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Sergii Gasanov
Ph. D. (Economics), Professor, Honored Economist of Ukraine, SESE "The Academy of Financial Management", Kyiv, Ukraine, sgasanov@ukr.net

UNCERTAINTY IN ECONOMICS AND THE ECONOMY OF UNCERTAINTY

Abstract. Uncertainty is a complex and "multilayered" object of multidisciplinary research. However, such concepts as "fundamental uncertainty", "ambiguity", "probability" and "risk" are common and universal. For a long time in economic theory, the problem of uncertainty remained, as it were, "behind the scenes", its presence was rather implied than precisely formulated and served as some kind of "obscure background", the meaning of which could "appear on the screen" only under certain circumstances, but from which researchers were accustomed to abstracting. The appearance of F. Knight's book "Risk, Uncertainty and Profit" changed the tradition of abstracting from the uncertainty factor. One of the significant characteristics of neoclassical theory is the neglect of strong types of uncertainty, in particular fundamental uncertainty. The problem of uncertainty is one of the central issues in the Keynesian, post-Keynesian, and institutional areas of economic theory. A deep institutional crisis is the main feature of the current state of the Ukrainian economy and the system of public administration. Now, the conditions of fundamental institutional uncertainty dominate in the national economy. Fundamental institutional uncertainty is the critical level of uncertainty when both permanent "failures" and the chronic institutional "incompetence" of the state, as well as special, different from the classical situation "failures" of market mechanisms of coordination, take place, and the national economic system actually functions as quasi-market. The economic behavior of both the state and business entities in such conditions lose their signs of rationality; economic policy, including fiscal and monetary policies, are mostly unpredictable. The consequences of fundamental institutional uncertainty are the transaction costs of a particular type – "transaction costs of alternative coordination", which are necessary for the temporary maintenance of the economic system from disintegration.

Keywords: uncertainty, risk, fundamental institutional uncertainty, transaction costs of alternative coordination.

JEL classification: D81, E02, E12, E13.

С. С. Гасанов
кандидат економічних наук, професор, заслужений економіст України, директор Науково-дослідного фінансового інституту ДННУ "Академія фінансового управління", Київ, Україна, sgasanov@ukr.net

НЕВИЗНАЧЕНІСТЬ В ЕКОНОМІЧНІЙ НАУЦІ ТА ЕКОНОМІКА НЕВИЗНАЧЕНОСТІ

Анотація. У статті розглянуто питання невизначеності – складного й багатошарового об'єкта міждисциплінарних досліджень. Однак такі поняття, як "фундаментальна невизначеність", "неоднозначність", "імовірність" і "ризик" є загальними й універсальними. Одна з істотних характеристик неокласичної теорії – зневага сильними типами невизначеності й, зокрема, фундаментальною інституціональною невизначеністю. Проблема невизначеності є однією з центральних у кейнсіанській, посткейнсіанській та інституціональній сферах економічної теорії. Нині в національній економіці домінують умови фундаментальної інституціональної невизначеності. Фундаментальна інституціональна невизначеність – це критичний рівень невизначеності, за якого спостерігаються як перманентні "провали" ринку, так і хронічна інституційна "неспроможність" держави, а також особлива, відмінна від класичної, ситуація "провалів" ринкових механізмів координації, коли національна економічна система фактично функціонує як квазіринкова. Економічна поведінка як держави, так і суб'єктів господарювання в таких умовах втрачає ознаки раціональності; економічна політика, включаючи фіскальну і монетарну політику, переважно малопередбачувана. Наслідками фундаментальної інституціональної невизначеності слід вважати трансакційні витрати специфічного типу – "трансакційні витрати альтернативної координації", які необхідні для забезпечення тимчасової підтримки економічної системи для уникнення розпаду.

Ключові слова: невизначеність, ризик, фундаментальна інституціональна невизначеність, трансакційні витрати альтернативної координації.

