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Opportunities of the Comprehensive Neo-Schumpeterian Economics for Innovation-Based Economic Development

Evgeny A. Kapoguzov*

*Omsk State University
55 Mira, Omsk, 644077 Russia¹*

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In this article the topics of Comprehensive Neo-Schumpeterian Economics (CNSE) are considered. The main differences between this approach and basic Schumpeterian model are discussed. Therefore the reasons of the Schumpeterian renaissance in recent studies are analysed. The 3-pillars as central elements of CNSE and empiric research about their contribution to the future-oriented innovation-based economy are considered. In conclusion the challenges of application of CNSE in Russia are discussed.

Keywords: Neo-Schumpeterian Economics, economic development, innovation-based economy, economic co-evolution.

From Neoclassical to Comprehensive Neo-Schumpeterian Economics

The crisis of neoclassical economics, caused by the inability to explain the economic crisis using the traditional economic models, has proposed more attention to alternative approaches. Despite rigorous research and analytical potential of the new (modern) institutional economics (NIE), in this article we will consider a different approach, which is able to become one of “corner stones” of the theory of innovation-based economy. There are talks about innovations-oriented (based) development at scientific and political levels. The approach, proposed by the famous German economist G. Mensh and outlined in the article published in “Journal of Economic Theory” (№ 3, 2009), suggests countries refuse to simply restore

global economy and move to its renovation on the basis of innovative development (Schumpeter, 1988). The G. Mensh’s explanation of crisis is connected with the divergence between the innovations in financial sector and innovative financing and activity of bankers – focused on innovative development in real sector. Other concept, we will be discussing in this article, was developed by Professor Horst Hanusch, University of Augsburg (Germany), the president of J. Schumpeter Society (<http://www.iss-evec.de>) and his team. This approach was called as Comprehensive Neo-Schumpeterian Economics (CNSE).

During the past three decades in economic theory some approaches have appeared. They are based on ideas of J. Schumpeter, presented in “The

* Corresponding author E-mail address: egenk@mail.ru

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Theory of Economic Development”, and his later works “Capitalism, Socialism and Democracy” (1942), “The March into Socialism” (1950). We have noted the following most significant, in our opinion, theories:

- Endogenous Growth Theories with technological progress (P.Aghion, P.Howitt, P.Romer, R.Barro e.a), that developed Schumpeter’s idea about the role of accumulation of knowledge and presented factors influencing the economic growth (investments in R&D, fundamental science; technology diffusion; protection of intellectual property rights for inventions and innovations);
- Evolutionary Economics (R. Nelson, S. Winter), picked up the idea of Schumpeterian Selection of Entrepreneurs;
- Approaches, focusing on the collective innovation process, development and changes. The process of learning is considered as a social and interactive process with collective innovations and heterogeneity as a source of innovation.

But the question is why *Schumpeterian renaissance* began only seventy years later after the first edition of “Theory of Economic Development”. One of the explanations is the long success of Neo-Keynesian economic policy and later Neo-conservatism with its monetary statically focused recipes. The Keynesian approach corresponded to the time of exiting the Great Depression, when an expansion of aggregate demand was needed. The same way the monetarism and the supply-side economics offered after “energy and oil shocks” of 1970th became adequate to the changed external conditions in the situation of stagflation and raw materials shocks. At the same time, the development of “new” knowledge-based economy, IT and

sharp growth of interdependent branches have required other macroeconomic recipes and other explanations of the reasons of occurrence and variants of development of the situation. The Neo-Schumpeterian approach, focused not on the financial and fiscal side of economic development, but on industrial dynamics and structural changes in real sector, looks very competitive and more attractive.

Other explanation of *Schumpeterian renaissance* is the attempt to formalise theoretical verbal propositions of Schumpeter. Neoclassical economics has an active application of mathematical methods. It is characterised by rational individuals and the price mechanism responsible for an efficient allocation of resources within a set of constraints. Neo-Keynesian Economics with demand-oriented macro approach, based primarily on short term processes occurring in non perfect markets, often used mathematical instruments. But all these approaches with their analytical stringency have failures when it comes to analysis of dynamic phenomena endogenously caused by the economic system. Avoiding the inflation in Neo-Keynesian Economics, the exogenous Solow-Swan model has given chance for Schumpeter’s “Creative Destruction” in mathematical layout. The works on physics and biology, theories of chaos and self-organisation, and synergetic theory, have reflected in the development of so-called Agent-Based Modeling¹.

