

## **CYCLICITY & CHAOTICS IN POST-CRISIS CONTEXT**

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*ABSTRACT: The current global crisis has generated in economic and management theory numerous questions/ dilemmas, because the magnitude of the crisis surprising the entire capitalist world. Juglar cycles, Kuznets cycles and Kondratieff cycles are well known in economic theory but their findings have been deliberately ignored by policy makers. The current theory discusses about the chaotics of the business environment, the instability and highly sinuous evolution of economic life. Regarding the study of cyclicity in business at the firm level, this subject has been and remains more complex by its very nature. From the perspective of our research, we aim to highlight the relation of interdependence between the macroeconomic cycles and business development at the company/firm level.*

*Keywords: chaos, chaotics, business cycle, global crises, EBC, MBC*

*JEL Codes: M20, M21*

### **Introduction: history and current times regarding economic cycles**

The onset of global crisis in the U.S. since 2008 and its rapid expansion, although with different intensities from one country to another, induced new questions/dilemmas in classic economic theory. The first studies on the economic cyclicity belonged to Modelski, since 1850; subsequently other authors as Juglar, Kuznets (Juglar, 1862; Kuznets, 1930) etc. have identified the various types of cycles. The systematic study of this phenomenon remains tied to Kondratieff's name, who at the beginning of the last century, analyzing statistical data for the major industrial countries at the time (England, France, Germany, USA, etc.) revealed a cycle or wave with a duration of about 25 years as an upward phase and of about 25 years as a downward phase. (Kondratieff, 1984) In fact, it can be said that the Russian economist Kondratieff predicted the advent of the Great Depression from '29 - '33, as the downward phase of the third Kondratieff wave corresponds as minimum with the period of severe economic crisis that characterized the Great Depression. Moreover, the idealized version of the fourth Kondratieff wave predicted for 1997 a possible severe economic crisis in the industrialized countries; simplifying, it can be said that the current global economic crisis has manifested only with a difference of about a decade compared to the predictions made by Kondratieff. Certain questions arise, such as: How current has become the study of business cycles today? What are the influences of the global crisis on businesses environment and how should companies react? What are the new dilemmas in macro and microeconomic theory as the global crisis is prolonged?

### **Economic cycles from a macroeconomic perspective**

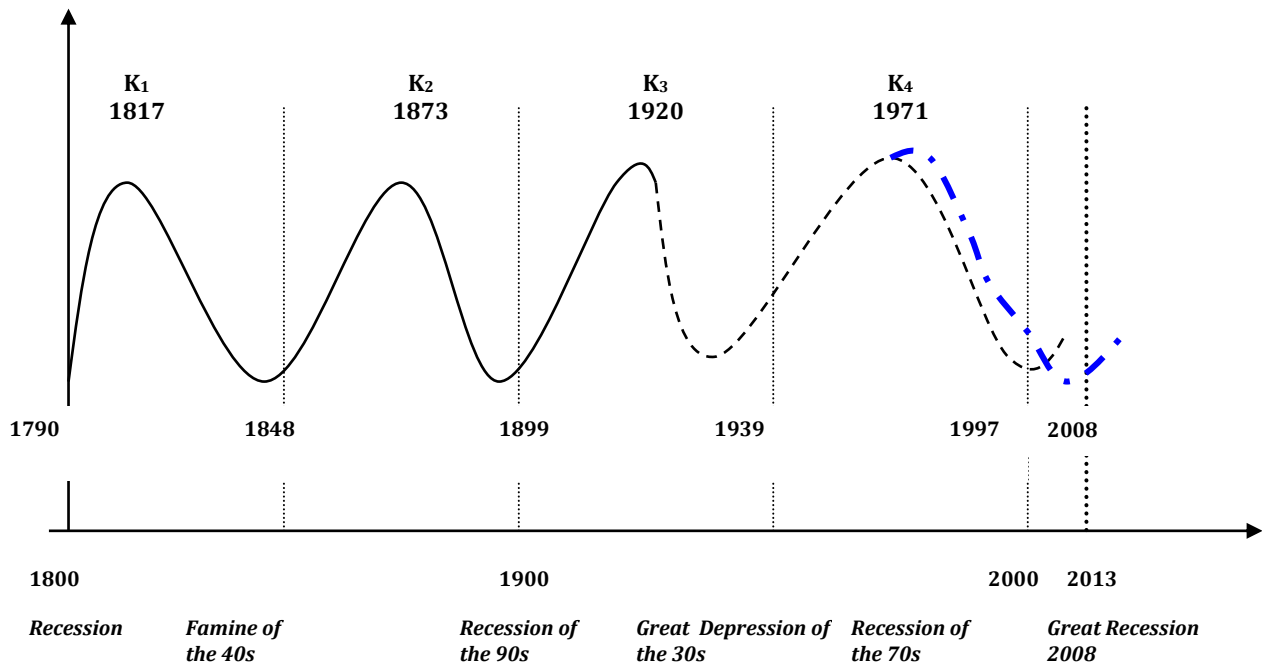
From the perspective of our research, we believe that particularly Kondratieff cycles provide a more suggestive image of the dynamics of national economies (without minimizing the importance of the decennial Juglar cycles, Kuznets cycles or other cycles shorter in time). This is because periods of severe economic crisis (both Great Depression from '29 - '33 and from 2008) can