Літ. 18.

С. С. Гасанов
кандидат экономических наук, профессор, заслуженный экономист Украины, директор Научно-исследовательского финансового института ГУНУ "Академия финансового управления", Киев, Украина

НЕОПРЕДЕЛЕННОСТЬ В ЭКОНОМИЧЕСКОЙ НАУКЕ И ЭКОНОМИКА НЕОПРЕДЕЛЕННОСТИ

Аннотация. В статье рассмотрены вопросы неопределенности – сложного и многослойного объекта междисциплинарных исследований. Однако такие понятия, как "фундаментальная неопределенность", "неоднозначность", "вероятность" и "риск" являются общими и универсальными. Одна из существенных характеристик неоклассической теории – пренебрежение сильными типами неопределенности и, в частности, фундаментальной институциональной неопределенностью. Проблема неопределенности является одной из центральных в кейнсианской, посткейнсианской и институциональной сферах экономической теории. Сейчас в национальной экономике доминируют условия фундаментальной институциональной неопределенности. Фундаментальная институциональная неопределенность – это критический уровень неопределенности, при котором наблюдаются как перманентные "провалы" рынка, так и хроническая институциональная "несостоятельность" государства, а также особая, отличная от классической, ситуация "провалов" рыночных механизмов координации, когда национальная экономическая система фактически функционирует как квазирыночная. Экономическое поведение как государства, так и хозяйствующих субъектов в таких условиях теряет признаки рациональности; экономическая политика, включая фискальную и монетарную политику, в основном малопредсказуема. Последствиями фундаментальной институциональной неопределенности следует считать трансакционные из-

держки специфического типа – “трансакционные издержки альтернативной координации”, которые необходимы для временной поддержки экономической системы во избежание распада.

Ключевые слова: неопределенность, риск, фундаментальная институциональная неопределенность, транзакционные издержки альтернативной координации.

The modern world is, figuratively speaking, the “ocean” of uncertainty, in which certainties are rather individual islands, constantly emerging and disappearing in turbulent waves of economic, political, social, technological, institutional, structural, and many other changes. These changes have sharply accelerated over the past two centuries. The dynamics of changes and the “scope” of uncertainty are interrelated. The speed of change is higher, while the predictability of tomorrow is less. Wars, revolutions, world economic and financial crises, the collapse of empires and scientific discoveries – all these events have occurred and continue to occur quite unexpectedly and are not predictable for most people.

At the same time, each person to some extent constantly deals with uncertainty, which concerns both his own plans and actions and the plans and actions of other people with whom he enters into any relationship. The desire of people to make their life more predictable and orderly, to reduce the degree of external uncertainty, and, consequently, external threats, led to the creation and development of numerous and diverse institutions in the form of customs, rules, norms of behavior, and laws.

As D. North (1995) noted, “institutions are formed to reduce the uncertainty in human exchange” [1, p. 18]. In our opinion, it should be clarified: “Institutions are formed to reduce the uncertainty in relations among people, including the exchange among them”. In fact, the socialization and organization of human activity is its institutionalization. Since its inception, economics has dealt with an already institutionalized object of study.

However, this fact is not directly recognized by supporters of methodological individualism (primarily within the framework of the “mainstream”). G. M. Hodgson (2007) in his article “Meanings of Methodological Individualism” notes the ambiguity of this term [2]. A review of institutional criticism of methodological individualism and rational choice in neoclassical theory is contained in the article by D. J. Kjosavik [3].

Uncertainty is a complex and “multilayered” object of multidisciplinary research. However, such concepts as “fundamental uncertainty”, “ambiguity”, “probability” and “risk” are common and universal. Silva Marzetti Dall’Aste Brandolini and Roberto Scazzieri (2011) distinguish four areas of research related to the uncertainty problem: 1) philosophical research into rational decision-making; 2) artificial intelligence; 3) decision theory and statistics; 4) economic theory [4, p. XV].

