2. Analysis of literature on the topic

Numerous researchers have explored the concept of economic growth. However, in this article, we will delve into the prominent and all-encompassing theories of economic growth and stability.

According to prominent Uzbek economists, such as Dzhumaev, the concept of economic growth refers to a sustained and gradual expansion in the capacity for production that aligns with conditions of full employment. In essence, economic growth signifies a rise in overall supply, encompassing both real and potential Gross Domestic Product (GDP). This trajectory denotes a continuous enhancement in the economy's ability to generate goods and services over an extended period, ultimately contributing to broader prosperity and development.

Let's talk about the Harrod-Domar growth model. This model is the result of independent research of British economist Roy Harrod and American economist Evsey Domer. According to this model, economic growth depends on three factors: capital (K), labor (L), resources (R)

$$Y = F(K, L, R)$$

In this case, R and L are considered as factors that lead to growth in capital production [2]. The Solow-Swan model, commonly referred to as the Solow model in academic literature, was introduced by economists Robert Solow and Trevor Swan in 1956 through a comprehensive paper [3]. Subsequently, Bob Solow further refined the model and explored its potential applications, ultimately earning the Nobel Prize for his groundbreaking contributions to economics. The Solow model has not only revolutionized our understanding of economic growth, but has also significantly influenced our approach to various aspects of macroeconomics. Its enduring impact on the field continues to shape economic theory and policy discussions to this day.

In their seminal work "Economic Growth," Harvard University Professor Robert J. Barro and Columbia University Economics Professor Xavier Sala-i-Martin identified three crucial factors that drive economic growth: capital (K(t)), labor (L(t)), and intelligence (T(t)). According to their analysis, these factors play a fundamental role in determining the overall productivity and output of an economy. The production function, as outlined by Barro and Sala-i-Martin, can be expressed as a complex interplay between these factors, where the level of capital, labor, and intelligence present in an economy at any given time directly influences its growth trajectory.

$$Y(t) = F[K(t), L(t), T(t)]$$

Here, Y(t) represents the amount of production over a period of time. The difference between this economic model and the Harrod-Domar model is in the last factor. According to it, resources cannot be used in society without technology and knowledge, and it is intellect and technology that bring resources to power. mentioned.

Arthur Lewis, another prominent economist, proposed a model in which he emphasized that the labor force reserve serves as the foundation for economic growth. According to Lewis, this model is particularly applicable to countries characterized by high population density,

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limited natural resources, and a scarcity of capital. Examples of such nations include India, Pakistan, and Egypt. Lewis's model suggests that in these contexts, the availability of a surplus labor force can drive economic development and expansion, as it can be harnessed to boost production and contribute to overall economic growth.

Professor Acemoglu's seminal contribution to the field of development economics lies in his groundbreaking theory known as "Why Nations Fail." In this theory, he emphasizes the pivotal role of political institutions in shaping the economic outcomes of nations. Acemoglu distinguishes between two fundamental types of institutions: extractive and inclusive. Extractive institutions are characterized by their tendency to benefit a small elite or privileged few, often at the expense of the broader population. This can be seen historically in systems such as feudalism, where power and resources were concentrated in the hands of nobles. In contrast, inclusive institutions are designed to empower and represent the interests of the majority, with a focus on promoting overall societal well-being. By highlighting the importance of inclusive institutions in driving economic development and prosperity, Acemoglu's work underscores the critical link between politics and economics in shaping the trajectory of nations.

In the field of economics, the Ramsey model serves as a fundamental neoclassical framework for analyzing economic growth within a closed economy, taking into account exponential population growth. This model delves into the interplay between capital accumulation and consumption over time, shedding light on the dynamics of economic development. Moreover, one of the key principles stemming from the Ramsey model is known as "Ramsey's rule," which underscores the concept of inverse elasticity in taxation. According to this rule, the tax burden imposed on products should be inversely proportional to the elasticity of demand for those products. In essence, this suggests that goods with more elastic demand - meaning consumers are more responsive to price changes - should bear lower tax rates relative to goods with less elastic demand. In summary, Ramsey's rule highlights the importance of considering consumer behavior and market dynamics when designing taxation policies, aiming to strike a balance between revenue generation and economic efficiency.

