

# Consciousness determining existence

Vladimir M. Koshkin

National Polytechnic University, 21 Frunze St., Kharkov, 61002, Ukraine

+38 057 3360326; [vkosh@online.kharkov.ua](mailto:vkosh@online.kharkov.ua)

## Abstract

Professor Sergey Maslov was the first, who showed that cultural manifestations of humankind are oscillating with the period of about 50 years. Maslov showed that these oscillations of populations psychological state is almost synchronic with Kondratiev's long waves in economic. The Maslov's estimations showed also that "cultural waves" are somewhat ahead comparing economical long waves. One may assume that just the birth of ideas was and is the starting point for economic development. This assumption is investigated in the present paper. The interrelations between psychological and economic state of societies are tight. The to-day global economical crisis is the result of these interrelations. The measurements of psychological state of populations and its monitoring have to be the most important part for prediction of economy.

**Keywords:** cognition – economy interrelations, mathematical model

I would like to dedicate this paper to the memory of Prof. Sergey Maslov. I had not met him personally but his outstanding paper of 1983 [1] influenced on my own creativity in the field of analysis of long period oscillations of economic and psyche manifestations of human society.

There were two famous forerunners of Maslov: Alexander Chizhevski and Nikolay Kondratiev (see [2]). Chizhevski demonstrated that a lot of scaled social events are correlated with of the Sun activity having the period of about 11 years. Kondratiev showed that economic indices of all countries undergo 50-year periodical changes (so called Kondratiev's long waves in economic). Maslov was the first who showed that many-centuries oscillations of culture manifestations and economic indices are almost synchronic. To construct his famous "culture curve" Maslov analyzed architecture styles of churches in different countries within some centuries and demonstrated that baroque and classic styles are competing, and the predominance of each of them has 50-year period. This S.Maslov's result about the 50-year periodicity of culture dynamics had been confirmed by V.Petrov, C.Martindale, V.Koshkin and their colleagues, using quantitative parameters about music, painting, literature (see review in [3]). All results mentioned showed, that "culture curves" correlate with economical Kondratiev's periodicities. What is the deep reason of synchronic oscillations of economic and cultural manifestations in different countries? From one point of view it seems that some external influence is governing. Is it possible that it is just Solar periodicity? To my opinion it is not verisimilar, because eleven years period cannot explain 50-year periodicity during many centuries: the difference between  $4 \times 11$  and 50 seems to be too great, even taking into account that 50-year periodicity is an average (statistically obtained) value. The other explanation is based at the assumption of competition of paradigms in preferences of societies [4,5]. But at any case the fact of long period (50-years) changes of a lot of manifestations of the humankind had been confirmed reliably.

Maslov's paper presented the short remark (among others), being of extreme importance. He revealed statistically that the "culture curve" is somewhat ahead comparing the economical one. These few words written thirty years ago had been the act of scientific courage. In our work [6] we were able to show that the "economic waves" are at least not ahead the "mentality waves". We showed that the agreement of economic and culture curves

appears to be better if one shift just economic curve forward for 5 years, but equivalent shift backwards leaves the same measure of fitness (just 5 year had been chosen for the quantization of time in our research concerning evolution of extroversive and introversive motives of poets of Russia within one and a half of century [4-6]).

Maslov's result contains the question, having the great philosophical sense: what is primary – the material life or the ideas? We understand now (in the circumstances of global crisis) that just the interaction of economy of societies and their psychological state is the moving force of any social events.

The economy is based at possibilities existing. The ideas are not so inertial, and being proposed, selected and then supported by societies, just ideas become governing instruments in politics and economy. The greatest economical revolutions had been initiated just by new ideas – from lever and wheel (with unknown authors) to personified ideas of Carnot, Watt, Faraday, Maxwell, Rutherford, Einstein, De Broglie, Bohr, Fermi, Shannon, and Wiener...