The problem of uncertainty has its long-time and complex history in economic theory. However, this history cannot be called clearly expressed, in contrast, for example, to the studies of value, capital, profit or money. Representatives of classical political economy sought to discover objective economic laws that govern the production and exchange of goods, the distribution of income and the accumulation of wealth. The discovery of such laws should reduce the main uncertainty associated with unpredictable price movements.

As L. Mises wrote, political economy remained a science about the economic aspects of human activity, the theory of wealth and selfishness until the end of the 19th century. Only subjective economic theory transformed the theory of market prices into a general theory of human choice. "The general theory of choice and preference goes far beyond the horizon which encompassed the scope of economic problems as circumscribed by the economists from Cantillon, Hume, and Adam Smith down to John Stuart Mill. It is much more than merely a theory of the "economic side" of human endeavors and of man's striving for commodities and an improvement in his material well-being. It is the science of every kind of human action. Choosing determines all human decisions" [5, p. 3].

For a long time in economic theory, the problem of uncertainty remained, as it were, "behind the scenes", its presence was rather implied than precisely formulated and served as some kind of "obscure background", the meaning of which could "appear on the screen" only under certain circumstances, but from which researchers were accustomed to abstracting. J. S. Mill spoke of circumstances that do not fall into the competence of economic science as *disturbing causes.* "These circumstances have been called disturbing causes. And here only it is that an element of uncertainty enters into the process—an uncertainty inherent in the nature of these complex phenomena, and arising from the impossibility of being quite sure that all the circumstances of the particular case are known to us sufficiently in detail, and that our attention is not unduly diverted from any of them. This constitutes the only uncertainty of Political Economy…" [6, p. 105-106].

The appearance in 1921 of F. Knight's book "Risk, Uncertainty and Profit" changed the tradition of abstracting from the uncertainty factor. F. Knight can be considered the founder of research on uncertainty in economic theory. He noted: "The essence of the situation is action according to opinion, of greater or less foundation and value, neither entire ignorance nor complete and perfect information, but partial knowledge. If we are to understand the workings of the economic system we must examine the meaning and significance of uncertainty; and to this end some inquiry into the nature and function of knowledge itself is necessary" [7, p. 199].

F. Knight distinguishes three important points of his previous analysis: 1) it was based on the psychology of the individual that underlies the valuation of goods; 2) the estimates and distribution are carried out under highly simplified conditions of perfect competition in the absence of any disturbing influences; 3) the main among the simplifications of reality is the assumption of practical omniscience inherent in each participant of the competitive system [7, p. 197]. At the same time, he notes that the problem of uncertainty and risk in economic science as a whole is not entirely new. Although Knight does not write about this, the works by W. Petty "Treatise of Taxes" (1662), "Verbum Sapienti" (1664), "The Political Anatomy of Ireland" (1672), and "Political Arithmetic" (1676) are the first scientific and most general and real attempts to reduce fiscal uncertainty and fiscal risks [8]. W. Petty drew attention to the dangers and negative consequences of "hidden taxation" for the population and the economy as a whole due to the depreciation of money caused by unexpected fluctuations in the exchange rate or inflationary policies of the state itself, monopoly taxes, excessive taxation of the population as a result of the increase in the number of "overpaid" public posts and the number of low-skilled civil servants. Ultimately, W. Petty first formulated a general position on the need for a rational economic policy that combines the goals of the development of the national economy, its structural adaptation to the conditions of external markets and the goals of public finance sanitation.

A. Smith in Chapters IX and X of the "Wealth of Nations" explores the reasons for the differentiation of wages and profits under various applications of labor and capital [9]. Risk is seen by him as a factor that can temporarily affect a higher level of return on investment. "In all the different employments of stock, the ordinary rate of profit varies more or less with the certainty or uncertainty of the returns". "The ordinary rate of profit always rises more or less with the risk. It does not, however, seem to rise in proportion to it, or so as to compensate it completely". "To compensate it completely, the common returns ought, over and above the ordinary profits of stock, not only to make up for all occasional losses, but to afford a surplus profit to the adventurers of the same nature with the profit of insurers" [9, p. 91].

