

Elena Erokhina

Tomsk State University of Control Systems and Radioelectronics

Deployment of Triple-Helix at Different

Stages of Open Economy Development

Over more than 200 years, several stages of development in open economies can be identified which are: the stage of free competition, the stage of pure monopoly, monopolistic competition stage and the stage of cooperative competition. The criterion for the stage of development of the economic system is to be a noticeable change in most of the features of its structure, relationships and functioning, including the specific form of interaction of firms, universities and government. Change in monopolistic and competitive forces of the economy and change in interaction between business, universities and government were taken as a general criterion. The first feature needs some clarification. The monopoly and competition not in their concrete economic sense¹, but in terms of forces or trends that counteract each other may be taken as the basis for classification of stages of open economy development. It is this counteraction, in which new economic structures and forms, including forms of interaction between business, government and universities emerge.

According to the self-organization concept, transition from one stage to another is sharp, it occurs within a relatively short period of time, and implies change in its structure and functioning of not only national economy as a whole but the majority of its levels and coincides with the transition from one N. Kondratiev cycle to another. However, we put aside the empirical study of price development, profit rates, employment, interest, rate and yield of securities and other indicators that are commonly used to study N. Kondratiev cycles and related processes since there are a huge number of publications based on study of varied empirical data by

¹ Note: in a concrete economic interpretation the competition is the struggle for the market, and monopoly is a market situation in which the firm – the only seller or manufacturer – limits the scope of production, increases prices and restrains market penetration for other firms.

different methods which prove the existence of N. Kondratiev cycles in dynamics of many indicators (including the above-listed) for at least two centuries.¹

We assume that the main components of the economic system to be changed are: property relations, the structure and functioning of firms, currently dominating form of business organization, the role and relationship between big and small business, the conditions and limits of the monopoly, features of its behavior, ways of profit taking and profit realization, innovation activity of economic agents, the level of manufacturing concentration and centralization. These microlevel changes occur at mesolevel as well. They change the market structure of different industries, intensify capital mobility, lead to merger and acquisition of various types. In turn, this changes the methods of the economy state regulation, industrial, dimensional and market structure of the economy, as well as the interaction between business, government and universities.

These criteria make possible to identify four stages of open economy development:

1. The stage of **free competition** (start of commodity production at the end of XIX century) was characterized by the atomistic structure of supply and demand, lack of separation of the capital-property and the capital-function, more or less significant product differentiation, influence of the manufacturer on the consumer, forced barriers for competition, small firms predominating, manufacturing concentration, inability of the manufacturer to control prices, high degree of exploitation; rare monopoly (which was of natural character or the result of state granted

¹ See: Business Cycles Since 1820: New International Perspectives from Historical Evidence/Ed. By T.J. Dick. Cheltenham, Northampton, 1998; G.D. Kovaleva. Cyclical dynamics of economic processes: measurement and modeling. Novosibirsk, 1992; A.V. Poletaev, I.M. Saveliev. Kondratieff cycles and the development of capitalism (the experience of interdisciplinary research). M., 1993, Sergei Menshikov, L.A. Klimenko. Long waves in the economy. M., 1989; S.Y. Glazev. The theory of long-term technical and economic development. M., 1993; Long-term trends in capitalist reproduction: the Abstract collection. M., 1985; Scientific heritage of N.D. Kondratiev and modernity. Proceedings of the conference. Two parts. M., 1991; Ideas of N.D. Kondratiev and the dynamics of the society at the turn of the third millennium. Proceedings. M., 1995, Long waves: scientific - technical progress and socio - economic development/Ed. S.V. Kazantsev, P.N. Teslya. Novosibirsk, 1991.

privilege); the monetary system based on the gold standard, a small role of the state in the economy. That was the stage when the Triple-Helix was not formed, and the state interference in the economy was limited by protectionist policies.

2. In transition to the stage of **pure monopoly** (in the mid 1890 – 1929) manufacturing concentration sharply increased and, as a result, the dominant forms of property changed: small individual private property was replaced by group forms of property. Joint stock companies owned by families became the leading shareholder ownership where industry-specific family corporations in the form of cartels and trusts dominated. The concentration of production was the condition for emergence of monopolies, which were on a leading position. Small business was forced out of the economy. In this period there was a transition from a predominantly agricultural development to the preferential development of the industry, mining in the first place, as well as railway transport. The monopoly was established through collusion, merging or acquisition, and formation of a new individual or associated firm. Sources of monopoly profits were primarily external by nature (man-made deficit, exploitation of the consumer and provider through high or low monopoly prices, unbalanced exchange with the colonies, etc.). The internal sources included: savings on production scale, intensive exploitation, in rare cases it was innovation. At this stage the triple helix was also at its start. The monopoly profited mainly from external sources: monopoly restricted production output and raised prices resulting in a low innovation activity of the monopolies. Small firms occupied the niche of mainly manual labor, producing poorly differentiated product and did not show the demand for innovation as well. Hence, the helix "business - universities" did not significantly affect the economic development at that stage, with the exception of breakthrough innovations introduced by big (sometimes monopolistic) firms. The helix "universities - the state" worked only for cases when education and research of universities was funded by the state. However, the helix "the state - business" considerably changed: in the history of the economy it was the first time when the state started to get actively involved in business, regulating labor relations between employees and business; the

antimonopoly law was worked out, the state pursued the protectionist policy, thus greatly reducing the international competition and supporting domestic firms including monopolies.