The political climate in all countries within a lot of centuries had been changed for many times, but the 50-year periodicity of economic and psyche preferences of societies appear to be preserving.

The differential equation had been proposed to describe any periodic behavior reflecting self-consisted competitions of opposite paradigms, with a feedback determined only by difference of occupation of two opposite states possible [4,5,7].

In the present paper the simple model of ideas influence on economy is proposed, taking in a mind that great ideas are the product of psychological state of populations.

Let us assume that the rate of some arbitrary (but important) economic index  $U$  is proportional to its level achieved to this moment:

$$dU/dt = gU \quad (1),$$

where  $g$  is a coefficient, which characterizes the “sensitivity” of the rate of economical level changes of the level achieved. This predetermines the exponential growth of parameter  $U$ , so called “progress” in some sense. Let us assume that this coefficient is influenced by to-day psychological state of a population. Let us use the strictly established fact that “culture” curve, being the reflection of psychological state, the mood of population, is the oscillating function of time. Let us assume that  $g = g_0 + m \sin f t$ , where  $m$  is the amplitude of “culture” (mental) influence,  $f$  is the circular frequency of oscillations  $f = 1/T$ .  $T$  is the period of oscillations (50 years for the case considered).  $g_0$  relates to the case when psychological contribution into the society's economic development is absent.

The equation (1) transforms to

$$d \ln U / dt = g_0 + m \sin f t \quad (2).$$

Solution of equation with starting conditions ( $t = 0, U = U_0$ ) is as following

$$\ln U = g_0 t - (m/f) \cos f t + \ln U_0 \quad (3)$$

The zeros of the function (2) reflect extremums of the function (3). The main values of  $t_{ext}$ , representing the points of minimum and maximum of economical success, are following

$$t_{ext} = (T/2\pi) \arcsin (-g_0/m) \pm n\pi \quad (4),$$

where  $n$  is an integral number.

It is clear that at  $g_0 = 0$  culture and economic curves extremums in this model are shifted one from other for the constant value  $\pi/2$ . But real curves (see [1, 6] are almost coinciding. May be it reflects the half of people generation time delay of usage of mental changes of paradigms to the practical economy or anything else, I do not know. But to take this fact into account let us move the curve  $\ln U$  for  $\pi/2$  and then analyze the actual shifts of  $t_{ext}$  comparing to the points of extremums on the mental (cultural) curve. It is clear that at  $g_0/m \geq 1$  real roots for equation  $g_0 + m \sin f t = 0$  are absent, thus mental influence on the economy is absent and economy is growing unrestrainedly. But we know that economy as it is shows the oscillating behavior. If our consideration is at least qualitatively right we have to conclude that  $|g_0/m| < 1$ , thus the mental influence on the economic life is rather decisive. One of families of roots  $g_0 + m \sin f t = 0$  describes just the lead of mental curve comparing economic one. This is just the Maslov's result. That is why I make bold to say that "Consciousness is determining existence". Without any clerical sense, of course. Let me emphasize that nowadays global economical crisis shows clearly and tragically that just the tight interconnection of populations moods and societies prosperity. Everyone of us know that our personal prosperity determines our mood. But the contrary assertion is right as well and seems to more important for the humanity as a whole. By the way more detailed analysis of this naive model leads to some curious conclusions else. It appears that preserving general (50 year, for instance) period of mental changes as primary one, the economical curve receives some new features: the distance between maximum and minimum have now two possible variants: one is shorter and other is longer that the origin mental period. It seems more detailed measurements of social psyche dynamics (now and in the nearest past) can be used to predict the dynamics of global economy. Really not only long waves in economy can be considered at the same base. G.Soros analysis of the dynamics of financial markets shows the oscillating behavior [8]. I'm sure that the psychological component is presenting in mechanisms of financial alchemy.

It seems we may propose the definite answer to the question: what is primary: cognition or existing? It is cognition. The detailed mathematical, computational, and historic and philosophical analysis will be provided.

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