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be explained as periods of confluence/overlap between downward phases of Kondratieff wave and minimum phases of decennial cycles or of other type. In Figure 1 we present an idealized version of the Kondratieff wave, graphical schematic that shows that the fourth wave manifested slightly atypical. There are multiple explanations for atypical manifestation of Kondratieff waves, especially the fact that some industries and new technologies (computers, Internet, wireless communications, etc.) could not be imagined by the author at the beginning of the last century. As Drucker argues, for most traditional industries/sectors in economy (oil, gas, automotive, consumer goods, etc.) the predictions made by Kondratieff show a remarkable vision.



**Figure no. 1 - Kondratieff waves and their extrapolation until present**

Source: Adapted (Houston 1995, p. 165; Cioban, 2013)

As shown in the figure, the minimum of the fourth Kondratieff wave is very close to the onset of the global crisis in 2008. In other words, the current global crisis was predicted long before it occurred, it can be said that only the conclusions or recommendations of theorists have been deliberately ignored by policy makers. For most observers, Stiglitz argues, the current global crisis was a classic case of "textbook"; the only surprise remains the intensity and quickness of its manifestation in all world countries. (Stiglitz, 2010, pp. 41-48) Unlike other recessions recorded by the Western world ('70s, '80s, etc.), which were temporary and of low intensity, the current crisis can only be compared to the Great Depression of the '30s. (Stiglitz, 2010, pp. 114-115)

Somewhat paradoxically, reputed economists argue quite pertinent the idea that in the capitalist society economic crises tend to become a rule and not an exception in both emerging economies and in the most industrial advanced economies (Roubini, Mihm, 2010, pp. 20-21) (we believe, since at least in the sense that different types of macro cycles inevitably overlap in time). Therefore, it can be said that careful study of the dynamics of national economies and understanding cyclical phenomenon (both macro and micro) may condition in the future the survival/prosperity of corporations. In other words, to predict/anticipate future crises, economists need to understand in advance the mechanisms and factors that led to various crises over the last century; only by understanding these factors/causes there can be designed rules and institutions to mitigate the crises in the future. (Lybeck, 2012, pp. 87-89) According to Krugmans' optics, in the

historical development of capitalism, it was threatened only by war and deep recession; making use of financial mechanisms and different regulations, Western states were able to mitigate the downward phases of the economic cycle (at least they induced such an impression/perception in public opinion until the outbreak of the actual global crisis). (Krugman, 2009, pp. 20-27) The onset of the global crisis in 2008 has made some studies, analyzes or opinions of Schumpeter, Kondratieff or other great economists to become now extremely current. However, it is noted that in the study of firm-level cyclicality, the subject is, by its nature, rare in the economic literature and/or management literature; this occurs because the wide range of "actors" in the real economy makes almost impossible the assertion of uniform conclusions on life and business developments. Predominantly selective, some specific studies of management address the history of large corporation, as Drucker does; however, the study of cyclicality in business for small and medium companies is rather an exception in literature. (Drucker, 1993, 2008)

### **The chaotic of business environment**

In a sense, the business community has always been uncertain, volatile and unpredictable, and therefore difficult to model for decision-makers in economy. Simplifying the complex relationships between macro and micro, the national economy can be described on the basis of a logic functions such as:

$$E = f(N, s, \sigma, r) \quad (1)$$

where:

E – national economy

N – companies/operators that compose the national economy

s – relationships between companies

$\sigma$  – the synergy factor exploited by the system in the functioning process

r – The residual factor that includes all elements unreserved by the first three factors

As known, the Great Depression of the '29-'30 came "suddenly", apparently inexplicable in ordinary dynamic of economies, and has generated thousands of bankruptcies, unemployment and instability. Somewhat similarly, the current global crisis induced instability, fear and panic for employees, investors, managers and the general public in almost all countries.