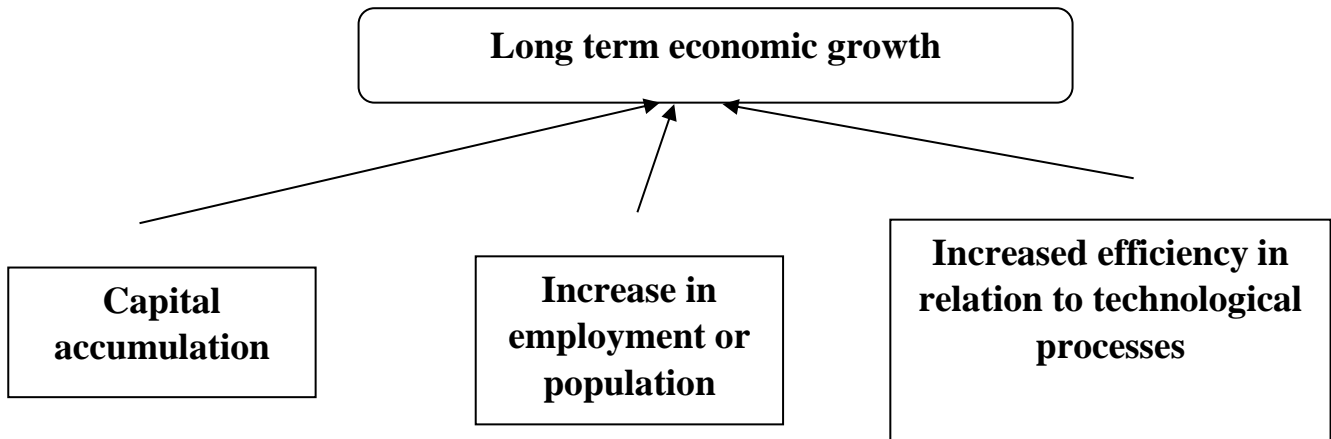
### **3. Research Methodology**

In the article, the theories of economic growth are compared and illustrated with the help of graphs, based on a systematic approach, statistics, comparison, scientific abstraction, and the study of existing domestic and foreign literature and articles related to economic growth.

### **4. Analysis and Results**

Economic growth is influenced by the production function and is a dynamic process that involves changes in gross output, capital, consumption, and population. To understand this dynamic process, it is important to study dynamic models. The Solow model, known as the general dynamic equilibrium model, aims to promote long-term economic growth. This

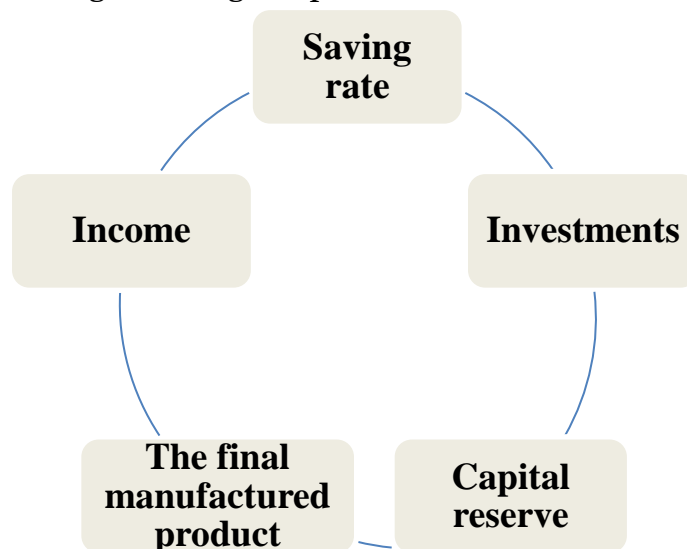
model provides insights into how various factors interact to drive economic development over time.



