# Theoretical Discussion over the Methodology and Economic-Policy Conclusions of Selected Theories of Economic Growth

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**Abstract**

This article aims to present the main conclusions of various theoretical approaches to investigation of the issue of economic growth within the mainstream economic theories, to assess their relevance to economic practice, and to evaluate the adequacy of their research methods used in solving the given issue. The main attention is paid to the concept of economic growth or creation and distribution of wealth within the English school of classical political economy, Harrod-Domar model, as an attempt to dynamize Keynesian economics, Solow-Swan model of economic growth, economic models of endogenous growth, and the new stylized facts of growth by C. Jones and P. Romer. For all investigated model approaches (except classical school and Kaldor approach), the authors of this paper arrive at the opinion that the recommendations for economic practice and used research methods are not adequate.

**Introduction**

Since the very beginning of economics as a science, the question of creation, use, and distribution of social wealth has been addressed, as it is the explicit condition of the issue of human needs and their saturation. In other words, economic growth is a fundamental economic problem, directly related to standards of living of people in the broadest sense. It is a multilevel process with significant social and economic consequences.

The development of theoretical concepts should correspond to the changes of economic problems in the real economies. Economic theory is attempting not only to understand and describe the real nature of these real problems, but also to provide appropriate proposals for their solution. In this context, based on the study of various growth models, a following assertion is discussed: The **various models of economic growth are able to describe the economic reality adequately and provide appropriate solutions or recommendations for the implementation of pro-growth economic policies (Hypothesis 1).**

Attention is also paid to the characterization and comparison of methodological approaches and used research methods of particular theoretical concepts of economic growth. It is the type of questions, the way they are asked, and the apparatus used to finding the answers, what is making from economics the most exact of the social sciences. The focus on the paradigms within which the individual growth models are constructed, is necessary, as they ultimately affect the conclusions arising from them. In this context, the following argument is discussed: The **methods of investigation are adequate to address the problem. (Hypothesis 2).** The operational goal is to demonstrate the mutual determination and causality of formulated propositions.

The following discussion concentrates on the concepts of economic growth or creation and distribution of wealth within the English school of classical political economy, Harrod-Domar model, as an attempt to dynamize Keynesian economics, Solow-Swan model of economic growth, models of endogenous economic growth, and new stylized facts of growth by C. Jones and P. Romer.

## 1 English School of Classical Political Economy

The approach of English school of classical political economy was entirely original. Representatives of this school brought a whole new way of economic thinking, which was no doubt a reaction to the then social and economic changes. The main representatives of this school include A. Smith, D. Ricardo, T. Malthus, J. B. Say, N. W. Senior, and J. S. Mill. Determining for this school of thought is the work of the first two mentioned economists.

The questions of economic growth and development were determining the nature of classical school. The main interest was fixed on the nature and causes of wealth of the nations, and on the distribution of national product between the factors of production in the context of a growing population, limited resources, and free market competition in private-ownership economy. The principal contributions lie in the theoretical emphasis on capital accumulation, in understanding the limitations of the market as a factor hampering growth, in this context, in building the theory of international trade, and especially in the division of labor, leading to productivity growth and economic growth. In terms of economic policy, an important success was a theoretical justification for economic liberalism and a significant initiative in its real implementation. At the same time, it is possible to appreciate a clear definition of the role of the state and its instruments in the implementation of economic policy.

When realizing that A. Smith's views were shaped in the very beginning of the industrial revolution, in the period of established and ingrained mercantilist political-economic approaches, it can be stated that the classical school of economics described the economic reality adequately and provided appropriate solutions for the implementation of economic policies. It explicitly pointed on the sources of economic growth. In connection with the views of A. Smith, one must admit that even "ahead of its time". Therefore, the English school proved the hypothesis 1.

The classical school of economics has contributed to the development of methodologies and methods used in economics. The representatives of this school can be in terms of methodology divided into two groups: The first group includes those who used the inductive method (such as A. Smith), i.e. that they formulated hypotheses and derived empirical laws, based on empirical findings. These laws were used for theoretical argumentation and their conclusions were tested in other empirical data. The second group (such as D. Ricardo) advanced deductive method in the creation of hypotheses. The conclusions were inferred from these hypotheses without seeking for their empirical verification.

