

## СЕКЦІЯ 1 ЕКОНОМІЧНА ТЕОРІЯ ТА ІСТОРІЯ ЕКОНОМІЧНОЇ ДУМКИ

УДК 330.33/330.83(043.3)(100)

**Gaidey D.A.**

*assistant of the International economics department,  
Donetsk National university*

### CRITICAL ANALYSES OF ECONOMIC CYCLES THEORIES

### КРИТИЧНИЙ АНАЛІЗ ТЕОРІЙ ЕКОНОМІЧНИХ ЦИКЛІВ

#### ANNOTATION

This paper provides analyses of economic cycles theories. It examines into economic cycles according to their periodicity, explores the theoretical background and formulates the basics of the mechanism of the Kitchin inventory cycles of 3-5 years, the Juglar fixed investment cycles of 7-11 years, the Kuznets infrastructural investment cycles of 15-25 years), the Kondratiev long technological cycles of 45-60 years. It studies different classifications of economic cycles and covers main causes, which drive periodical fluctuations in business activity.

Key words: the Kitchin inventory cycle, the Juglar fixed investment cycle, the Kuznets infrastructural investment cycle, the Kondratiev wave or long technological cycle, expansion, stagnation, recession, economic growth, economic fluctuation.

#### АНОТАЦІЯ

У статті запропоновано аналіз теорій економічних циклів. У роботі розглянуто економічні цикли різної тривалості, досліджено теоретичні засади та базові механізми циклів Китчина тривалістю 3-5 років, циклів Жюгляра тривалістю 7-11 років, циклів Кузнеца тривалістю 15-25 років, довгих хвиль Кондратьєва тривалістю в 45-60 років. У дослідженні запропоновано різні класифікації економічних циклів і вивчено основні причини, які їх призводять до періодичних коливань ділової активності.

Ключові слова: короткостроковий цикл Китчина, середньостроковий цикл Жюгляра, ритм Кузнеца, хвиля або довгий технологічний цикл Кондратьєва, поширення, стагнація, спад, економічне зростання, коливання в економіці.

#### АННОТАЦИЯ

В статье представлены анализ теорий экономических циклов. В работе рассмотрены экономические циклы разной длительности, исследованы теоретические основы и базовые механизмы циклов Китчина длительностью 3-5 лет, циклов Жюгляра длительностью 7-11 лет, циклов Кузнеца длительностью 15-25 лет, длинных волн Кондратьева периодичностью в 45-60 лет. В исследовании предложены различные классификации экономических циклов и изучены основные

причины, которые приводят к периодическим колебаниям деловой активности.

Ключевые слова: краткосрочный цикл Китчина, среднесрочный цикл Жюгляра, ритм Кузнеца, волна или длинный технологический цикл Кондратьева, распространение, стагнация, спад, экономический рост, колебания в экономике.

**Statement of the problem.** The increasing frequency and severity of financial and economic crises over the past three decades have raised important questions about background of such emergencies. Explanation the externalities of upturns and downturns in world economy could be provided with understanding the nature of cyclic economic transformations. Representation the mechanism of cyclic fluctuation of economy is important tool for effective economic policy, which enables government to forecast possible scenarios for economic development and work out efficient managerial strategy.

**Analyses of latest studies and publications.** The foundation of cycles theories was settled by Joseph Kitchin, Simon Kuznets, Nikolai Kondratiev, Joseph Shumpeter, Clément Juglar. Today the attempts to analyze the nature of business cycles represented in works of A. V. Korotaev, S. V. Tsirel, A. F. Burns, W. C. Mitchell, A. Sullivan, S. M. Sheffrin, J. W. Forrester, M. Bormotov, A. Telecote and others. At the same time despite the intense attempts of economist to give proper explanation to mechanisms of cyclic development this question is still in need for scientific consideration.

**The objective** of the article is to explore the theoretical background and formulates the basics of the mechanism of economic cycles.

**Unsolved aspects of the problem.** Due to significant variability of display areas, scope and duration of economic cycles there is consistent approach to understanding the nature periodical economic fluctuations. In addition, there is no single concept of views on the problems of the interaction between dynamic fluctuations in economic activity with the innovative development of the world economic system, which explains the need for further study of the issue.

