

# **A New Theory of Economic Systems and Its Application to Economic Policy Studies**

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## **Introduction (1)**

- The aim of the presentation is to introduce the new theoretical and methodological approach to the analysis of social and economic systems of various level. This approach has been developed over the several years in Central Economics and Mathematics Institute of the Russian Academy of Sciences.
- The method was applied to analysis of the enterprises, strategic planning, corporate governance, and other systems. It can be applied to the Economic Policy studies.
- Wide sphere of application can be explained by this approach which is based on a new paradigm in the economic science recently offered by J.Kornai – a *system paradigm*.

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## Introduction (2)



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- “Economic theory experiences difficulties in explaining events occurring in the real world and in performing an analysis suitable for economic policy.” Lawson (2006)
- It seemed possible to build a single structure for economic science based on a neoclassical paradigm. Yet the latter has failed to accomplish the task.
- The development of the institutional-evolutionary theory has also demonstrated its evident narrow-mindedness, mostly in describing the dynamics of institutions and their relationships with agents.
- Kornai (2002) proposed a system paradigm as an alternative to both neoclassical and institutional-evolutionary mainstream.

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## Introduction (3)



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- An essential component of a system paradigm in economics should become a *unified theory of economic systems*, interpreting properties inherent by economic systems of various levels, nature, and scale.
- Arrow (1995) noted that biological analogies are more relevant for economic theory than generally accepted mechanical analogies. Hahn (1995) expressed the same opinion, but biological systems are significantly more system-like than mechanical ones.
- All this provokes the idea that, in the future, a systems perspective may become the mainstream in economic theory.

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## Introduction (4)



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- In this research, we develop system paradigm by Kornai and propose the basics of a new theory of economic systems are proposed as a fundamental synthetic field of economics.
- The theory proposes to unify the description of economic phenomena usually studied by various sections of economics: economic agents (legal entities and individuals), formal and informal institutions, economic processes, and projects.

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## Plan of the presentation



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1. System paradigm in economics
2. Basic typology of economic systems
3. Variative characteristics of economy
4. The core competences of systems of different types
5. State economic policy in Russia in the light of new economic systems theory

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## 1. System paradigm (1)

- The essence of a system paradigm is that the functioning of an economy, i.e., the realization of the processes of production, distribution, exchange, and consumption, is viewed through the prism of creation, interaction, transformation, and liquidation of *economic systems*.
- The principle of “methodological institutionalism,” basic to the neoclassical paradigm, and the principle of “methodological individualism,” basic to the institutional paradigm, gives way to the principle of “methodological systematics,” basic to a system paradigm.

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## System paradigm (2)

- As system we are considering are relatively steady in space and in time a part of the world surrounding us, they possess properties of external integrity and internal variety
- The enterprises, regions and countries are examples of economic systems. But it is possible to speak about systems and in relation to environments, institutions, processes, projects etc.
- All the economic systems under examination are “living” systems, meaning that the functioning of each of them is based on the activity of people as individuals, collectives, groups, and/or communities.
- Under the system paradigm, the character of natural functioning of an economic system is defined not so much by its scale as by its distinctive nature.

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## 2. Basic typology of economic systems Certainty/uncertainty of system boundaries



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Different systems have different degree of certainty of its boundaries.

- An enterprise, an individual, a country have, as a rule, fixed spatial boundaries and do not possess *a priori* a fixed life time (for enterprises, it is reflected in the notion of “ongoing concern”).
- Other systems, for instance, systems of institutional nature (such as the Civil Code treated together with the mechanisms of its enforcement), do not have certain boundaries either in time or space.
- On the other hand, projects, i.e., the aggregate of measures aimed at achieving a concrete goal (construction of a building, mastering of a new market, establishment of a company, publishing of a book), have, as a rule, well-defined boundaries in time and in space.
- Processes, for example, the process of lecture delivering, have no certain spatial boundaries and certain time duration.

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## Basic typology of economic systems.

### Coordinate illustration (1)



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- Let's set co-ordinates axes ( $p, q$ ) where the axis of abscisses reflects the degree of uncertainty of spatial border  $p(s)$  of the systems  $s$ , and axis of ordinates  $q$  reflect the degree of uncertainty of time borders  $q(s)$ . Every system  $s$  can be displayed in the form of a point ( $p(s), q(s)$ ) on this co-ordinate plane.
- $p = \infty$  is the case of full uncertainty of the spatial borders of the system,
- $p = -\infty$  is the case of full definiteness of the spatial borders of the system,
- $q = \infty$  is the case of full uncertainty of the time limits of the system,
- $q = -\infty$  is the case of full definiteness of the time limits of the system,
- $p = q = 0$  is the case of “normal” degree of definiteness of the time and spatial borders of the system (From the point of view of an observer).