D. Ricardo used the method of abstraction and for the first time in the history of economics built a strictly logical and highly abstract model. He laid the foundation of today's axiomatically-deductive economics. D. Ricardo has managed to create an analytical system built on the axiomatic basis from which were derived theorems using deductive logic describing a simplified and therefore axiomatically analyzable macroeconomic relationships Despite many critics[1], of D. Ricardo the methodological approach can be supposed capable of providing a credible picture of the economy. Economics in his concept has become an exact science discipline. Therefore, the English school proved also the hypothesis 2.

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[1] The approach of D. Ricardo has been criticized for example by J. A. Schumpeter, who called it "Ricardian vice". See [15].

## 2        Harrod-Domar Model and Its Extensions in the Post-Keynesian Economics

An attempt of R. Harrod and E. Domar to dynamize Keynesian theory and thus create Keynesian growth theory was the first work leading to the modern growth theory. This is a uni-sector model concentrated on the role of investment both in terms of capital accumulation and also as a component of aggregate demand. The model is based on a simple investment function with accelerator, where investment is dependent on the expected real income. The model assumes a constant savings rate, a constant capital-output ratio, a constant growth rate of labor force, and a constant rate of technological progress. According to this model, the economy is in its dynamic optimum if there is a balance between the natural and guaranteed growth rate of income. It is such a situation when all the factors of production are fully utilized. Nevertheless, Harrod-Domar model does not explain what kind of mechanism directs the four above-mentioned parameters to achieve the dynamic optimum.

In other words, the balance (i.e. the guaranteed growth rate) is achieved if the planned investment equals planned savings, or more precisely when planned investment equals savings induced, respectively savings from increased net income due to the prior investments. However, if the guaranteed rate of growth is not achieved then there is a persistent imbalance in the whole economy. Higher growth than the guaranteed rate leads to a surplus of planned investment over planned savings, further increasing the growth rate. This process is bound to run into capacity constraints of the economy. Lower growth leads to underinvestment, lack of effective demand, and unemployment.

The so-called problem of "balancing on a knife edge" can then be addressed through the adaptation of one (or of all) of the four basic model parameters. This task was undertaken by Post-Keynesian economists, especially N. Kaldor, L. Pasinetti, and J. Robinson, who oriented their investigation to adaptation through the rate of savings.

From this logic, it can be concluded, the Harrod-Domar model explains rather than long-term economic growth only short-term fluctuations. In terms of recommendations for pro-growth economic policy, it is rather limited to short-term stabilization policy, which also justifies the more interventionist approach against classical economics.

To evaluate the hypothesis 1 on the Harrod-Domar model, it appears useful to divide it into two parts. The first part relating to the adequacy of the description of economic reality must be considered rejected. The reason is the obscurity about the factors affecting the defining parameters of the model. The observed model in its essence does not explain the long-term growth. This lack of the model, however, was partly removed by N. Kaldor. The second part of the hypothesis 1 must be also rejected, because if the issue of long-term growth is not explained, then from the logic of the model, the proposed use of instruments of economic policy cannot be proved pro-growth.

The Keynesian and later Post-Keynesian methodology is characterized by abandonment of methodological individualism of neoclassical economics and adoption of the so-called critical realism, for which it is typical to avert from the theoretical models built on axioms and to construct reasoning on realistic abstractions. The change in methodological approach can be evaluated positively in terms of further development of economics. But this methodological approach itself could not provide in the Harrod-Domar model, what was not formulated as a fundamental objective of the model, i.e. understanding of the causes of long-term growth. The verification of the hypothesis 2 is therefore negative again.

The so-called Kaldor's stylized facts of growth (For details see Table 1, stylized facts of growth 1–6.) are a typical example of critical realism in the Post-Keynesian methodology. Science in Kaldor's concept is defined as a set of theorems based on empirically derived

assumptions, i.e. observations, and including such hypotheses that would stand the verification, both in terms of the assumptions, as well as against predictions. When evaluating the Kaldor's approach with regard to hypothesis 2, the result must be affirmative.

What follows is a description of how the contribution should look. The authors can utilize the electronic form of the model contribution for their writing.

## 3        Neoclassical Theories of Growth

In 1970, A. Sen [16] said that the economics of growth became a part of the modern economic theory. This was both due to considerable economic growth in developed economies as well as due to the related development of the theory of economic growth in the previous decade. The concept of growth theory at that time was exclusively associated with the neoclassical model. Its basic version was presented by R. Solow and T. Swan. Its further development has been attributed to D. Cass and T. Koopmans and also P. A. Samuelson and P. A. Diamond who took up earlier work of F. P. Ramsey. These models are naturally based on the neoclassical methodology.