From Orthodox Neo-Schumpeterian Economics to CNSE

According to Schumpeter the process of economic development is both evolutionary and revolutionary one. The revolutionary “Creative Destruction” is manifested in repeating cycles of effective monopoly and effective competition, when the previous forms of economic activity and the whole branches die away. The evolutionary

aspect of Schumpeterian development is shown in a similar, but incremental process. Creative and innovative activities play a special role in it. They form the basic foundation of evolutionary process with its power connected with the immanent nature of attitude to capitalism and its drivers: egoism, aspiration to enrichment, self-realisation. Thus, the economic development should be considered as *active* changes, caused not only by exogenous factors.

The entrepreneur as a central actor in Schumpeterian development, as it is known, creates new combinations of production factors. Whether it is a product or process innovation, or new market development, or technology or raw materials development, or organizations innovation – the main driver is Smith's animal spirit of Entrepreneurships. Profit making, a creative and *risk-bearing* activity, leads to destruction of the old and construction of the new.

Thus, the key elements of Schumpeterian theory of economic development are:

- the character of evolutionary economic development: innovations as an object of change and technological progress;
- the entrepreneur, in contrast to static investor-capitalist or manager-administrator, as an active actor, is the subject and the initiator of economic development and thereby equally the creator of structures and shapes, changing them.

In the 1980-s on the basis of Schumpeterian theory of economic development the so-called "Orthodox Neo-Schumpeterian Economics" (ONSE) began to develop. The founders of this concept were Ch. Freeman and G. Dosi. The key elements of ONSE are:

- the entrepreneurship and technological innovation are the basic principles and they determine and they are responsible for

development of economies by removing and overcoming limiting constraints;

- the innovation competition instead of price competition as the coordination mechanism of interest;
- true uncertainty in the sense of Frank Knight enters the scene.

An important element for Neo-Schumpeterian economic development is enhancement of national innovation system. The national innovation system, consisting of various sectors of the economy, numerous public and private research organisations, as well as numerous political and administrative institutions can be regarded as a good example for synergy creating structures. Cooperation of the enterprises and networks, technology transfer centres and business incubators, technopolices etc. can be attributed to national innovation system. This idea of collective evolutionary process is the subject of Comprehensive Neo-Schumpeterian Economics (CNSE). It is defined as "an approach dealing with dynamic processes and corresponding co-evolutionary processes. The dynamic process cause qualitative transformations of economies driven by introduction of various innovations (technological, institutional, organisational, social dimensions)" (Rosmainsky).

According to Schumpeterian approach, knowledge and technological innovations are the drivers of economic development. At the same time, technological innovations are not developed in vacuum. In a greater degree, "development" should be defined as a complex phenomenon, supported by the real sector as a pillar, but taking into account the influence of financial and public sectors. If earlier Neo-Schumpeterian researches were focused on studying the transformation processes in real sector, then recently the understanding of difficult interconnections has appeared and CNSE is used for their analysis and explanation.

Three Pillars of Neo-Schumpeterian Development

The given approach has normative and positive perspectives. From a normative perspective there are three basic pillars of economy: real, financial and public sectors (Fig. 1).

The basic elements of Neo-Schumpeterian approach are innovations and as a result orientation of all the actors of economics towards the future. The orientation towards the future means the necessity, ability and readiness to address the uncertainty and overcome it using new ways and approaches. The process of overcoming the uncertainty is connected with going beyond the borders of set conditions. It concerns both the spheres of the existing limited resources and creations of new various economic opportunities. Going beyond the borders means progress and changes of the current situation. The progress and changes occur in all the spheres of public life though first of all technological progress defines the situation in real sector of economy. Its dynamics assumes accompanying equally oriented towards the future processes of changes in financial and public sectors.

Thus we can talk about Neo-Schumpeterian co-evolutionary processes. Its innovation drivers

are based on intention and readiness of all the agents involved. The stronger the national and global economy shows up such attitude of economic agents, the clearer you can identify the connection of Neo-Schumpeterian system with Smith's principles of market economy.

At the same time Neo-Schumpeterian approach demonstrates a new normative paradigm. A situation is defined not by a short-term profit maximisation and allocative efficiency of prices, but agents orientated towards the future, acting innovatively within co-evolutionary process of economic and social dynamics, carrying out changes and progress, and facing the uncertainty.

