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# Long Waves and Other Economic Cycles: Navigation Prospects*

**BRONZE MEDAL**

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At present, the world economy and Russia experience some recession and systemic crisis which indicate the end of the development model which evolved in the world economy after the 1990s: a unipolar world, globalization, and transformation of Russia into a raw material appendage for the West. This model, in fact, was geopolitical and economic essence of the economic development mechanism of the fifth long wave. There are signs of a new world order based on the development of NBIC technologies, on the formation of new centers of geopolitical dominance, the growing clamour for the need for neo-industrialization in Russia, reformatting its development model and bringing its world order closer to the model of a noospheric integrated society which was formed during the fifth long wave in China, Vietnam, and a number of other countries, including Western ones. This requires further research into the economic development mechanism of long waves, their connection with cycles of longer or shorter duration in order to form an adequate policy response to economic and geopolitical challenges and to bring our country's economy out of the developmental dead end.

The study of long waves reveals that they include four main factor-trends in their development: innovation and technology, natural resources, information and price, as well as financial and credit (Rumyantseva 2003).

Factor-trend identification is based on Kondratieff's principle according to which economic dynamics is divided into cumulative processes and processes-flows (Kondratieff 1989: 59). Only those indicators that have both cumulative and flow component in their structure are part of factor-trends. Thus, in the innovation and technology factor, these are the techno-economic paradigm and the number of radical innovations or R&D expenditures; in natural resources – energy prices and consumption pattern change; in information and price – the quantity of information in the economic system and prices; and in financial and credit – the dominant financial style and the money supply value.

* This study has been supported by the Russian Foundation for Basic Research (Project No. 17-02-00521-OGN).

The fourth long wave was characterized by a number of distortions, the most significant of which there was a permanent inflation (distortion of information and price factor-trend) along its downward phase, from 1982 to 1995 (Rumyantseva 2000: 271–284). This was due to, inter alia, by the fact that at the period of formation of information society, information itself had become a commodity that began to be transported via communication networks, as well as the result of the development of stock market instruments and the associated development of low liquidity credit money supply (the complication of the financial and credit factor-trend).

In the financial and credit factor-trend the fifth Kondratieff wave began *c.* 1994–2000 (*Idem* 2016: 106); in the information and price factor-trend – *c.* 1995; in the innovation and technology factor-trend – circa 1991, when the WWW became publicly available on the Internet; and, in 2009 with a certain half-phase delay which is regular for long waves – in the natural resources factor-trend (*Ibid.*: 103–104).

Currently, after the 2008 crisis, the fifth long wave has been decreasing and we observe recession signs in the Russian and world economy (Rumyantseva 2012a: 3–19).

After 2008, the price dynamics in the US economy started to show the downward trend of the fifth Kondratieff cycle, with the signs of deflation, which restores distortions obtained by the long-wave process during the fourth long wave (*Idem* 2016: 112). Deflation signs can be explained by a gradual growth of overproduction in the ICT sector.

In the natural resources factor-trend, there is a decrease in Brent oil prices to US$ 50 per barrel whereas the decline in the resource factor-trend during the last long-wave depression of 1986–1999 was up to 30 (1986) and 18 (1999) USD per barrel. One can expect that the bottom of the drop has not been reached yet. On the rise of the fifth long wave, the price reached US$ 115 per barrel,[1] and the peak increase in natural gas prices circa 2008–2009 may mean a downward turn in the resource factor-trend dynamics.[2]

The fifth long wave was significantly lower than the fourth one in its amplitude. This can be explained by the fact that ICT technologies were fully implemented during the fourth long wave, and the fifth one caused by the development of ICT-based communication means just proceeded with the techno-economic paradigm of the fourth long wave but did not suggest a new one.

The economic development is carried out in a multi-cycle way. There are Juglar, Kuznets, Kondratieff, and Modelski cycles alongside. They are interrelated by chains of interrelation links, and in particular, the fourth empirical regularity of Kondratieff is manifested in implementation of this link. On that ba-

[1] URL: http://tass.ru/infographics/8156.
[2] Natural Gas Futures Contract 1. U.S. Energy Information and Administration.

sis, we suggested a concept of economic conjuncture map (Akayev *et al.* 2011: 43; Rumyantseva 2012b: 161–180; Rumyantseva 2012c: 27–45), where conjuncture is understood as an interrelation between different types of economic cycles which develops the approach of N. D. Kondratieff who defined it as a set of key economic development trends (Kondratieff 1989: 64). Economic conjuncture map shows interrelations of cycles with different duration in the historical perspective as overlay of different waves with different length and helps to distinguish a dynamic economic conjuncture niche for each specific moment – a period on the time scale of the interrelated cycles when it is reasonable to implement innovations of special types.

In particular, we managed to demonstrate that, at present in the world economy, Kuznets cycle is in the final phase of its plateau phase, signaling that another economic crisis might occur soon, although a rise of this cycle caused a 2 % increase in the US economy in 2013–2016. The Kondratieff cycle is declining with the prospect of entering the depression phase circa 2020–2025, and the same period is the Modelski cycle's final phase, fraught with military confrontations.