F. Knight grouped the previous studies of risk and uncertainty into three areas: a) Insurance; b) Speculation; (c) Entrepreneurship. According to Knight "English economics has been too exclusively occupied with long-time tendencies or with "static" economics to give adequate attention to this problem" [7, p. 200]. F. Knight marked measured uncertainty as "risk" and immeasurable uncertainty – as "uncertainty" itself. The provision that imperfect competition is a consequence of risk and uncertainty was in fact first formulated so fully and conclusively in the concept of F. Knight.

It is noteworthy that "A Treatise of Probability" by J. M. Keynes [10] was published, like F. Knight's book "Risk, Uncertainty and Profit", in the same year of 1921. Three years later, J. Commons' book "Legal Foundations of Capitalism" was released [11].

J. Commons (1931) made a distinction between the initial unit of analysis of economists-classics, hedonic or subjective economists and institutionalists [12]. For economists-classics, hedonic or subjective economists it is a commodity (in terms of production and, accordingly, consumption). For institutionalists, this is a unit of activity or a transaction between participants. Transactions are not an "exchange of goods", but the alienation and acquisition by individuals of the rights of property and freedom created by society. The rules of these transactions should be discussed among the interested parties, established and recognized collectively before the very beginning of the process of production or exchange of goods. "If bargaining transactions are the units of investigation then the trend is towards the equality of opportunity, the fair competition, the equality of bargaining power, and the due process of law of the philosophy of liberalism and regulated capitalism. But there may be all degrees of combination, for the three kinds of transactions are interdependent and variable in a world of collective action and perpetual change, which is the uncertain future world of institutional economics" [12, p. 657].

According to Hodgson (2000), Colander, Holt and Rosser (2007), as well as Dequech (2007), one of the significant characteristics of neoclassical theory is the neglect of strong types of uncertainty, in particular fundamental uncertainty [13, 14, 15]. The problem of uncertainty is one of the central issues in the Keynesian, post-Keynesian, and institutional areas of economic theory. In a sense, it even serves as a kind of bridge connecting both directions, although each of them has its own "shores". Fernando Ferrari-Filho and Octavio Augusto Camargo Conceição note that the post-Keynesian and institutionalist theories try to answer the following questions: How do economic agents make rational decisions? How do they form expectations? Why do they retain (or decide not to retain) money? Can the institutional environment influence economic decisions? If so, in what way? The answers to these questions lie in the concept of uncertainty linking the two schools of thought [16, p. 579-580].

The degree of risk is related to the probability of occurrence of events or circumstances that may lead to either income in the sizes smaller than expected, or to losses, or to monetary and material losses, etc. In any case, estimates of the "outgoing" and "incoming" cash flows, the level of profitability, the mass and the rate of expected profit are at the heart of decisions made by investors, entrepreneurs, owners of production factors. A high degree of risk can result in either high profit or large losses and even bankruptcy. The main criterion for the degree of uncertainty in economic theory is the time period of analysis. It is generally believed that in the short term in a market economy, "pure equilibrium" is the exception rather than the rule. And, conversely, in the long run, market forces of self-regulation "do not allow" chronic disequilibrium. However, these statements on closer examination can be severely criticized. As Keynes wrote, "but this long run is a misleading guide to current affairs. In the long run we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is long past the ocean is flat again" [17, p. 80]. In "The General Theory of Employment" Keynes noted that classical economic theory "might work very well in a world in which economic goods were necessarily consumed within a short interval of their being produced. But it requires, I suggest, considerable amendment if it is to be applied to a world in which the accumulation of wealth for an indefinitely postponed future is an important factor; and the greater the proportionate part played by such wealth-accumulation, the more essential does such amendment become" [18, p. 213].