The basic assumption is the neoclassical production function[2] with mutual substitutability between labor and capital, unlike the production function with constant parameters in the Harrod-Domar model. The equilibrium is a situation, when "savings are high enough to replace amortized capital. Thus, technological progress is the main factor of economic growth." [1, p. 37] The essence of the model is that the equilibrium – or steady state – is introduced by parameter changes in the ratio capital-income. If e.g. the savings increase (i.e. if the guaranteed rate of growth is higher than natural), the investment will record a short-term rise and accelerate the pace of growth. With the increase of capital-labor ratio, an economy will permanently hit the border of the workforce. Unlike the Harrod-Domar model, this situation lead to non-utilization of capital goods, but to shifts to more labor-effective technologies, it means the capital-income ratio increases, while the marginal product of capital will fall and the economy will tend to the new steady state (long-term equilibrium), where output, capital, and labor (adjusted for quality) will grow at the same pace.

The neoclassical model has been in the economic literature criticized on a number of problems, among which fall mainly the inability of the model to explain the growth of income per person, the unreality of its assumptions and the impracticability of its quantitative predictions.

The growth of income per person in a steady state is equal to the annual rate of productivity growth. This rate of productivity growth can be interpreted as an improvement of knowledge that is not embodied in capital equipment (e.g. it may be a better administration of resources, more efficient material flow direction in a company, etc.), or as changes of knowledge embodied in capital equipment. Essential for the assessment of the model is that the model does not say anything about which factors determine the pace of productivity growth. Thus, it cannot explain the pace of income growth per person either. For the Solow-Swan model and its subsequent extension in the framework of the optimal growth theory, the hypothesis 1 cannot be confirmed. If the model does not explain the factors determining the fundamental parameters of the model, then it cannot be possible to deduce from it adequate pro-growth economic policy recommendations.

The second group of problems of the neoclassical models consists of methodological problems of in nature. The methodological individualism of neoclassical school of thought is associated with the assumption of the existence of perfect competition, perfect information,

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[2] For details se e.g. I. Nedomlelová and A. Kocourek [11].

and with the concept of "*homo œconomicus*" or the concept of rationally optimizing individuals. These assumptions necessarily result in the fact that no economic entity has any motivation to act, thus, any motivation to change anything. Everyone (whole economy) is in the optimum. From a model constructed in this way, it is very difficult to draw economic policy implications.

In the Solow-Swan model, the existence of a steady state depends on the assumption of Harrod-neutral technical progress. The problem with this model is that any different type of technical progress is not compatible with a steady state. Advocates of Keynesian methodological approach criticize the assumption of perfect prediction, which is related to the expected equality of savings and investment, causing the permanent equality of the actual and guaranteed growth rate. An example of another controversial assumption of the model is the capital homogeneity. For example, F. Hahn [5] attempted to explain how very problematic would be the convergence to a steady state under the existence of two or more different capital goods. In terms of the verification of hypothesis 2, it can be stated that the neoclassical methodology and research methods leading to the described design of the model(s) are not adequate to explain the factors of economic growth.

In the context of the neoclassical growth model, it is important to mention another group issues, empirical issues. The first of them is the extent of international differences in living standards. The actual differences are significantly larger than a calibrated neoclassical model would predict. The national accounts statistics show[3] an estimate of $\alpha = \frac{1}{3}$, which means the differences in saving rates or in growth rates of the population should have roughly half impact on the differences in the output. In practice, however, much bigger differences in levels of income per capita (roughly ten times) have been observed while the differences in saving rates remain relatively small (rarely more than twice). The second problem is the speed of convergence of the economies. With the so-called $\beta$-convergence,[4] where the $\beta$ parameter indicates the pace of convergence to a steady state, the model predicts a much faster convergence than most of the empirical studies estimate. The third major challenge for the neoclassical model is the return on capital in individual economies. Given that poor countries are approximately one tenth of income per capita in rich countries, the rate of profit in the poor countries should run about one hundred times higher than in the developed countries. Empirical evidence is far from proving such an immense difference. Especially for these reasons, the hypothesis 1 must be rejected for the neoclassical model.