**Diagram 1:** Factors of economic growth according to the Solow model.

*Source: Compiled on the basis of the author's scientific developments, 2023.*

The Harrod-Domar model is designed for the economies of developed countries and focuses on achieving stable growth rates. In this model, economic growth is driven by the levels of savings and capital production. The more savings that are accumulated, the greater the efficiency of capital and the overall economic growth. Savings and investment are directly related, as investments lead to the creation of capital. Therefore, in the Harrod-Domar model, the emphasis is placed on building up a fund for investment. This model can be better understood through the diagram provided below.



**Diagram 2:** Circular diagram of the Harrod-Domar economic growth model [8].

-In underdeveloped and low-accumulation countries, where the level of accumulation is low, there is a corresponding low level of investment. This leads to a very limited capital stock and ultimately results in an unsatisfactory final output of GDP due to the inadequate rate of capital. Consequently, the overall income levels in these countries remain low. Therefore, the model discussed may not be suitable for economies that are characterized by underdevelopment and low levels of accumulation.

Conversely, in countries where the level of accumulation is high, there is a natural increase in the volume of investments as well as the volume of capital stock. This heightened level of capital leads to a greater volume of final production and subsequently an increase in income levels within the economy. As a result, economies with high levels of accumulation tend to experience higher rates of economic growth and prosperity compared to those with lower levels of accumulation.

Problems with the Harrod-Domar model:

- ✓ The level of accumulation is different;
- ✓ Financial system, for example, inefficiency of banks;
- ✓ Increase in external debt creates problem of repayment, and there is a break in the above process.

We can also express economic growth in the Harrod-Domar model with the following mathematical formula:

$$\text{Rate of growth} = \frac{\text{Saving ratio}}{\text{Capital output ratio}}$$

**Table 1 Comparison chart of Solow and Harrod-Domar models.**

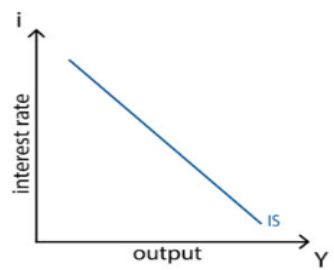
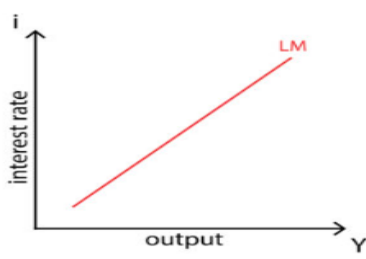
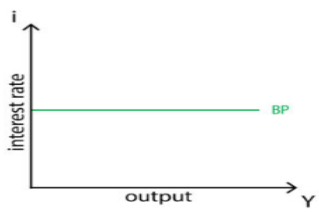
Harrod – Domar model	Solow model
A drop in aggregate demand (AD) for goods is known to constrain economic growth.	Reduced capital returns limit economic growth;
A change in the savings rate has a lasting impact on the growth rate of GDP per capita.	A change in the savings rate has a temporary effect on the growth rate of GDP per capita.

*Source: Compiled on the basis of the author's scientific developments, 2024.*

A different perspective on economic equilibrium can be observed through the IS-LM-BP model, which encompasses the interactions between investments and savings, the liquidity of money, and the balance of payments. Initially developed by economists Robert Mundell and Marcus Fleming, this model seeks to establish a balance between the goods and money markets as well as external trade through a comprehensive analysis of the IS, LM, and BP curves. The IS curve represents the equilibrium in the goods market by showing all combinations of interest rates and output levels where total spending equals total output. The LM curve reflects the equilibrium in the money market by illustrating all combinations of interest rates and income levels where money supply equals money demand. Finally, the BP curve outlines the equilibrium in the balance of payments by depicting all combinations

of exchange rates and output levels where inflows equal outflows in a country's international trade.