Currently, authors like Kotler and Caslione try to argue that the business environment has become completely chaotic and more unpredictable than it was 7 or 8 decades ago; but the same environment offers opportunities and threats for business organizations (Kotler, Caslione, 2009).

Chaos theory remains tied to the name of Edward Lorenz who tried to use a modest computer to forecast key parameters regarding weather (temperature, wind speed, etc.); the issue raised is of utmost complexity and requires successive iterations for dozens of variables, being unsolved even today. (Gleick, 2008, pp. 11 -33) Lorenz programmed the computer to simulate/print a "pattern" of weather conditions as forecast on the basis of previously known variables, initially expressed by figures with five decimal places (eg 0.506127). (Lorenz, 1993, pp. 130-137) Involuntarily by omitting the last 3 decimals, Lorenz led to a completely different model of forecast compared to the previous simulations. In other words, ignoring minor issues regarding the state of a parameter led to completely different results in the behavior of the system; this came in literature under the name of *chaos theory*. (Gleick, 2008, pp. 12 -19) The so-called *butterfly effect* sketched by Lorenz has now become highly visible in the operating environment of the companies as all individuals and organizations became directly or indirectly interdependent and/or interconnected. (Kotler, Caslione, 2009, pp. 31 -32)

Theoretical developments in the exact sciences and the natural sciences (with reference to chaos theory, the concept of system, etc.) were then reflected since the '50s until present in management theory and social sciences. (Gleick, 2008; Danek, 1999) Normally, any firm is considered an open socio-economic system, its behavior over  $n$  years being difficult to model and to

predict. Turbulence and chaos have become nowadays the new normality of the business environment and the survival of firms in this environment requires a strategic vision quite different from the one in the past. (Kotler, Caslione, 2009, pp. 36-37) There are, according to Kotler and Caslione, several factors which emphasize the interdependence between countries and/or corporations; among such factors we mention (Kotler, Caslione, 2009, pp. 37-95):

- Computer revolution and advancements in technology, primarily the computer networks that globalizes the commercial and financial trade and the communication activity between individuals and organizations; at the same time, however, it was created an unprecedented interdependence between different markets, organizations and countries.
- The "destructive" character of technologies predicted by Schumpeter almost a century ago (Schumpeter, 2011) has now become a kind of constant in technological and social progress; today's theory discusses about *disruptive technologies*, a trend that companies and employees adapt hard even today. (Kotler, Caslione, 2009, pp. 45-46)
- The appearance of new centers of economic power on the global map of the world (the EU, Japan, China, India, Russia, Brazil, etc.) complicates companies' predictions about the future; the top 500 global corporations are constantly changing from one year to another.
- The environment business has now become "hyper-competitive" and standards/rules that menus the competition change from day to day; sometimes, large corporations can be removed from the market precisely because they adapts very difficult to new rules.
- Integrationist tendencies of countries (by setting commercial blocks of type EU), protectionism and aggressive strategies of multinational corporations induce additional constraints in the business environment; protection of the environment has now become a requirement in corporate responsibility.

In the background of the global crisis in 2008 and until present, managers need to devise new strategies to mitigate turbulence/chaos induced and eventually to exploit opportunities that may arise in this new uncertain environment/context.

### **Business cycle at the firm level**

The analysis of business dynamics at the firm level is, by its very nature, a subject that somehow interposes between microeconomic theory and the theory of business administration. Given the relatively large number of economic "actors" operating in every country in the world (hundreds thousands of companies or more) is extremely difficult to identify and/or generalize realities that are encountered in business practice. In a general sense, it is accepted the idea that business development at the firm level follows a sinuous, cyclical line, and not upward linear over  $n$  years. Mutual relations between evolution's dynamic of business for the firm/company and the dynamics of the national economy (or of a sector, regionally, globally, etc) are, however, extremely difficult to detect, characterize and model. From the perspective of our research, we will simplify these realities and we note the abbreviations:

- EBC: *Enterprise's Business Cycle* or dynamics of business for a company, commercial society or other economic "actor" (mainly referring to medium and large companies that have a history of  $n$  years and are significant on the market they operate);
- MBC: *Macroeconomic Business Cycle* or dynamic of national economy.