## 4 Models of Endogenous Growth

Endogenous growth models were created in response to the shortcomings of neoclassical model. In all three above-mentioned problems of quantitative neoclassical theory, the key role has been played by the capital coefficient $\alpha$. Its value predicted by the model appears to be very low. Representatives of endogenous growth theories have proposed three major arguments for a much higher value of this parameter. These include: externalities resulting from capital accumulation (P. Romer [14]), human capital (R. Lucas [8]), and higher quality/variety of products due to research and development (P. Romer [13], G. Grossman and E. Helpman [4]).

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[3] The best-known type of neoclassical production function is Cobb-Douglas production function. After abstracting from technological progress, it can be formulated as follows: $Y = K^{\alpha} \cdot L^{(1-\alpha)}$, where $Y$ represents the total product in constant prices, $K$ and $L$ stand for the quantities of capital and labor input, respectively, and $\alpha$ and $(1-\alpha)$ are the output elasticities of capital and labor, respectively. Each of them expresses the percentage increase in the total product, given the amount of the respective factor increases by 1%.

[4] $\beta$-convergence is defined as a situation when countries with lower real income per capita grow faster than countries with higher real income per capita.

The greater the value of the capital coefficient, the slower would be the pace of convergence to a steady state and the lower differences in income would appear. If the effects of these factors were high enough to switch the returns on accumulated the capital to constant or even to increasing ($\alpha \geq 1$), then the model would be able to generate endogenous growth. The situation with the assumption of $\alpha = 1$ is most simply described in the AK model. Unlike the neoclassical model, the AK model does not predict (conditional) convergence, because there is not assumed any relationship between the level of output per capita and its growth rate. According to the AK model, the countries with different initial stock of capital will diverge (the difference between them will gradually increase).

From a content perspective, the AK model differs from the neoclassical model by the definition of capital. From a mathematical perspective, the key difference rests in the abandonment of assumption of diminishing marginal returns on capital. In the neoclassical model, this particular assumption leads to the fact that the returns from additional investments are sooner or later not sufficient to ensure further growth of the capital/labor ratio, which decelerates and finally suspends the growth rate of output per person. In the AK model, unlike the Solow-Swan model, there is no steady state, investment is always higher than the capital depreciation, and therefore capital stock per worker is growing. Due to this rising capital stock, also the product per person permanently grows. Table 1 summarizes the predictions of the Solow-Swan model and the AK model (endogenous growth models) and the main stylized facts of growth.[5] The predictions of both models match to a certain extent. Predictions of the facts 1 and 2, although theoretically different, are difficult to be distinguished in an empirical research, since the difference between the steady states with wrong predictions and the transitional dynamics are hard to detect. Therefore, the most striking difference between the two models remains in their predictions on conditional convergence.

Within the framework of the endogenous growth theory, there are a great number of more advanced models running to several directions. Two main trends of this development can be specified as models dealing with more than one production sector and models with explicit microeconomic decision-making foundations underlying the research process, namely the motivation of companies to acquire monopoly rents from the results of investments in research and development (R&D).

Theory of growth should be able to explain the various situations of a real economic development, such as slowing growth in the OECD countries after 1973. Growth accounting procedures based on the standard neoclassical model failed here, because the decelerations of the growth rates of physical and human capital were able to explain only a small part of the slowdown in output growth during this period. Analysts therefore included in the methodology of growth accounting also the changes in levels of expenditure on R&D, the effects of regulation in the field of labor relations, the environment, and many other explanatory variables (e.g. A. Maddison [9]). It is one of the major economic policy recommendations of the endogenous growth theory to increase spending on education, science, and research. Although these other (new) variables were together able to explain the slowdown of the output relatively well, their use was difficult to formalize and to embody in any generally accepted theory, i.e. both neoclassical theory as well as the theory of endogenous growth. The paradox was – in the context of the endogenous growth theories – that expenditure on R&D had almost zero impact on growth. In most countries, the share of these expenditures on GDP remained virtually unchanged and in Japan, where this indicator was growing rapidly, was the slowdown in output growth observed too.

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[5] Facts 1. – 6. according to N. Kaldor [7], facts 7. – 11. according to R. J. Barro and X. Sala-i-Martin [2], facts 12. – 17. according to C. Jones and P. Romer [6].