The crisis nature of the modern world and Russian economy is also determined by the fact that since 2008, the crisis which in addition to its systemic nature fits into the standard duration of the Juglar cycle (1987, 1997, and 2008), a sufficient number of years have passed for a new crisis to occur. This is indirectly confirmed by a new increase in the derivatives bubble, both in the U. S. and in Russia. Thus, in comparison with the corresponding period of 2016, in June 2017 the total Moscow Exchange trading volume grew by 12.3 % and amounted to 78.9 trillion rubles.[3] For reference, in January 2016, Moscow Exchange derivatives trading volume increased by 157.1 % and amounted to 10.6 trillion rubles (in January 2015 4.1 trillion rubles). The derivatives bubble is being inflated in Russia.

In terms of the economic policy, this means that the current state of the dynamic economic conjuncture niche consists of transition phases to Modelski cycle's global war phase, Kondratieff cycle's recession phase, Kuznets cycle's plateau phase, and Juglar cycle's final phase fraught with crisis. In these circumstances, there is aggravation of the geopolitical situation, inhibition of the basis innovation breakthrough associated with introduction of NBIC technologies, and the relative overaccumulation in ICT industries.

This requires innovation development policy. It is important to take into account that the pattern discovered by G. Mensch (1979) (depression as a trigger for cluster of basis innovations) ceases to be true in the context of globalization (Rumyantseva 2016: 95). It is not individual companies which compete with each other within national economies, but national economies

[3]URL: http://www.moex.com/n16460.

compete with transnational corporations. That is why the development of the domestic national innovation system is so important in modern times.

The problem of the nature of innovations which should be supported as part of governmental programs for innovation process incentive is important. We managed to show that during recession phases of long economic cycles, historically the benefit was caught by those companies which introduced institutional and organizational innovations that paved the way for a future basic innovation breakthrough (*Idem* 1999: 204–218). Currently, the entire economic system of Russia requires institutional and organizational reformatting so that new technologies could be introduced in 2020–2025. Such innovations may include, for example, the formation of a single information business support system in Russia and creation of the Technology Bank with the assets replenished through financial speculation taxes. This seems to be a possible application of the idea of financial socialization as an anti-crisis measure for Russian economic development, suggested by Viktor T. Ryazanov (2016: 628–641). But that is an issue for a future research.

The hopes only for the strength of NBIC technologies as the basis for a new wave of economic development are excessive – we will immediately face an overproduction crisis due to effective demand shortage in this sector. Therefore, it is necessary to isolate economy sectors and branches that are connected by reproduction relation links to NBIC technologies and to carry out reindustrialization on a new technological basis in such branches as medicine and pharmaceutics, ICT, nuclear technologies, instrument engineering and electronics, oil and gas processing, automobile and aircraft construction, shipbuilding, space industry, chemical industry, and agriculture.

Geopolitical tension which increased during the downturn period of the Modelski cycle requires strengthening of Russia's territorial integrity and implementation of the national projects (Grinberg 2014: 11–15) which would prevent negative effects of the country's disunity if these risks occur.

Social and institutional restructuring of the Russian economy is also important during transition to a new development wave. A number of authors suggest that in today's world economy there is a transition from divergence to convergence, to an integral society characterized by unity of the market and centrally planned economics, and by fair distribution of created national wealth (Bogomolov *et al.* 2016; Kuzyk *et al.* 2011; Spence 2013; Akayev 2015). As demonstrated by Carlotta Perez (2011), the transition to a new techno-economic paradigm is impossible without institutional transformations. However, in our country the oligarchic lobby will impede this process. Under these conditions the formation of social consensus on future development of the economy and the sociopolitical structure of Russia requires the transition to noospheric consciousness (Rumyantseva 2014: 64–72) which alone may prevent geopolitical risks associated with the end of the Modelski long cycle.

Therefore, when entering a new long wave of economic development, completing the Kuznets and Juglar cycles, and beginning the global war phase of the Modelski cycle, a serious reformatting of both socioeconomic relations and the social value system is required. When entering the deflation phase, the information and price factor-trend overcame its distortions which should facilitate the introduction of new technologies within the innovation and technology factor-trend. Only in the case of Russia, it is important to take into account that in order to form a full-fledged techno-economic paradigm driven by these technologies it is necessary to involve all lines of inter-branch relations with old branches and modify them on a new basis. However, within the financial and credit factor-trend there increases financial fragility, based on derivatives spread, both in the United States and in Russia, which requires the implementation of the financial socialization policy suggested by V. T. Ryazanov. This will contribute to the transition to the principles of integrated, noospheric society. Considering the historically objective half-phase delay of the natural resources factor-trend, a radical change in resource consumption can be expected not earlier than 2040, giving the Russian economy one more chance to transform oil and gas revenues into funds to support innovative development.

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