ECONOMIC SCIENCES

NEW IMPULSE TO ENDOGENOUS ECONOMIC GROWTH THEORY, ACCUMULATION OF CAPITAL AND INNOVATION

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The study of endogenous mechanisms of economic growth of states in the conditions of economic and financial fragmentation of the world economy is of particular importance.

Starting from Robert Solow, theories of economic growth have steadily entered the discourse of modern economic science. Over the past seven years, the Nobel Committee has awarded three prizes in economics for achievements in the development of theories of endogenous economic growth, in particular, Paul Romer (2018) for integrating innovations into long-run macroeconomic analysis; Daron Acemogly, Simon Johnson and James Robinson (2024) for studies of how institutions are formed and affect prosperity, and, finally, Joel Mokyr, Phillipe Aghion and Peter Howitt for having explained innovation-driven economic growth [1].

Let us briefly dwell on the main mechanisms of endogenous economic growth discovered by the above-mentioned economists, who reveal the "black box" of Solow residual or how technical progress is doing.

P. Romer initiated the AK model, where the determining role is played by capital accumulation, but without diminishing returns, where growth generated as by-product of capital accumulation, but where expanding variety of intermediate goods prevented the returns on capital from falling to zero. The idea of P. Romer is that variety specializations can allow capital to maintain its marginal product despite capital deepening and growth will persist [2]. So, in this theory saving rate in economy plays the crucial role.

The process of capital accumulation, i.e. investment in the economy, requires a high quality and efficient institutional environment.

Daron Acemoglu and James Robinson created a theory of extractive and inclusive economic and political institutions. "Inclusive economic institutions that enforce property rights, create a level playing field, and encourage investments in new technologies and skills are more conducive to economic

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growth than extractive economic institutions that are structured to extract resources from many by the few and that fail to protect property rights to provide incentives for economic activity" [3, p. 472]. The authors further explain that "…sustained economic growth requires innovation, and innovation cannot have decoupled from creative destruction, which replace the old with the new in the economic realm and also destabilizes established power relations in politics. Because elites dominating extractive institutions fear creative destruction, they will resist it, and any growth that germinates under extractive institutions will be ultimately short lived" [3, p. 474].

P. Aghion and P. Howitt who elaborate the theory of sustained growth through creative destruction are in some way in tune with the ideas of D. Acemoglu and J. Robinson about inclusive economic and political institutions that ensure the effectiveness of the process of creative destruction.

P. Aghion and P. Howitt see the accumulation of capital as the basis of innovation processes, as does P. Romer. "More capital accumulation stimulates innovation by raising the equilibrium flow of profits, just as more innovation stimulates capital accumulation by raising the rate of productivity growth. Neither process could take in the long run without the other. For without innovation, diminishing returns would choke off net investment and without net investment the rising cost of capital would choke off innovation" [4, p. 99] and therefore "… policies that favor capital accumulation will generally also stimulate innovation and therefore raise the long-run growth rate" [4, p. 102].

UNCTAD specialists conducted a study of the relationship between the growth rates of R&D expenditures and economic growth for the period 2007–2017 for countries with different income levels and obtained the following results: for low income countries, the growth rates of R&D (7.2%) are 1.8 times higher than the growth rates of GDP (4%) and their share in GDP is 0.3%; for lower middle-income countries, the growth rates of these indicators are almost equal and are 4.5% and 5.5% respectively, and the share of R&D in GDP is 0.43%; for upper-middle income countries, the growth rates of R&D expenditures are 2 times higher than the growth rates of GDP (10.2% Vs 5%) and the share of R&D in GDP is 1.48%; for high income countries, the growth rate of R&D (2.3%) is 1.64 times higher than the growth rate of GDP (1.4%) and accounts for 2.42% of GDP. In general, for the world, the share of R&D expenditures is 1.72%, and their growth rate (4.3%) is 1.65 times higher than the growth rate of GDP (2.6%) [5]. From this study, we can conclude that the growth of income per capita stimulates the growth of innovation expenditures of the country compared to the growth of GDP, which, in turn, causes the acceleration of the growth of R&D financing, attracting additional capital for sustainable economic growth.

P. Aghion, M. Dewatripont and J. Tirole emphasize that when country "have gotten sufficiently close to the technological frontier, innovation necessarily becomes the main engine of growth. That has certainly been the case in the US, where the information-technology revolution, and now the artificial-intelligence revolution, developed quite spectacularly. In Europe, however, policymakers failed to adopt the institutions and policies to promote disruptive innovation. As a result, Europe's private-sector investment in research and development is only half that of the US. This is primarily due to a composition effect. Europe's R&D is concentrated in the mid-tech range, which absorbs more than 50% of private R&D, with the automotive industry accounting for roughly one-third, even though it generates few breakthrough innovations. By contrast, 85% of private R&D in the US is in more R&D-intensive and higher-return (incidentally) areas such as biotech, software, hardware, and AI." [6].

They compare US model of financing and development of innovation with EU model and make conclusions: "The US model delegates scientific decision-making to top scientists, does not pretend to know which technologies will work, and offers no incumbency advantage…. Absent any change in its economic doctrine – under which regulation largely prevails over investment – Europe runs the risk of suffering an irremediable decline… Moreover, European startups suffer from the absence of a true capital-market union" [6].

Specialists of European Investment Bank conceive that "investment plays a crucial role in explaining Europe's constrained innovation performance. European investors appear far more risk-averse than their counterparts elsewhere, adopting a wait-and-see attitude. This matters, as innovation today is happening at a faster pace, has a deeply transformative character and is increasingly science-based and complex. The lack of risk capital and other investment makes it difficult for European innovators to adopt new technologies or grow new, disruptive businesses. In 2020, venture capital funding in the EU market was seven times lower than in the United States" [7].

In summary, we can conclude that sustainable economic growth is possible if state economic and political institutions are inclusive, and which ensure the continuous accumulation of capital and promote the introduction of innovations through creative destruction.

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