**Tab. 1:** *Empirical Facts and Alternative Growth Models*

| Stylized Facts of Growth | Solow- Swan Model | AK model (Endogenous Growth Models) |
|---|---|---|
| 1. Labor productivity has grown at a sustained rate. | In a stable state, it is increasing at the growth rate of technology. | It grows at the pace equal to $s \times A - n - \delta$ |
| 2. Capital per worker has also grown at a sustained rate. | In a stable state, it is increasing at the growth rate of technology. | It grows at the pace equal to $s \times A - n - \delta$ |
| 3. The real interest rate or return on capital has been stable. | In a stable, it remains constant. | It remains constant. |
| 4. The ratio of capital to output has also been stable. | In a stable, it remains constant. | It remains constant. |
| 5. Capital and labor have captured stable shares of national income. | In a stable, it remains constant. | It remains constant. |
| 6. Among the fast growing countries of the world, there is an appreciable variation in the rate of growth of the order of 2–5 percent. | It is possible if the growth rates of technology differ across the fast growing countries. | It is possible if the cross-country differences in parameters $s$, $A$, $n$, and $\delta$ are significant. |
| 7. The share of gross domestic investment and share of gross domestic savings to GDP are increasing with the economic growth (at least in certain periods of development). | The shares can increase, if the economy converges to its steady state. | It is in accordance with the conclusions of the model. |
| 8. The fertility rate in the developed countries decrease with the rise of the real GDP per capita, but in the poorest countries fertility rate can increase even when GDP per capita grows (as predicted by Malthus) | Not explained by the model. | Not explained by the model (but in accordance with the following theory of endogenous fertility). |
| 9. Unconditional convergence of GDP per capita across countries was not found. | It is possible if the economies differ in their parameters (esp. in parameters $s$, $n$, and $\delta$). | It is in accordance with the conclusions of the model. |
| 10. Conditional convergence of GDP per capita in the OECD countries has been found. | Economies converge if they have the same parameters $s$, $n$, and $\delta$. | Not in accordance (but can be solved by using "compromise" production function). |
| 11. GDP growth is influenced by government policies (negatively by taxation, market distortions, political instability; positively by development of the law enforcing institutions, financial institutions, and by public expenditure on infrastructure). | Explained only indirectly. | Not directly explained by the model (advanced models developed arguments as to whether and how particular policies affect parameters $s$, $A$, $n$, and $\delta$). |
| 12. Increased flows of goods, ideas, finance, and people have increased the extent of the market for all workers and consumers. | Not explained by the model. | Not directly explained by the model (partly in relation to spill-over effects of R&D results and the non-rivalry of ideas, within the extent of national economies). |

| | Stylized Facts of Growth | Solow- Swan Model | AK model (Endogenous Growth Models) |
|---|---|---|---|
| 13. | For thousands of years, growth in both population and GDP per capita has accelerated, rising from virtually zero to the relatively rapid rates observed in the last century. | Not explained by the model. | Not directly explained by the model (partly through constant or increasing returns, but not incorporated in the model, the ideas are able to change also institutions). |
| 14. | The variation in the rate of growth of GDP per capita increases with the distance from the technology frontier. | Not explained by the model (model was able to explain only a small part of changes in growth rates of output). | Not directly explained by the model (Olson doubts whether economies move along their production functions, suboptimal policies and institutions lead to waste of resources). |
| 15. | Differences in measured inputs explain less than half of the enormous cross country differences in GDP per capita. | Not explained by the model (model showed residual TPF in the accounting of economic growth over time). | Not directly explained by the model (large TPF residue in the accounting of differences in the levels of GDP per capita across countries, ideas as non-rival, but partly excludable good). |
| 16. | Human capital per worker is rising dramatically throughout the world. | Not explained by the model. | Human capital embodied in the model. |
| 17. | The rising quantity of human capital relative to unskilled labor has not been matched by a sustained decline in its relative price. | Not explained by the model. | Not directly explained by the model (admitting decreasing returns to scale of human capital). |

*Source: [3], [7], [6], amended*

In terms of evaluation of the contribution of the endogenous growth theory, it is possible to incline to the view this is not an entirely new theoretical framework, but further development of neoclassical theory accompanied by altering some of the initial assumptions. The revival of interest in the issue of long-term growth, both in the theoretical and empirical research, can be considered the main contribution of the endogenous growth theory. The theory alone extended the number of formalized descriptions of how changes in certain economic variables affect economic growth. However, the very nature and the true factors affecting these variables remain out of the focus again. From this perspective, the endogenous growth theory did not extend the borders of adequate understanding of growth very far and even in the empirical testing was not more successful compared to e.g. neoclassical theory. Implemented economic policy recommendations based on empirical research has not always fostered economic growth unambiguously. These are just some of the reasons leading to the conclusion that the endogenous growth models do not describe appropriately and mainly comprehensively the economic reality and thus do not provide adequate solutions or recommendations for the implementation of pro-growth economic policies.