**Table 2 IS-LM-BP funksilari [9]**

<b>IS</b>	<b>LM</b>	<b>BP</b>
<p>A high interest rate in the commodity market leads to a decrease in income (Y).</p> 	<p>In the money market, the interest rate and the rate of return are directly proportional.</p> 	<p>The BP curve shows at what point in the interest rate the balance of payments reaches equilibrium.</p> 

Another general equilibrium model is the AD-AS model. This model is also called the basic macroeconomic scenario. In this model, it is reflected that at the equilibrium price, the aggregate demand and aggregate supply in the country are equal.

In addition, there are several developed foreign countries that have employed different economic growth models to drive their economies. Some of the prominent ones include:

1. The United States: The U.S. has a mixed economy, characterized by both capitalist and socialist elements. The country relies heavily on consumer spending, technological innovation, and entrepreneurship to drive economic growth.
2. Germany: Germany's economic growth model is based on a strong industrial base, export-oriented manufacturing sector, and emphasis on high-quality products and services. The country also places a strong emphasis on vocational training and workforce development.
3. Japan: Japan's economic growth model focuses on innovation, technology, and exporting high-tech products. The country has a strong focus on research and development, as well as collaboration between government, industry, and academia.
4. South Korea: South Korea's economic growth model is based on export-led industrialization and investment in technology-intensive industries such as electronics, automotive, and shipbuilding. The country also places a strong emphasis on education and skills development.
5. Sweden: Sweden's economic growth model is based on a combination of social welfare policies, innovation-driven economy, and sustainable development practices. The country has a strong focus on research and development in sectors such as healthcare, renewable energy, and information technology.

## 5. Conclusions and Suggestions

In conclusion, analyzing economic growth and creating models aimed at ensuring it is a very complex process. Each of the models of economic equilibrium and growth presented in this article has different characteristics.

- In the Harrod-Domar model, economic growth is primarily seen in developed countries and it is evident that increasing savings leads to economic growth by attracting investments in the form of capital.

- On the other hand, the Solow model emphasizes that technological advancements play a crucial role in driving growth. This model is considered exogenous, focusing on how changes in population growth, accumulation levels, and technological progress impact overall production volume over a specific period.- IS-LM-BP modelida esa tovar-pul bozoridagi hamda to'lov balansining barqarorligini ta'minlash uchun muvozanatli foiz stavkasi(R) ni topish asosiy o'rin egallaydi. Ushbu model foiz stavkalari va ishlab chiqarish o'rtasidagi qisqa muddatli muvozanat nuqtasini namoyish qiladi.

Our suggestions for this article include the following. The need to study the comparison of various researches and models carried out by the world and local scientists on the issue of economic growth, which has a key place among economic issues, and to include them in the literature of the family education system is the current economic growth about the issue will bring comprehensive benefits to students and researchers.

## References

1. Dzhumaev Z.A. (2018)., "Macroeconomics". Instructional manual: "Innovative development publishing-resource house", page 164. /Dzhumaev Z.A. (2018), Macroeconomics. Instructional manual: "Innovative Development Publishing House", page 164.
2. Le Ngoc Thong, Nguyen Thi Hao., International Journal of Humanities Social Sciences and Education, Volume-6, Issue-4, April 2019. P 11-12.3. Daron Acemoglu., "Introduction to Modern Economic Growth", 2007 y., P-50-54.
4. Robert J.Barro, Xavier Sala-i-Martin., "Economic Growth" Second edition. P 23-30.
5. Lewis, William Arthur (2003), "The Theory of Economic Growth", London. P 1-29.
6. Daron Acemoglu, James A. Robinson, "Why Nations Fail.", New York-2012 y. P 93-96.
7. Viktoria Kajanovichova, Branislav Novotny, Michal Posposil., "Ramsey model with non-constant population growth", The journal of Mathematical Social Sciences, V-4/2020, P 40-46.
8. Mark Wallace., "Harrod-Domar growth model", compiled by the author from a video lesson.
9. It was developed by the author based on the information from <https://policonomics.com/is-lm-bp/>.