The uncertainty increases with the time period of economic analysis. Information about possible risks is minimal, therefore, the risks themselves are huge. If imperfect competition is a consequence of risk and uncertainty, imperfect competition dominates and is the rule in the long run. This means that the thesis of equilibrium, which is immanent in the market system in the long run, is false. Economic reality is an instant. Tomorrow it will not be the same as today or yesterday. Changes in the economy occur constantly – sometimes very quickly and sharply, sometimes – gradually and slowly, but – all the time. We cannot travel by time machine to the future for twenty or ten years, or even for one year or six months, and assess the future state of the economy as "equilibrium" or "nonequilibrium". But we can use long series of statistical data describing the state of the economy in the past – close and far enough. Economic change is a permanent process. The connecting lines between the past, present and future states of the economy can be identified through theoretical abstractions. However, the limits of the explanatory-cognitive abilities of such abstractions are determined by the degree of uncertainty, which increases along with the scales of the time period chosen for analysis, estimation or forecasting. Taking into account the differences between short, medium and long periods in the past, present and future, the usefulness of lengthy disputes about the absolute and relative advantages or disadvantages of neoclassical, mainstream, orthodox, and heterodox economics is called into question. In this situation, the only possible approach, in our opinion, is in the formula "to each his own".

A deep institutional crisis is the main feature of the current state of the Ukrainian economy and the system of public administration. Now, the conditions of fundamental institutional uncertainty dominate in Ukraine.

We understand fundamental institutional uncertainty as the critical level of uncertainty when both permanent "failures" and the chronic institutional "incompetence" of the state, as well as special, different from the classical situation "failures" of market mechanisms of coordination, take place, and the national economic system actually functions as quasi-market. The economic behavior of both the state and business entities in such conditions lose their signs of rationality; economic policy, including fiscal and monetary policies, are mostly unpredictable; internal political cycles are transformed into determining factors of economic fluctuations, the amplitude of which increases in proportion to the frequency and unexpectedness of political shocks; social, economic, public, and personal distrust in the actions of both the legislative and executive authorities is deepened, even in cases when relatively justified and rational decisions are taken; political and fiscal opportunism is intensifying, and in its essence denies the clear rules and mechanisms of constitutionally organized and democratic public choice; the system of public administration loses its institutional capacity; the constitutional principles of independence and division of authorities and the responsibilities of the legislative, executive and judicial branches of power are replaced by the principles of informal hierarchy and personal dependence. Eventually, the state and the national economy lose features constitutionally organized and acquire real features of oligarchically regulated and controlled with a significant degree of external political and economic dependence.

The consequences of fundamental institutional uncertainty are:

- the transaction costs of a particular type – "transaction costs of alternative coordination", which are necessary for the temporary maintenance of any system from disintegration. These expenditures are approaching the transformational costs of the transition period of the 1990s, but do not carry with them any prospects for renewal or modernization, but, on the contrary, they suppress the economic activity of the private sector, preserve and intensify economic inefficiency, social stratification, mass poverty, and public pessimism;
- the actual refusal to justify and consistently implement the national consensus model of economic growth and the formation of a social market economy in the special conditions of the "buffer" country;
- irrational behavior of the state in the sphere of finance and attempts to overcome institutional failures by the state, and in fact – by "manual" interference in the economy;
- the impossibility of making rational current and long-term investment decisions by business entities;
- the strengthening of the special functions of a "new type" of bureaucracy that comes from the environment of "professional reform activists" and, by speculating with the slogans of reforms, establishes unwritten rules and engenders corruption;
- attempts by oligarchic groups to privatize the state for approving special rules that are beneficial only to these groups;
- high barriers to free competition and the strengthening of trends in the monopolization of both state power and the economy;