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## Basic typology of economic systems. Coordinate illustration (2)



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In the proposed coordinates the set of economic system  $S$  could be divided into four subsets:

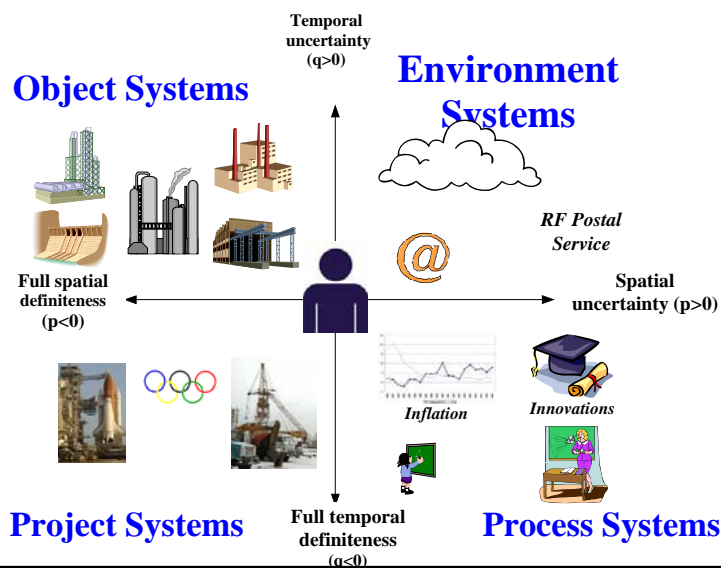
- 1) The set  $S_1$  including systems  $s$ , for which  $p(s) > 0$  and  $q(s) > 0$  (the system has uncertain spatial boundaries and an uncertain functioning time span);
- 2) The set  $S_2$  including systems  $s$ , for which  $p(s) > 0$  and  $q(s) < 0$  (the system has uncertain spatial boundaries and a more or less certain time span of functioning);
- 3) The set  $S_3$  including systems  $s$ , for which  $p(s) < 0$  and  $q(s) > 0$  (the system has more or less certain spatial boundaries and an uncertain functioning time span);
- 4) The set  $S_4$  including systems  $s$ , for which  $p(s) < 0$  and  $q(s) < 0$  (the system has more or less certain spatial boundaries and a more or less certain functioning time span).

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## Basic typology of economic systems. Examples



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Basic typology of economic systems depending on spatial and temporal characteristics (L – limited, U – unlimited)



Spatial localization	Duration	
	Limited (certain time period)	Unlimited (uncertain time period)
Limited (certain size)	<b>LL (S4) Project Systems</b>	<b>LU (S3) Object System</b>
Unlimited (uncertain size)	<b>UL (S2) Process Systems</b>	<b>UU (S1) Environment Systems</b>

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Basic typology of systems (applications): classification of types of products



- Typical products of activity of **object systems** are *the goods*.
- Typical products of activity of **environment systems** are *service*.
- Typical products of activity of **process systems** are *works*.
- Typical products of activity of **project systems** are *transformations* of economic systems.

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Basic typology of systems  
(applications): classification of types of  
organizational culture



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1. “Zeus culture” (an authoritarian culture) enhances the properties of an organization as an **object system**.
2. “Apollo culture” (a bureaucratic culture) enhances the properties of an organization as **process system**.
3. “Athenian culture” (project culture) enhances the properties of an organization as a **project system**.
4. “Dionysius culture” (a culture oriented to creating favorable conditions for participants in activities) maximizes the properties of an organization as **environment system**.

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4. Variative characteristics of the  
economy



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- The basic typology of economic systems is important not only for an in-depth understanding of their nature but also for the examination of their functions in the economy.
- The functions of systems belonging to the same type appear to have common properties, whereas the properties differ for systems belonging to different classes. In what terms the difference is investigated is not evident *a priori*.
- Therefore, prior to examining the characteristics of the functions of the basic system types in the economy, we will characterize, in general functional terms, the properties of standard economic processes (acts) of the production, distribution, exchange, and consumption of goods.