The uncertainty is a key element of positive-empirical analysis of Neo-Schumpeterian economics. The pace of real sector economic development can slow down or accelerate. This process can be explained by both cyclical nature of economic development and the theory of long waves in particular. At the same time, it is possible to observe co-evolutionary process in other spheres: financial and public sectors. Insufficient orientation of financial sector toward future, including low readiness to provide liquidity and venture capital, finally influences the real sector

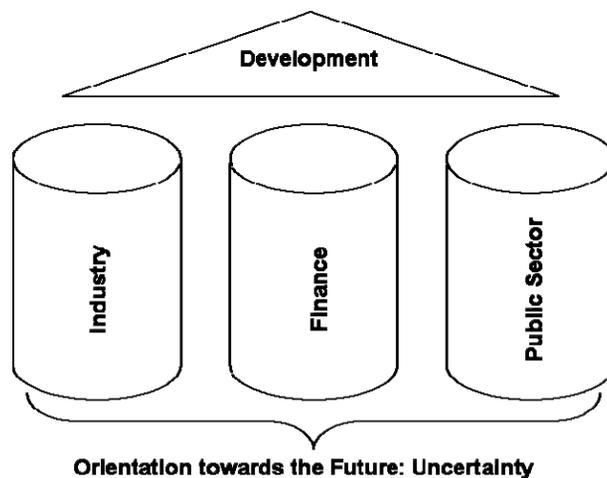


Fig. 1. The three pillars of Comprehensive Neo-Schumpeterian Economic Development (Hanusch, Pyka, 2007)

and has negative impact on innovation activity of enterprise.

Insufficient orientation of public sector toward future is shown in low budget spending for Health care, Education, R&D and deficient intention to modernise, reform social and political structures and institutes. It ultimately has a negative influence on economic dynamics in real sector.

The economic development depends strongly on situation in these three sectors. The periods of depression can occur between the periods of rapid growth and recession. This typical Schumpeterian development of economy is the basis of the concepts of a Neo-Schumpeterian corridor (Fig. 2).

Far-reaching Neo-Schumpeterian development takes place in a narrow corridor between the extremes of uncontrolled growth and exploding bubbles, on the one hand, and stationarity, in other words, zero growth and stagnancy, on the other. The desirable process is the one that keeps the system in an upside potential including both overheating-protection,

i.e., from macro-level bubble explosions and from micro-level insane explosive growth, and downside protection, i.e., from macro-level stagnation and from micro-level bankruptcy.

The economic history of the 20th century illustrates that the two threats – overheating and bubble explosion on the one side and stagnation on other side – shape economic development. The examples of such development are Japan, Germany and the USA. After World War II both Japan and Germany were within the Neo-Schumpeterian corridor and the USA were below its borders. But further the USA returned, and Japan and Germany in 1990s years dropped out of the corridor. What had happened? In both countries growth-friendly institutional arrangements were generated. In particular, it concerned the financial sector and its close interaction with the real sector on the basis of joint risk-taking in the middle- and long-term economic development (“Keiretsu” in Japan, “Rhine Capitalism” in Germany). These countries were focused on the development of each of elements of the economic system; the system of interdependence of all participants

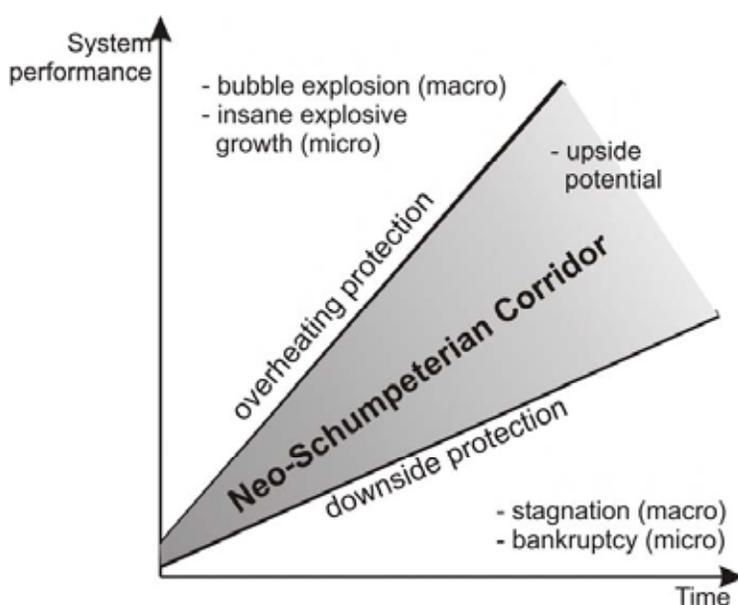


Fig. 2. The Neo-Schumpeterian Corridor (Hanusch, Pyka, 2005)

(stakeholders) was generated. In the USA, where the financial sector was focused on the short-term interests, the similar structures did not develop.