- loss of citizens' trust in the state and attempts to avoid even rational formal rules;
- the dynamic outflow of capital, especially intellectual and labor abroad;
- adverse conditions for foreign investment, as well as for internal and external borrowing, to service the public debt on better terms;
- increased demand for foreign currency as a means of "insurance" against the unexpected actions by the state;
- increased risks of entrepreneurial activity and as a consequence – "contribution" to price increases (risk premium);
- the growth of mass poverty, unreasonable social, income, property differentiation;
- search for citizens' protection of individual rights, property rights, etc., outside the national judicial system;
- erosion of democratic principles of organization and functioning of the state, loss of public confidence in the institution of democratic free elections;
- the inability of the state to fulfill its constitutional functions, the threat of dictatorship.

Institutional certainty is a condition for the rationalization of economic behavior of both economic entities and the state. Even the effects of useful measures of deregulation, which have been implemented in Ukraine in recent years, are being "extinguished" by the prevailing environment of general institutional uncertainty and the dysfunctionality of many macro-management decisions that daily surround real business activities. There is a paradoxical situation: deregulatory economic and political decisions exist mainly by themselves and seem to support small and medium-sized businesses, but this is a kind of "virtual" support that is more calculated for external rating effects. In real life, at the micro level, deregulation impulses have little effect on the overall climate of entrepreneurial activity.

Institutional uncertainty destroys the foundations of economic calculation, the possibility of assessing and selecting alternatives, financial forecasting and planning, making rational decisions both at the micro level of firms, and at the macro level of fiscal, monetary and structural policies. Institutional uncertainty increases the risks of economic disorganization, and economic policy loses its system characteristics and turns into a process of reflex response to permanent internal and external shocks.

It is impossible to successfully organize and complete any of the relatively independent structural reforms without prior authorization of the general fundamental constitutional issues of creating and providing real democracy and on this basis – clearly delineated and balanced rights and responsibilities of central and local governments to citizens.

The necessary prerequisites for structural reforms in the circumstances of institutional uncertainty and financial instability are:

- a conceptual justification of the priority directions of structural reforms in the form of a clearly articulated "orderly-sequential" set of goals and corresponding functions that the state must fulfill at the same time;
- the implementation of a systemic economic policy aimed at increasing the role of the mechanism of internal market coordination and structurally adapted to the external environment of the world economy, given the absolute and relative advantages of the national economy;
- functioning of the state as the most important vehicle of the goals and instruments of structural policy, the spokesman and guarantor of the realization of national rather than group interests. At the same time, the state should take into account the need to significantly reduce its role in the form that has developed in the "pre-transformation" economy, to promote necessary structural changes, and support them with coordinated measures of fiscal and monetary policies;
- substantiation of the goals and used instruments of structural policy in each individual case, based on the potential of a specific institutional sector of the economy, the fiscal capacity of the state, the multi-vector impacts of political parties, social groups, institutions, organizations, etc.

In the political economy context, structural changes of the economy are above all its structural-institutional changes. However, structural reforms similar by their nature are successfully completed in certain countries, while others turn into a long simulation process. Overcoming the institutional uncertainty and financial instability is essential to the successful implementation of Ukrainian structural reforms. Institutional changes in the structure of economic activity are increasingly associated not with a conflict but with a compromise of economic interests, a factor of confidence among business entities, as well as their relations with state and property rights observance. Economic growth in developed countries is mostly provided by state support of innovations and structural reforms, which enhance efficient use of public expenditures and synergy effects from creative combinations of financial, material and intellectual resources. Long-term stagnation, economic fluctuations and shocks of the Ukrainian economy are the consequences of permanent institutional state disability to ensure economic freedom, competitive economic framework and the protection of human and property rights. The trend of "a new privatization of a state" and usage of its facilities for private sector exploitation is a noticeable tendency in the modern context. The efforts should be concentrated on a faster implementation of an extensive institutional network of sustainable interconnections and rules that would cement the economic system and shape the institutional framework of stability, giving it more certain and relatively predictable essence. That is, in the author's view, the mission of the structural policy under modern transitive conditions. It is a special structural policy, which by its nature is mainly structural-institutional rather than structural-sectoral, structural-regional or structural-functional, as it is typical for a "normalized", "fixed" and "standardized" market economy. Under institutional uncertainty and market coordination mechanisms conflict with oligarchic group controlled mechanisms of governance, there arises a threat of involving structural reforms into centralized decisions and measures aimed at implementing specific group interests of political and economic power informal centers.