It is easily deducible that between the notation EBC and MBC there is permanently a relationship and a mutual influence of cause - effect, but it is difficult to define unitary this type of

relationship; previously, through equation (1) we described the national economy on a logic function of maximum generality. From the perspective of cyclical and/or dynamics evolution at a macroeconomic level (MBC), respectively, at the micro level (EBC), we understand that the two phenomena intersect/overlap/blend over a longer period of time (one to two decades and so on). To what extent can we capture and describe common manifestation of the two types of economic dynamics?

Simplifying existing realities in a national economy, if we denote by E the national economy, then we have:

$$E = \sum_{i=1}^n N_i \quad (2)$$

where: N=number of firms in economy (economic “actors”)

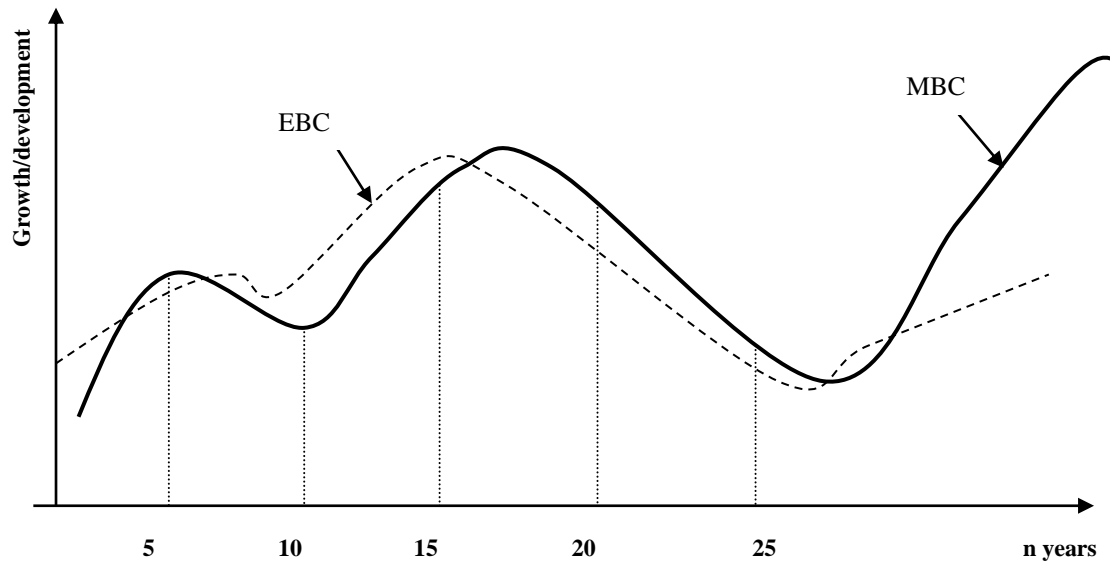
If we denote by  $\Delta E$  the tendency manifested within a period by the national economy (its cyclical evolution, ie MBC), then it appears as a resultant of cyclical evolution located at the level of economic agents  $N_i$ , respectively as a resultant induced by the manifestation of CAF. In other words, we can write:

$$\Delta E = \sum_{i=1}^n \Delta N_i \quad (3)$$

As known in the theory of economic dynamic, various ten-year cycles or shorter cycles overlap/intersect in time the two phases of the wave of Kondratieff. By analogy with the expression of certain categories of economic cycles at macro level, there are easily to formulate, we believe, some views on the dynamics between micro and macro. However, the subject of cyclicity in economic life has become extremely actual today as the 2008 global crisis has generated many questions in traditional economic theory. (Stiglitz, 2010)

Keeping the perspective of our research, we believe that *the critical points from the evolution of the company for n years are the moments when EBC minimum overlaps the minimums of one or more MBC* (short cycles, Kitchin type, decennial type, Juglar type, Kuznets type, Kondratieff type).

Figure 2 shows graphically the situation where one or more minimums of EBC overlap/synchronize, if appropriate, the minimums of a MBC type; in the graphic example suggested we include as MBC a decennial cycle with an upward phase of about 5-7 years and a downward phase for another 6-8 years.