To the end of the 1970s the German “Economic Wonder” began to disappear and “Wohlfahrtsstaat” could not cope with the new challenges, globalization and IT-revolution, in particular. In fact, Germany overslept the first stage of knowledge-based economy in all the three pillars. Only after the crisis of 2007-2009, due to weak euro and technological innovations, Germany drifted upwards from the stagnation sector. In the 1980s Japan reached the peak of its economic development. But later moved to the decade of depression and near-zero growth, caused by huge bubbles in financial and the real estate markets, which lead to enrichment of some agents, but after their bursting, affected the whole economy.

By contrast, the USA in the 1990s transformed from depression economy into the one of the OECD-leaders. It was connected with the rate of creation of firms in IT-sphere, managed and financed by venture funds, combined with intention of private and public sector to invest in R&D.

The role of financial sector, bank sector in particular, in Neo-Schumpeterian sustainable growth is very important. Schumpeter himself in his “Theory of Economic Development” (1912) strongly emphasised the role of both the creative entrepreneur and the risk-friendly banker. Bankers and industrial entrepreneurs should be considered in a symbiotic relationship. The major task for financial sector should be seen in the acquisition and supply of capital for firm actors. So such a cautious and prudent banker as J.P. Morgan did not play only the banker’s role, but became the largest investor of American railroads.

The main driver for development in the financial sector during the last decade was the use of pension and insurance funds, first of all

private, aspiring to a high risk level. Thanks to profit aspiration there were investment banks and similar structures actively involved in all the spheres including mergers and absorptions. So-called “venture capital funds”, aspiring to high profits from invested in the enterprises capital, give a chance even to financial losers to earn on their investments. If all goes smoothly, it becomes a wonderful symbiosis of Schumpeterian real and financial sectors, which not only meets the requirements of the economic dynamics of the time, but also appears to be a valuable recipe for success and growth of modern economy. It could be seen most clearly in the US economy in the 1990s. But it was also one of the main reasons of the current global financial crisis.

The future orientation of Neo-Schumpeterian approach makes it necessary to rethink the role of monetary policy and central banks. In Monetarism and Neoclassical approach, this role is defined the following way: control of inflation and stability of national currency exchange rate. The real sector, thus, is playing a secondary role. From a Neo-Schumpeterian perspective the central bank has the task of supporting the policy focused on Schumpeterian growth and providing the enterprises with necessary liquidity. The other task is to prevent the speculative fluctuations in the financial market. It is necessary to supplement traditional monetary policy with psychological influence on expectations of economic subjects, and direct intervention in chains of communication between real and financial sectors, where there can be a regulation of Schumpeterian symbiosis.

Increasing Role of Public Sector

In orthodox Neo-Schumpeterian Economics public sector played very humble role. The Neoclassical approach has an advanced and diversified theory of public sector, built on the theory of the public goods and paradigms of welfare economics. But NSE does not answer

the question about normative and positive justifications of the state actions and their comparison with the market.

Of course, within the Neo-Schumpeterian approach the public sector is analysed from positions of future orientation and uncertainty. Innovations, future orientation and uncertainty reflect the starting points of Neo-Schumpeterian theory of public sector.

The ideas about uncertainty, as a reason of origin of a state, are reflected in the idea of social contract in the area of income redistribution. The uncertainty of the future, the aspiration of a society to mitigate the consequences of loss of incomes, creates a basis for social policy, and displays the actual foundation of the state as an organisation, authorised to provide realisation and monitoring of contractual conditions.

A good insurance from uncertainty can be a social contract with a fixed duty of society to finance science and education and provide social security. It concerns both the infrastructural and educational organisations, such as kindergartens, schools, universities and academies on the one hand and social services on the other. Both coordination and organisation of these actions can be transferred to the state.

Thus, Comprehensive Neo-Schumpeterian Economics is characterized by the following key theses:

- the emphasis on qualitative, innovation driven development;
- the connection between all three pillars of development – industry (real), finance and public sector – that distinguishes it from orthodox Schumpeterian Economics, focusing on real sector development;
- innovations and uncertainty as connected factors of economic development and ubiquitous phenomena, characteristic for each of the three pillars and intrinsically interrelated;

- interrelation and interaction (co-evolution) between the sectors;

- the necessity to guide a national economy within Schumpeterian corridor for sustainable and dynamic development.

The inter-relationship between these three sectors occurs in the spheres connected with development, while each of them plays its significant role. The state creates institutions as the rules of the game, provides infrastructure development, and also invests in fundamental science. Development of the international and interregional competition for capitals provides inflow of investments, and they are directed to countries and regions with the most attractive investment climate. One more form of interrelationship is a public-private partnership in R&D. It can be realised by creation of business-incubators, and special taxation regime. The interaction of real and financial sectors is demonstrated in creation of hi-tech firms with venture capital and financing start-up projects.