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Variative characteristics of the economy  
 Effect of Basic Economic Processes on  
 Variative Functions of Space and Time



Basic Economic Processes (acts)	Variative Functions of Basic Economic Processes (acts)	
	Homogeneity of Space:	Homogeneity of Time:
Production	Decreases	Increases
Distribution	Decreases	Decreases
Exchange	Increases	Decreases
Consumption	Increases	Increases

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5. Core competences of various types of economic systems



- Environments and processes are responsible for increasing space homogeneity,
- Objects and environments promote time homogeneity,
- Objects and projects diversify space, and
- Projects and processes support time differentiation.

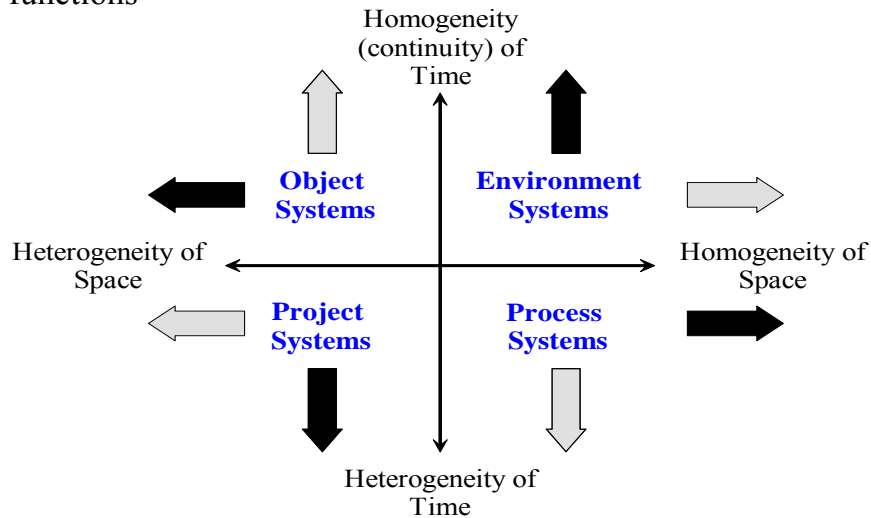
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## Core competences of various types of economic systems. Coordinate illustration



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Black arrows – basic functions, grey arrows - additional functions



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## Core competences of various types of economic systems (homogeneity/heterogeneity)



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The functioning of economic systems of different types changes these variety characteristics

- **Object systems** reduce uniformity of space and increase uniformity of time.
- **Environment systems** increase uniformity of spaces, and time.
- **Process systems** increase uniformity of space and reduce uniformity of time.
- At last, **project systems** reduce uniformity of both spaces, and time.

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## Core competences of various types of economic systems: missions



- Mission of **object systems** is *the organization of diverse elements in a single whole during regular production.*
- Mission of **environment systems** is *communications and coordination, creation of conditions for an exchange between various components of economy, including transactions.*
- Mission of **process systems** is *harmonization of activity and a condition of all economic systems.*
- Mission of **project systems** is *innovative transformation of the economy.*

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## 6. Economic policy of Russia government



### **General goals of Russian economic policy (desirable models of the economy):**

- The economy should be market-based;
- The economy should be effective;
- The economy should be competitive; and
- The economy should be innovative.

All the goals reflect partial purposes.

**The general goal: the economy should be harmonious!**

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## Economic policy: harmony of the economy



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The notion of harmony as “unity in diversity” used to conceptualize the world goes back to classical Greek precursors of modern science, i.e., Heraclitus, Plato, and Aristotle. In the Middle Ages, the concept of harmony was further developed by Leonardo da Vinci and later by Leibniz and many other scholars.

In economic science, the concept of harmony was considered in the works of Adam Smith, Richard Cantillon, and Francois Quesnay.

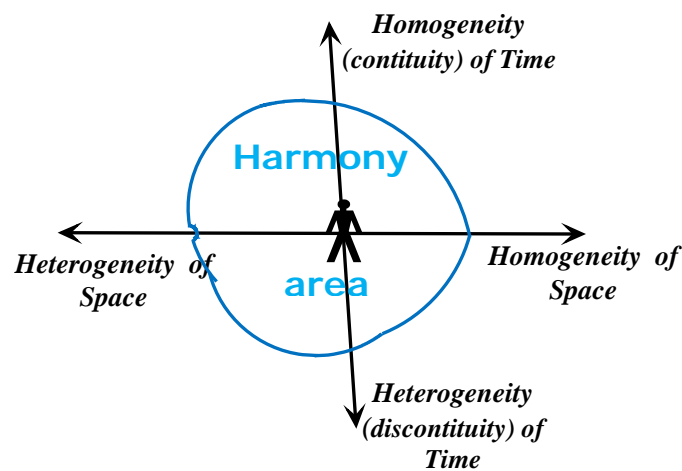
The term economic harmony was used in the titles of books by Henry Charles Cary, Claude Frédéric Bastiat, and Jean-Baptiste Say. In most cases, the concept of economic harmony was associated in literature with the *laissez-faire* principle and theories of spontaneous order.