3. After the crisis of 1929 – 1933 the majority of economically developed countries started a new stage of development, a **monopolistic competition**. Change in property relations resulted in alienation of the shareholders from management and real assets ownership. There was a tendency of individual shareholding being substituted by a legal person, which strengthened the role of managers. Large corporations that adhere to the "massive" production system characterized by high inventory levels and manufacturing capacity reserves became the main form of business organization. During the first half of this stage the production was of standard, flow line and mass character which resulted first in saturation of the market with standard goods and differentiation and individualization of the demand in the second half of the stage. Increase in the absolute manufacturing concentration, as the production volume, asset sale grew, slowed by the end of the stage, however, the level of relative concentration (market share of the firm as its indicator) decreased. Change of the sizing structure resulted in the process of forcing out small business and increasing the optimal and medium-sized firms. This process had been exhausted only by 1970. Changes in the sectoral structure of the economy manifested themselves in the continued increase in the share of industry, reducing the share of agriculture and transport. The transition to the third stage, made automotive, chemical, rubber, industries the basic sectors, facilitated stabilization of the share of manufacturing industry and growth of the share of nonproductive sectors, including services. The dominant type of the market structure changed as well: in conditions of monopolistic competition there developed the polystructure with various forms of the size structure and close interaction between these forms. The most common types of market structures are considered to be oligopoly (including asymmetric, in combination with a large number of small producers), polypoly, and the rarest is monopoly. At this stage the monopoly could occur under certain conditions only (small market, possibility of significant savings on the production scale, high degree of production differentiation and market

segmentation). The monopoly itself underwent significant changes: the protectionism was gone, the laws on patents and licenses ceased to be a source of long-term preservation of a monopoly position, most monopolies were of partial character. There appeared new sources of the monopoly realization: product differentiation, market segmentation; monopoly on equipment, technology, organization of production, raw materials and unique product with specific qualities. In conditions of market openness even a complete monopoly is forced to implement the proactive innovation strategy.

In transition to the cycle considered functioning of the economy at macro- and microlevels changed as well.

Profit modification resulted in the shift from external sources of its realization (monopoly included) to internal ones (savings on production scale and diversity, implementation of new equipment, technology, and organization of production to reduce production costs). Among the external profit sources a special role is played by the quasi-rent, exploitation of underdeveloped countries, cooperation with small business, and price discrimination. The nature of capital mobility changed: in the earlier stages it was made mainly by direct transfer of funds to another sector, however at this stage it was primarily merger and acquisition (predominantly vertical).

Interaction within the Triple-Helix significantly changed. Collaboration of firms with universities strengthened since technological, product and organizational innovation appeared to be the main sources of income. Universities took an active part in decision making together with the public authorities. This influence occurred through various forms: the Institute of advisers to the leaders of the state developed, public debate over books and articles by economists strongly influenced the decisions of the state. The primary evidence was adoption of Keynesian doctrine in the United States to get out of the Great Depression.

State interference in the economic life as a whole and business in particular sharply increased. Forms of the government regulation of the economy changed: the extreme protectionist policy was gone, protection of interests of the industry was replaced by the aim to

ensure the "public interest"; government regulation in the sphere of environmental protection took place, state property and state business gained its momentum; countercyclical regulation, social security, and etc emerged. Thus, at the stage of monopolistic competition not individual helices, but a complete Triple-Helix is formed.

4. The stage of **cooperative competition** (from 1974 – 1975 to 2008). Changes in property relationship resulted in replacement of property for real assets by property for real titles for real titles, in different forms of property, spread of cooperative property, intense change of private property to that owned by a juridical person, diffusion of ownership. Corporation remained the main form of business, however, its behaviour changed: assets were disinvested; enterprises were disaggregated through separation of strategic business units. The level of production concentration keeps decreasing.

Stabilization or decrease in the absolute level of production concentration led to change in the size structure of the economy: as a result of reduced optimal size of firms the share of large firms decreased and that of small firms increased, the differentiation of the size structure enhanced. At this stage, three directions of development for small and large business could be distinguished: its symbiosis strengthening (subcontracting, franchising, spin-offs and rent), competition between small and large firms, small business niche specialization.

Change in the industry structure resulted in the reduction of the share of industry, agriculture, forestry, fishery, manufacturing industry and increase in the share of the service sector, finance, insurance and information business; the sectors which were the backbone of the industry at the stage of monopolistic competition were structurally poor. The main areas for capital deposition were energy-, material-, labor-saving and high-tech industries. The market structure of the economy gradually migrated toward strengthening of the polypoly, though the oligopoly made the basis of the economy at that cycle.

The feature of the economy functioning in developed countries at the stage of cooperative competition is wide distribution of inter-firm cooperation, which extended beyond the national borders evinced by business networks development.