Comprehensive Neo-Schumpeterian Economics Potential: Empirical Data

There is a question that follows: how such theoretical approach as CNSE can be applied to analysis of modern trends of economic development? Here are two cases to consider.

As it has already been mentioned above, a long period of stagnation in Japan in the 1990s was caused by shifting from the top (exponential growth) of Neo-Schumpeterian corridor to the bottom (stagnation) because of rapidly increased gap between profitableness of investment in the financial and real estate markets and profitableness of the real sector. After the bursting of the bubble in the given markets, Japanese economy moved into a long period of stagnation, which is still affecting it. The other bubble appeared in the world financial markets of hi-tech firms in 2000,

bursting together with “Enron” and “WorldCom” scandals. The latter became possible because of the absence of interaction between three pillars of economic development, and also because the American system of the financial markets had nothing in common with the difficult system of interaction between the stakeholders, existing in models of bank financing of Japan and Germany.

The other case is connected with development of “new” economy in Europe, Japan and the USA and roles of three sectors in their development. The analysis of 18 European countries, Japan and the USA accomplished using the data for the period 1996-2000, various indicators, characterising the situation with future orientation of these countries, allowed to come to the conclusion that the following countries are above the Schumpeterian corridor: Ireland, the USA and Finland corridor, while Italy, Germany, Japan and Switzerland are in a stagnation zone. The various indicators used included indicators of technological development, private and state sectors expenditures on research and development (in particular BERD (Business Expenditure on R&D), level of interest rates, etc. Generally 24 indicators on real sector, 35 on public and 10 on financial were used (Mensch, 2009). As for the influence of separate sectors on results of concrete countries they are: Germany is on the second place within its group in public and real sector and on the fifth in financial sector. The similar situation is in Denmark: it is on the third place in the group in public and real sector and on the ninth in financial sector. Great Britain shows good results in financial sector (second and third place accordingly), but only the fifth on real sector indicators. The most advanced country on all three sectors is the Netherlands, while Italy is the outsider.

Conclusion

This approach to the analysis of economic development allows us to consider, in our

opinion, the Comprehensive Neo-Schumpeterian Economics could be a possible alternative to Neoclassical model when giving a theoretical justification of national innovative economic system. The future orientation and analysis of interaction between the sectors responsible for innovative development can serve as a starting point for application of the approach for cross-country and inter-regional analysis of innovative process. At the same time, the application of the given approach has restrictions connected with the following patterns of institutional environment of Russian innovation business:

- low level of protection of the property rights;
- short-term orientation of economic agents and consequent “investment short-sightedness” (Hanusch et al., 2007);
- lower appeal of investments into the social capital in comparison with investments into the human capital;
- the absence of working mechanism of transformation of inventions into innovation products and well-functioning institutions of commercialization of ideas.

The overcome of these burdens, in our opinion, is a necessary condition for transition to Schumpeterian type of corporate capitalism with innovation system as a self-development mechanism. But both in the Schumpeter’s approach and in NSE, the development is impossible without an actor – an initiative, free from “bound hand and foot wit red tapes” and shortage in liquidity entrepreneur. It is obvious that growth of innovation development institutes should start from a collective innovation action problem, in which all stakeholders (entrepreneurs, bankers, and officials) are involved. In this regard, the discussion about modernisation of economic system should start from a change of basic institutes of development, but with an active

state policy in the spheres of science, education and infrastructure. Otherwise, it will be very difficult for Russia to get out from negative of Global Innovation Index (GII), despite billion expenditures for development programmes, financed by the state budget.

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Потенциал комплексной неошумпетерианской экономической теории для инновационной экономики

Е.А. Капогузов

Омский государственный университет

Россия 644077, Омск, пр. Мира, 55

В статье рассматриваются ключевые элементы комплексной нео-шумпетерианской экономической теории как теоретического фундамента экономического развития инновационного типа. Анализируются интеллектуальные предпосылки данного подхода и его отличия от ортодоксального шумпетерианства. Приводится концепция «трех столпов экономического развития» и обсуждаются эмпирические данные тестирования данной модели на макроуровне. Анализируются возможности применения данного подхода как альтернативе неоклассике при теоретическом обосновании инновационного типа развития.

Ключевые слова: неошумпетерианство, экономическое развитие, инновационная экономика, экономическая коэволюция.