Neither the hypothesis 2 can be answered affirmatively. Mathematical and econometric methods used to model the endogenous growth do not allow implementation of such variables that are difficult to quantify (e.g. factors of political and institutional nature). The cross-sectional studies carried out during the 90's and later discovered serious economic issues related to a significant influence on the measured growth rates not only of economic shocks (e.g. changes in the terms of trade), but also of variables expressing the macroeconomic policies. This implies that even if countries fully utilize their primary inputs, they can move under their production frontiers.

The idea that the real explanation of growth in contemporary economies is not the shift of the country along existing production functions, but rather catching up and closing the gap between actual and potential performance , was published in an article by M. Olson [12]. Olson at the same time recalls unrealistic results of calibration calculations for the neoclassical production function. The endogenous growth theory tries to overcome this problem by searching for more appropriate production function. Olson raises the question whether economies really move close to their production functions. He justifies his concerns by showing that suboptimal policies and institutions can lead to great waste of resources. His assumption of sub-optimality is based on the observation that institutions and policies decide not only according to individual rationality and that the political structures, legal system or lobbying groups play also an important role.

The main contribution of Olson's approach is that political factors are modeled endogenously, so as interconnected with the economic parameters. The so-called new political economy is generally concerned with endogenous policy modeling in economics and represents one of the fastest developing fields of modern economics in the last decade. Representatives of this theoretical approach understand their theory as a return to the very foundations of classical political economy in which political and economic issues were always addressed in relation to one another. The main difference of the new political economy from the classical one is the research method based on formalized analysis. The main subjects of investigation of this branch of modern economics include topics related to the role of personal interests, asymmetry of information and institutions in shaping policies.

This research is on the very border of the endogenous growth theory and the new political economy. It has been called the political economy of growth and it aims to modeling explicitly the political factors behind the growth and other economic variables. In this approach, there has not been generally formulated assumption that the economies must move along their production functions, i.e. their actual performance may be lower due to suboptimal policies. In other words, a key factor in growth may not be the returns to scale or to capital, but rather the policies and institutions that are regarded to some extent as endogenous. Part of this new political economy are also studies seeking to explain growth on the basis of factors that are not part of the endogenous growth theory, such as management practices, labor relations, introduction of new management methods, quality cycles and ability to design organizational strategies allowing rapid development of new models of consumer products.

## 5    New Stylized Facts of Growth

The new stylized facts of growth (For details see Table 1, stylized facts of growth 12–17.) formulated by C. Jones and P. Romer [6] in 2010 reveal a wider range of modern growth theory and also significant complementarities between the key endogenous variables. If the growth model is about to encompass all these facts, it must consider the interaction between ideas, institutions, population, and human capital.

The interaction between population and the ideas stands behind the acceleration of growth. Institutions are likely to have major impacts on income inequality across countries, since they restrict the adoption and use of ideas from around the world. To understand the growth of human capital, one cannot forget about the important role played e.g. by public education and university system. Institutions themselves are ideas, they represent a way of resource allocation and thus the search for better institutions is a never-ending process. Also the increasing size of the market leading to higher revenues from ideas and thus higher income from human capital may help to explain why the supplements to the wages of university educated workers do not fall systematically despite a massive increase in the number of university and high school graduates.

Precisely these complementarities are the evidence of the importance and suitability of the approach of general equilibrium. They are the basic reason why it is necessary to seek a unified framework for understanding the economic growth. According to C. Jones and P. Romer, the research in the near future will deal with connecting the components of just like the new stylized facts in a simple formal model. In the distant future, perhaps, the new analytical tools will make it possible to achieve the progress in the search for a simple model of institutional development.

**Conclusion**

Very generally, the explanatory power of the analyzed models can be stated vastly different. This sterile conclusion is determined by the period of the genesis of the models, by the level of knowledge then available not only in the social sciences (economics), but also in the natural sciences (esp. mathematics, statistics, econometrics, etc.), and by the ability to interact and to form into an interdisciplinary approach. This ever deepening interaction and interconnectedness especially between mathematics, statistics, econometrics, makes it possible to use their methods in economics and also creates a pressure to develop and improve these methods based on the requirements of empirical economic research. The conclusions of each of the investigated theoretical models of growth are also strongly influenced by basic systematic approach and applied scientific methods of economic analysis.