**Presentation of the basic materials.** Severe economic fluctuations which had recently hit the entire world economy after relatively prosperous decades despite numerous institutional efforts to control them have recalled an interest to the theory of economic cycles. Historical data on main economic indexes and academic evidence show that recurrent fluctuations in the pace of economic growth are consistent over time. Technological revolutions and worldwide implementation of basic inventions are necessarily accompanied by the processes of creative destruction or – sanitation of the economy, which cause long term economic cycles which appear to be predictable but practically unavoidable.

The term business cycle (or economic cycle) refers to economy-wide fluctuations in production or economic activity over several months or years. These fluctuations occur around a long-term growth trend, and typically involve shifts over time between periods of relatively rapid economic growth (expansion or boom), and periods of relative stagnation or decline (contraction or recession) [1, p. 15].

These fluctuations in economic activity are usually measured by the growth rate of real gross domestic product and despite being recurrent they do not follow any strict harmonic pattern.

The widely accepted definition of business cycles refers to Arthur F. Burns' and Wesley C. Mitchell's definition: «Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises; a cycle consists of expansions

occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; in duration, business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles of similar characteristics with amplitudes approximating their own» [2, p. 8].

In the mid-20th century, J. Schumpeter proposed a typology of business cycles according to their periodicity, so that a number of particular cycles were named after their discoverers or proposers:

the Kitchin inventory cycle of 3-5 years;

the Juglar fixed investment cycle of 7-11 years (often identified as 'the' business cycle);

the Kuznets infrastructural investment cycle of 15-25 years (after Simon Kuznets also called building cycle);

the Kondratiev wave or long technological cycle of 45-60 years (after Nikolai Kondratiev) [3, p. 106].

Kitchin cycle is a short business cycle of about 40 months discovered in the 1920s by Joseph Kitchin.

This cycle is believed to be accounted for by time lags in information movements affecting the decision making of commercial firms. Firms react to the improvement of commercial situation through the increase in output through the full employment of the extent fixed capital assets. As a result, within a certain period of time (ranging between a few months and two years) the market gets 'flooded' with commodities whose quantity becomes gradually excessive. The demand declines, prices drop, the produced commodities get accumulated in inventories, which informs entrepreneurs of the necessity to reduce output. However, this process takes some time. It takes some time for the information that supply significantly exceeds demand to get to the businesspeople. As it takes entrepreneurs time to check this information and to make the decision to reduce production, time is also necessary to materialize this decision (these are the time lags that generate the Kitchin cycles). Another relevant time lag is the lag between the materialization of the afore mentioned decision (causing the

capital assets to work well below the level of their full employment) and the decrease of the excessive amounts of commodities accumulated in inventories. Yet, after this decrease takes place one can observe the conditions for a new phase of growth of demand, prices, output, etc. [4, p. 10].

Juglar cycle is a fixed investment cycle of 7 to 11 years identified in 1862 by Clement Juglar. Within the Juglar cycle one can observe oscillations of investments into fixed capital and not just changes in the level of employment of the fixed capital (and respective changes in inventories), as is observed with respect to Kitchin cycles. 2010 research employing spectral analysis confirmed the presence of Juglar cycles in world GDP dynamics [4, p. 11].

Kuznets swing is a claimed medium-range economic wave with a period of 15–25 years found in 1930 by Simon Kuznets [5, p. 207]. Kuznets connected these waves with demographic processes, in particular with immigrant inflows/outflows and the changes in construction intensity that they caused, that is why he denoted them as «demographic» or «building» cycles/swings. Kuznets swings have been also interpreted as infrastructural investment cycles [6, p. 109].

In economics, Kondratiev waves (also called supercycles, great surges, long waves, K-waves or the long economic cycle) are supposedly cycle-like phenomena in the modern . Averaging fifty and ranging from approximately forty to sixty years, the cycles consist of alternating periods between high sectoral growth and periods of relatively slow growth [4, p. 13].

Kondratiev identified three phases in the cycle: expansion, stagnation, recession. More common today is the division into four periods with a turning point (collapse) between the first and second phases. Writing in the 1920s, Kondratiev proposed to apply the theory to the 19th century:

1790-1849 with a turning point in 1815.