References

1. North, D. (1995). The New Institutional Economics and Third World Development. In J. Harriss, J. Hunter & C. M. Lewis (Eds.). *The New Institutional Economics and Third World Development*. London: Routledge.

2. Hodgson, G. M. (2007). Meanings of methodological individualism. *Journal of Economic Methodology*, Vol. 14, Iss. 2, 2011–226.

3. Kjosavik, D. J. (2003). Methodological Individualism and Rational Choice in Neoclassical Economics: A Review of Institutionalist Critique. *Forum for Development Studies*, Vol. 30, Iss. 2, 205–245.

4. Brandolini, S. M. Dall'Aste, Scazzieri, R. (Eds.). (2011). *Fundamental Uncertainty. Rationality and Plausible Reasoning*. Basingstoke, Hampshire; New York: Palgrave Macmillan.

5. Mises, L. (1998). *Human Action. A Treatise on Economics*. Ludwig von Mises Institute. Auburn, Alabama.

6. Mill, J. S. (2000). On the Definition of Political Economy; and on the Method of Investigation Proper to It. In *Essays on Some Unsettled Questions of Political Economy by John Stuart Mill*. (2nd ed.). Batoche Books. Kitchener. Retrieved from https://socialsciences.mcmaster.ca/econ/ugcm/3ll3/mill/Questions.pdf.

7. Knight, F. H. (1921). *Risk, Uncertainty and Profit*. Boston; New York: Houghton Mifflin Company.

8. Petty, W. (1899). *The Economic Writings of Sir William Petty, together with The Observations upon Bills of Mortality, more probably by Captain John Graunt*. (Vols. 1–2). Cambridge University Press. Retrieved from http://oll.libertyfund.org/titles/1677.

9. Smith, A. (2007). *An Inquiry into the Nature and Causes of the Wealth of Nations*. MetaLibri Digital Library. Retrieved from http://metalibri.incubadora.fapesp.br.

10. Keynes, J. M. (1921). *A Treatise of Probability*. London: Macmillan and Co., Ltd.

11. Commons, J. R. (1924). *Legal Foundations of Capitalism*. New York: The Macmillan Company.

12. Commons, J. R. (1931). Institutional Economics. *American Economic Review*, 21, 648–657.

13. Hodgson, G. M. (2000). *Evolution and Institutions: On Evolutionary Economics and the Evolution of Economics*. Cheltenham, U.K.: Edward Elgar.

14. Colander, D., Holt, R. P. F. & Rosser, J. B. (2007). Live and dead issues in the methodology of economics. *Journal of Post Keynesian Economics*, Vol. 30, Iss. 2, 303–312.

15. Dequech, D. (2007). Neoclassical, mainstream, orthodox, and heterodox economics. *Journal of Post Keynesian Economics*, Vol. 30, Iss. 2, 279–302.

16. Ferrari-Filho F., Conceição O. (2005). The Concept of Uncertainty in Post Keynesian Theory and in Institutional Economics. *Journal of Economic Issues*, Vol. 39, Iss. 3, 579–594.

17. Keynes, J. M. (1924). *A Tract on Monetary Reform*. London: Macmillan and Co., Ltd.

18. Keynes, J. M. (1937). The General Theory of Employment. *The Quarterly Journal of Economics*, Vol. 51, No. 2, 209–223.