In terms of the above formulated hypotheses and subsequent analysis of individual models and their comparison, it is possible to declare that within the classical school, both statements are true. On the contrary, the Harrod-Domar model contains a number of moments that do not meet the hypotheses. This model in fact does not even explain the long-term growth. From the followed angle, the methodological approach of N. Kaldor is an exception within the Post-Keynesian economics and it positively corresponds with the second researched hypothesis. Neoclassical growth model or the Solow model has been a subject to criticism over the time from various aspects: both theoretical and empirical. Based on the above reasoning, neither one of the monitored hypotheses can be answered positively. Authors of endogenous growth models attempted to remove the shortcomings of the neoclassical model. Performed analysis of these models, however, leads to the conclusion that they do not describe adequately economic reality and do not provide adequate recommendations for implementation of pro-growth economic policies. Even in the case of the second hypothesis of suitability of the methods used, the answer cannot be affirmative.

Regarding the new stylized facts of growth, it is currently impossible to make firm conclusions about the two monitored hypotheses. The reason may be a relatively small number of empirical studies carried out to verify the conclusions formulated by P. Romer and C. Jones (see e.g. [11]) or difficult quantification of institutional factors and their incorporation into the formalized model.

At the end, the theory of economic growth has always been and will be an area, which provides considerable scope for further research.

**Acknowledgements**

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## Teoretická diskuse nad metodologií a hospodářsko-politickými závěry vybraných teorií ekonomického růstu

Cílem článku je představit hlavní závěry jednotlivých teoretických přístupů ke zkoumání problematiky ekonomického růstu v rámci hlavního proudu ekonomické teorie, zhodnotit relevantnost těchto závěrů pro hospodářskou praxi a posoudit adekvátnost použitých metod zkoumání při řešení daného problému. Pozornost je věnována konceptu hospodářského růstu resp. tvorby a rozdělování bohatství v rámci klasické anglické školy politické ekonomie, Harrod-Domarovu modelu, jakožto pokusu o dynamizaci Keynesovy ekonomie, Solow-Swanovu modelu ekonomického růstu, modelům endogenního ekonomického růstu a novým stylizovaným faktům o růstu C. Jonese a P. Romera. Autoři tohoto příspěvku u všech zkoumaných modelových přístupů (s výjimkou klasické školy a Kaldorova přístupu) docházejí k názoru, že doporučení pro hospodářskou praxi i použité metody zkoumání nejsou adekvátní.

## Theoretische Diskussion über die Methodologie und wirtschaftspolitischen Schlüsse ausgewählter Theorien des ökonomischen Wachstums

Ziel dieses Artikels ist es, die wichtigsten Schlüsse einzelner theoretischer Ansätze zur Erforschung der Problematik des ökonomischen Wachstums im Rahmen des Stroms der ökonomischen Theorie vorzustellen und deren Relevanz für die wirtschaftliche Praxis zu bewerten. Unsere Aufmerksamkeit gilt dem Konzept des wirtschaftlichen Wachstums bzw. der Schaffung und Verteilung von Reichtum im Rahmen der klassischen englischen Schule der politischen Ökonomie, dem Harrod-Domar-Modell als Versuch der Dynamisierung der Ökonomie nach Keynes, dem Slolow-Swane-Modell des ökonomischen Wachstums, dem Modellen des endogenen ökonomischen Wachstums und den neuen stilisierten Fakten über das Wachstum nach Jones und Romer.

## Teoretyczna dyskusja nad metodologią i ekonomiczno-politycznymi wnioskami wybranych teorii wzrostu gospodarczego

Artykuł ma na celu przedstawienie głównych wniosków wynikających z poszczególnych teoretycznych podejść do badania zjawiska wzrostu gospodarczego w ramach głównego nurtu teorii ekonomii oraz ocenę ich przydatności dla praktyki gospodarczej. Uwagę poświęcono koncepcji wzrostu gospodarczego, względnie tworzenia i podziału bogactwa w ramach klasycznej angielskiej szkoły ekonomii politycznej, modelowi Harrod-Domara, będącemu próbą zdynamizowania ekonomii keynesowskiej, modelowi wzrostu gospodarczego Solow-Swana, modelom endogenicznego wzrostu gospodarczego oraz nowym faktom stylizowanym dotyczącym wzrostu przedstawionym przez Jonesa i Romera.