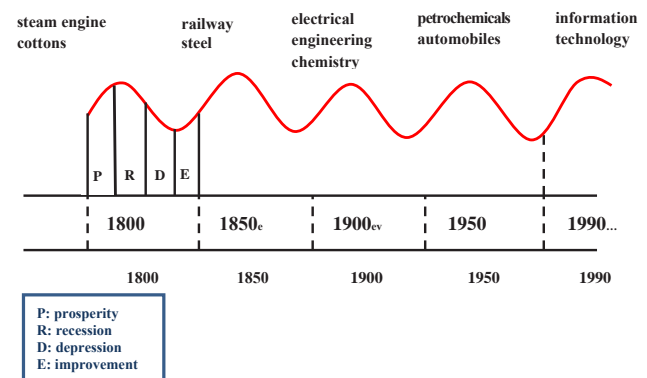
1850-1896 with a turning point in 1873.

Kondratiev supposed that, in 1896, a new cycle had started.

The long cycle supposedly affects all sectors of an economy. Kondratiev focused on prices and interest rates, seeing the ascendant phase as characterized by an increase in prices and low interest rates, while the

other phase consists of a decrease in prices and high interest rates. Subsequent analysis concentrated on output.

According to the innovation theory, Kondratiev waves arise from the bunching of basic innovations that launch technological revolutions that in turn create leading industrial or commercial sectors. Kondratiev's ideas were taken up by Joseph Schumpeter in the 1930s. The theory hypothesized the existence of very long-run macroeconomic and price cycles, originally estimated to last 50-54 years.



Picture 1. Simplified Kondratieff Wave Pattern [8]

There are several modern timing versions of the cycle although most are based on either of two causes: one on technology and the other on the credit cycle.

Additionally, there are several versions of the technological cycles, and they are best interpreted using diffusion curves of leading industries. For example, railways only started in the 1830s, with steady growth for the next 45 years. It was after Bessemer steel was introduced that railroads had their highest growth rates; however, this period is usually labeled the «age of steel».

The technological cycles can be labeled as follows:

- The Industrial Revolution – 1771;
- The Age of Steam and Railways – 1829;
- The Age of Steel and Heavy Engineering – 1875;
- The Age of Oil, Electricity, the Automobile and Mass Production – 1908;
- The Age of Information and Telecommunications – 1971.

According to Schumpeter, one of the reasons why the economic crisis of 1929-33

was so severe is a coincidence of troughs of Kitchin, Juglar and Kuznets cycles. The downturn in each cycle reinforced the downturn in the other cycles. However, most of the time, according to Schumpeter, the various cycles cross one another—a peak in one might correspond to a trough in another, thereby creating business conditions that are somewhere between all-out boom on one hand and the extreme crisis conditions on the other [8].

Economic cycles may be categorized according to five attributes of classification: duration, severity, the nature of underlying techno-economic processes, manageability and preventability by institutions [8].

By duration from trough to trough or from peak to peak there are recognized four typical time frames of economic cycles:

- cycles, with duration 50-60 years;
- cycles with duration 25-30 years;
- cycles with duration 10-12 years;
- cycles with duration 5-7 years.

Economic cycles are categorized here by a magnitude of severity which is recognized as a continuance of recession (significant decline in economic activity visible in real GDP), in three groups:

- extra severe, over 5 sequential years;
- severe, 3-5 sequential years;
- moderate, less than 3 sequential years.

By the nature of underlying techno-economic processes economic cycles are divided in five groups:

- economic cycles caused by technological revolutions which affect the fundamentals of economic system;

- economic cycles driven by major basic inventions that cause structural changes and create a base for upcoming basic inventions;

- economic cycles driven by basic inventions that cause surge of consequent minor inventions and innovations;

- economic cycles caused involuntarily by inadequate institutional, entrepreneur and customers behaviour leading to inflation and overshoots or undershoots of business inventories.

- economic cycles occurring due to – force major: nature cataclysms, wars, pandemics, etc.

The real rate of manageability and preventability, or at least ability to smooth

the severity of economic cycles, is floating somewhere between the classical economics concept of *laissez passé* and the communist concept of planned economy. Since the economy is considered to be partially manageable, economic cycles are not completely avoidable, but are subject of – smoothing regulations. Therefore in this paper economic cycles are categorized as the following:

- preventable economic cycles; in that category fall all cycles caused by human (institutions, entrepreneur and customers) behaviour;

- unpreventable but partially manageable economic cycles; cycles of all other nature fall in that category.