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## Harmony area in variative coordinates



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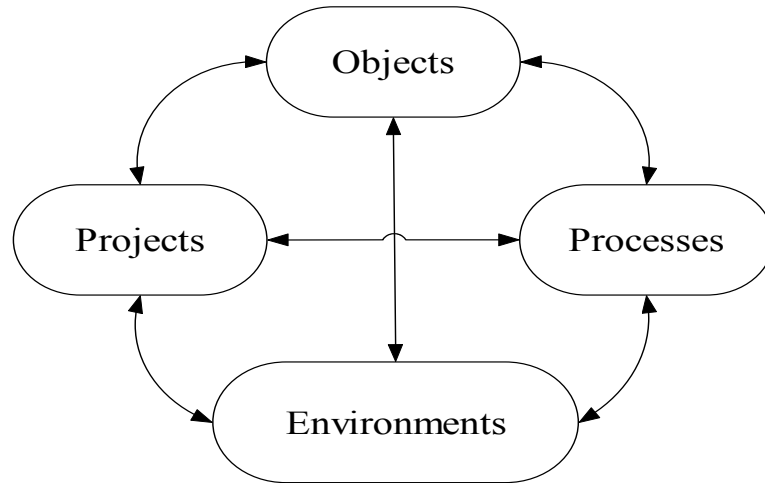


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## Relationship between four types of economic systems



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## Economic policy of Russia government in 2003 - 2008



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Type of system	Availability of systems of this type in the economy		Parameters of deficit or surplus level of systems of a given type
	Deficit	Surplus	
Object systems	Instability of economy	High transaction costs	Number of enterprises (to GDP or per person employed)
Project systems	Stagnation	Overheating	Investments into new construction, reconstruction, or retooling of enterprises (to GDP)
Environment systems	Self-sufficiency of the economy; high level of uncertainty of the economy	Narrowing opportunities for economic agents; limitation of their independence	Level of development of legal framework of the economy, transport, information, and energy infrastructure; level of independence of enterprises.
Process systems	Fragmentation of the economy	Bureaucratization	Size of administrative staff; money turnover rate; intensity of dissemination of innovations and new knowledge.

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## Economic policy of Russia government. Types of policy



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- An **object-oriented approach**: support for functioning and development of socioeconomic systems of the *object* type (enterprises, organizations, and complexes).
- An **environment-oriented approach**: support for functioning and development of *inter-object environments* (institutions and communication channels), promoting “the right” behavior of objects.
- A **project-oriented approach**: support and financing of *projects*.
- A **process-oriented approach**: support for *processes* of disseminating changes (innovations) between objects.

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## Economic policy of Russia government in 2003 - 2008



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### **Strategic goals in 2003 – 2008:**

- Doubling GDP within a decade.
- Russia’s embarking on the path of innovative development.
- Setting up “power vertical” institutions.
- Realization of four “national projects” in education, health services, housing construction, and agricultural production.

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## Urgent measures for economic policy in Russia



What is needed:

- A full-scale systematic effort to develop and implement a special section of the economic policy dedicated to the provision of parity of the economic systems of the four types described above.
- The organization of monitoring and regulation of variative characteristics of the economy (territorial, social, and temporal) are necessary for maintaining equilibrium between diversity and unification and between volatility and stability as properties of economic time.
- Certain costs that should be borne by the state budget. For this reason, a relevant federal authority, i.e., a kind of “equilibrium service,” should be established.
- It would be essential for economic systems of each type to obtain legitimate “citizenship rights” in the economy.

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## Examples of different types of countries. Mission of Russia



- **USA is project system;**
  - **Japan is object system;**
  - **China is process system;**
  - **Russia is environment system.**
- 
- *So, Russia is the environment country.* The huge territory, intermediate position between the East and the West, between archaic and modern cultures determine specificity of Russia in the international community. Development of Russia goes in both directions: to a modern society, on one side, and to archaic society, on other side.

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Thank you for your attention!