The sources and means of profit realization dramatically changed.

The main change, when profit was appropriated at the stage of cooperative competition, was a trend to sharp decline in the share of external sources of profit and increase of internal ones.

The main internal profit sources are:

- reduction of production costs through savings on primary products, materials, energy, implementation of new methods of work organization, optimization of the working staff, riddance of plants that do not meet the basic direction of the firm activity, technical, technological and organizational innovation, scale efficiencies;

- improving quality and reliability of the product made by firms;

- management decentralization, transferring more power to firm departments.

Those external sources of profit which were important for the firms in the previous stages were of less significance: the possibility of quasi-rent appropriation, exploitation of underdeveloped countries, and some others.

The new main external sources of profit at the stage of cooperative competition include: merger and acquisition with further sale of the assets, as well as zaitech (fast transition from one investment to another.)

The monopoly can no longer be almost completely, as it was in the days of pure monopoly, rule the market, and this modifies the sources of the monopoly profit realization. Now there is no reason to believe that the monopoly profit is always higher than that of the non-monopoly. It can be provided exclusively by low cost or inelastic and high demand for the product due to its high price. The monopoly profit shows, first of all, the relationship of the monopoly ownership to the production factors, including scientific and technological advances,

equipment and technology, manpower with specific skills, forms of production and management organization, as well as goods. The monopoly can be realized in practice in absence of the ownership for the objects No 1 – 4, but not in absence of monopolistic possession of the goods.

If for "classical" monopoly the main source and means of profit realization was inflation, at present, for the above mentioned reasons, this is not possible, except for the case when the firm produces goods with no substitute and the demand for these goods is price-inelastic. However, this can hardly be considered typical of modern industrialized countries; in addition, it cannot be sustained for long. More sustainable can be the monopoly producing goods with unique consumer properties,¹ in this case high price may also remain the means of monopoly profit realization.

For most of the currently partial and unstable monopolies monopolistically low production costs based on exclusive ownership of equipment, technology and other resources are the only sources of profit, and it is low cost that can be one of the major barriers to join the sector.

At this stage the Triple-Helix innovation completely developed and revealed. Since innovations became the main source of profit, collaboration between business and universities strengthened. The helix "universities – business" was widely spread as appraisal of various government projects and government decisions became common practice.

The helix "the state - business" changed; the Keynesian methods of control were replaced by monetarist and neoclassical methods. The quality of counter-cyclical policy increased that allowed some countries to achieve long crisis-free period.

Thus, it was possible to identify the cyclic recurrence of development stages interchange and distinctly indicate the turning points of N. Kondratiev cycle, which make the basis for distinguishing the development stages for open economy. The first one and a half-cycle of the

¹ CM.: Rao T., Saxena R. Economic Efficiency of the Organizational Decisions of the Firm // Rivista Internazionali di Scienze Econ. e Commerciali. 1988. Vol. 35, № 7. P. 678.

period under consideration were identified by N. Kondratiev. His periodization was proved by the study of changes in the structure and functioning of the economy:

- cycle 1 from 1844 – 1851 to 1890 – 1896 (upward wave till 1870 – 1875; downward wave from 1870 – 1875 to 1891 – 1896)
- cycle 2 from 1891 - 1896 to 1929 -1933 (upward wave till 1914 r, downward wave till 1929).
- cycle 3 from 1929 – 1933 (possibly till the end of 1930ies) to 1973 – 1975 (possibly till 198), (the ultimate turning point occurs at the beginning of 1950 ies).
- cycle 4 from 1973 – 1975 to 2008 (the ultimate turning point occurs at the beginning of 1990 ies).

It was found that in the downward wave of N. Kondratiev cycle and in the transition to the next cycle the economic structure breaks and only after that – in the lower turning point – the mechanism of economy structure starts to change. The mechanism of interchange of the development stages is characterized by three effects: the " lull before the storm" (relative decline of the shifts in the ratio of the specific weight of industries several years before the point of bifurcation), the "effect of the middle" (intensive structural changes 20 years the point of bifurcation, i.e. at the beginning of the downward phase of N. Kondratiev cycle) and the "echo effect" (7 - 10 years after the point of bifurcation a new economic crisis starts, as it was in 1900 – 1903, 1937 – 1938, and in 1980 – 1982, and it is these periods the second (after the point of bifurcation) peak of structural change falls on). One of the means to ensure economic restructuring in the period of transition from one N. Kondratiev cycle to another and, at the same time, one of the indicators of this transition are merger and acquisition, which can be proved by the fact that the largest wave of merger and acquisition occurs at periods of transition from one N. Kondratiev cycle to another. Each wave of merger is characterized by domination of one of the trends that turns into the next wave.

Transition to a new N. Kondratieff cycle occurs at the time of deep crises of Juglar cycle, which become structural crises. A structural crisis is a consequence of non-compliance between the economic structure and its functions. Thus, many real economic processes (changes in the size and market structure of the economy, the manufacturing concentration, change of property forms, dominance of one or another form of business organization, sources of profit realization, the scale and methods of state interference in the economy, monetary and currency systems, and many others) are cyclical.