Every economic school of thought (Classical, Neo-Classical, Keynesian, Neo-Keynesian, Austrian, Endogenous, and Techno-Economical) provides its own explication on how economic cycles are driven. Sometimes it appears to be a tautology in argumentation. Low demand induces low supply, that leads to unemployment growth, that caus-

Table 1

**Techno-Economic mechanism of economic cycles [9]**

Type of cycle	Underlying Techno Economic mechanism
Kitchin	Overshoots and undershoots of business inventories: recovery from recession left firms short of stocks which they then strove to rebuild. Suddenly they found they have succeeded all too well, and were obliged to cut back orders and output accordingly; which depressed the economy, and by doing so caused a further involuntary pile-up of stocks.
Juglar	Assets reallocation inside sectors of economy. Investment in fixed assets overshoots at the peak, giving excess capacity, and undershoots at the trough. The longer period between peaks and trough reflects the slower process of adjustment involved.
Kuznets	Assets reallocation between existent sectors of economy and territories, that requires substantial investment in infrastructure, particular in building
Kondratiev	Fundamental assets reallocation due to new sectors creating and structural reconstruction of entire economy on new generation technological base

es monetary injections, that induce inflation and make the investment bubble arise, that causes a financial system crisis, that requires sanitation, that leads to re-allocation of resources, that pushes economic activity, that induces a rise in employment, that leads to a rise in demand growth, that leads to a rise in prices, that leads to real demand fall, etc. This is a circle chain. One can start pooling from any link and turns over the entire chain [8].

Joseph Kitchin, Simon Kuznets, Nikolai Kondratiev, Clément Juglar provided their own explication on how economic cycles are driven (table 1).

**Findings.** There are three groups of causes that drive economic cycles: directly unmanageable causes (natural non-renewable resources scarcity – oil, coal etc.), slow manageable causes (knowledge) and manageable causes (taxes, money supply, interest, government spending, subsidies, wages, prices and import regulation, etc.). The – manageability of economy is limited; hence either – overdrive or – poor drive causes unwanted economic fluctuations.

Economic cycles are basically driven by complex of natural, technological, economical, financial and political causes and it is very difficult to mark out separate, specific reasons which cause periodic economy-wide fluctuations in production or economic activity. The crucial economical problem is so complicated and complex itself, that it pools out an adequate multifaceted explication. All and every schools possess and deliver a true judgment, but not a compre-

hensive or final one. A permanent evolution is an attributive characteristic of an economic system, therefore the mentioned economics theories, by influencing each other, are hopefully moving to some kind of positive diffusion and convergence.

#### REFERENCES:

1. Sullivan A. Economics: Principles in action / A. Sullivan, S. M. Sheffrin. – Upper Saddle River, New Jersey : Pearson Prentice Hall, 2003. – P. 502.
2. Burns A. F. What happens during business cycles: A progress report / A. F. Burns, W. C. Mitchell. – New York : National Bureau of Economic, 1951. – P.34.
3. Schumpeter J. A. History of Economic Analysis / J. A. Schumpeter. – London : George Allen & Unwin, 1954. – P. 968.
4. Korotayev A. V. Spectral Analysis of World GDP Dynamics: Kondratieff Waves, Kuznets Swings, Juglar and Kitchin Cycles in Global Economic Development, and the 2008–2009 Economic Crisis / A. V. Korotayev, S. V. Tsirel. – Structure and Dynamics. 2010. Vol.4 (1). – P. 57.
5. Kuznets S. Secular Movements in Production and Prices. Their Nature and their Bearing upon Cyclical Fluctuations / S. Kuznets. – Boston : Houghton Mifflin, 1930 – P. 536.
6. Forrester J. W. New Perspectives on Economic Growth. Alternatives to Growth – A Search for Sustainable Futures / Ed. by D. L. Meadows. – Cambridge : MA: Ballinger, 1977. – P. 107-121.
7. Tanning T. Kondratiev wave: overview of world economic cycles / T. Tanning, M. Saat, L. Tanning [Electronic resource] – Access mode : <http://globejournal.org/wp-content/uploads/2012/09/Vol-2-2-1-11-Tanning-Saat-and-Tanning.pdf>.
8. Bormotov M. Economic cycles: historical evidence, classification and explication / M. Bormotov [Electronic resource] – Access mode : [http://mpra.ub.uni-muenchen.de/19660/2/MPRA\\_paper\\_19660.pdf](http://mpra.ub.uni-muenchen.de/19660/2/MPRA_paper_19660.pdf).
9. Tylecote A. The long wave in the world economy / A. Tylecote. – New York : Routledge, 1993. – P. 352.