**Figure no. 2 - The synchronize between the minimums of an EBC and the minimum phases of MBC**

From the figure it is easily noticed the fact that the dynamic of the two phenomena described graphically is relatively uneven as trend followed for a period of about three decades; more precisely, for the first 5 years of business development, EBC approached pretty much the tendency followed by the national economy and for the next 10 years (due to proper strategic thinking at the firm level and to counter turmoil in the socio-economic environment) the development of EBC was relatively favorable and/or close compared to MBC evolution. Subsequently, the downward phase of EBC (about 10 years) overlaps or is very close to the general trend followed by MBC; as a result of this negative trend comes an extremely vulnerable moment in the company's evolution, namely the one in which the minimum EBC overlaps almost mathematically/chronologically with the minimum of MBC.

The example cited by us in Figure 2 summarizes clearly one economic actor; thousands or hundreds of thousands of companies will inevitably have a different "patterns" reported to the same MBC for a period of about three decades. This last remark remains valid, we believe, no matter how great the business instability is; even for chaotic business environments sketched by Kotler and Caslione it is visible that some companies manage to resist better than others and even to identify new opportunities. (Kotler, Caslione, 2009)

As noted in Figure 2, the intersection between the two economic cycles (EBC and MBC) is inevitable in time but, instead, it may occur at other points than those suggested in the figure (ie the minimum of MBC). In other words, in the context of a chaotic business environment the higher decider in companies should focus on getting out of synchronization of the minimum point of EBC towards the phases and/or points of minimum that can be predicted in the MBC evolution.

Therefore, in our opinion, the company along  $n$  years will be vulnerable and exposed to bankruptcy in those periods where the minimum point of its own business cycle intersects/overlaps with minimum points of some cycles at a macro level (short, decennial, Kondratieff etc.). Therefore, in any business environment (uncertain, unstable, chaotic or however that environment is described) the strategies designed by the top management should be based on the following principle: *the organization's strategic objective will be to get out of synchronization minimum points of the EBC from minimum points of MBC, the latter being able to be identified/predicted. So, along with other strategic objectives targeted by top management of the company* (anticipating turbulence that may arise in the business environment, exploiting knowledge as a separate resource of organization, etc.), we believe that a special place must be reserved to the change of "contour" of

possible EBC and its getting out of synchronization from MBC; we understand that this requires a careful study of the dynamics of the national economy and, similarly, a thorough study on its own business cycle .

### Conclusions

From the perspective of our research, we consider that the business environment has always been marked by a certain instability and cyclical development during n years. However, as globalization-induced interdependence between countries, corporations and individuals accentuated over time (especially from the 50s to the present), today we perceive that the business environment has become more unstable and we believe that we can say that it is chaotic in the sense proposed by Kotler and Caslione. However we define/describe the current business environment, it is clear, we believe, that each firm will still record favorable periods in its own evolution (ascending phase on EBC) and unfavorable periods as obtained annual profitability, owned market share and/or paid dividends (downward phase on MBC). Indirectly, the authors proposing the concept of chaotic admit that the same environment offers opportunities and threats; it is understood that every company will exploit differently the opportunities offered by global competition and will be able to mitigate differently the new risks of business environment. Therefore, economic decision makers in organizations are required to build permanently alternative strategies for different ways of action (to prevent turbulence in environment; to adapt products/services offered for what the market requires; to exploit knowledge as a distinctive resource; to manage distinctively EBC, etc.). In our opinion, one of the strategic directions that companies/firms can follow is the one aiming at a careful/thorough study of the EBC reported and/or compared with MBC for a period of at least a decade on the market. On this basis, the top management of the firm/company will have theoretical chances to identify future threats caused by environment and how it should be "modeled" EBC towards the foreseeable development of MBC.

In other words, among dozens of other theoretical/pragmatic consequences induced by the current global crisis, we believe that microeconomic theory will refocus on the study of cyclicity in business and of economy's dynamics. It is understood that any attempt to rigorously study the EBC can not provide meaningful answers if it is "broken" from the knowledge/understanding and study of the dynamics of national economies. Among the conclusions, in our opinion, the study of "Kondratieff's waves" has become more actual today than it was during the Great Depression of the '30s; that is because the analysis of the Russian economist still remains a profound prediction on dynamic economy.

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