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**A MESO-LEVEL REPRESENTATION OF ECONOMIC SYSTEMS:
A THEORETICAL APPROACH**

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Some theoretical problems and methodology of meso-economic systems were analysed in this article. For this purpose, systems analysis, synergetic and homeostatic approaches, the basic principles of the theory of logical inference, and research operations were utilised. Meso-systems (including economic ones) were analysed as ways (methods) to reach the macro-goal (in the selected scale). The essence and structure of mezzo-economic systems were shortly discovered.

Keywords: meso-system; complex system

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1 Introduction

The need to research meso-economic systems as complex systems, directed to achieve macro-goals, lies on two planes. In the theoretical aspect, it has been determined that presently there is a shortage of researchers in this field. There is also still no accurate definition of meso-systems. Economics traditionally involve a micro-macro-division of analysis.

In the applied aspect, the urgency of this problem is caused by the need to balance the development of economic systems on different levels.

Meso-systems on different levels have been investigated by such economists as Kurt Dopfer *et al.* (2004), who declared a micro-meso-macro-approach to evolutionary economics; Elsner and Heinricha (2009), who argued that some ‘meso-’ (rather than ‘macro-’) level is the proper level of cultural emergence, diffusion and retention (within the framework of ‘evolution of cooperation’); Zezza and Llambí (2002), who clarified the “meso-economic” concept by defining it as comprising both the market mechanisms and administrative procedures through which policy decisions and market signals trickle down to the household level; and Kristjanson *et al.* (2005), who analysed the meso-level as a community level. However, there are still many gaps in the meso-economic systems theory.

The goal of this article is to represent a meso-level of macro-economic systems, analyse the main theoretical foundation of interdependent systems of meso-level analysis, which could provide a framework for future research and meso-system theory development.

The methodological basis of the research is formed in systems analysis, synergetic and homeostatic approaches, the basic principles of the theory of logical inference, and research operations.

2 The essence of meso-systems

One of the founders of general systems theory, L. Bertalanffy (1968), defined a “system” as a complex set of elements that interact. According to Gaines (1979), a system can be defined as anything we deem to be a system. In his opinion, this is the essence of the systems theory: determining whether an entity is a system is a necessary and sufficient criterion for defining a system.

In order to successfully define a system, one should distinguish between the ontological and epistemological aspects of the “system”. In an epistemological approach, a “system” should be seen as a tool to study the essence of complex phenomena or processes. Ontologically speaking, a system can be defined as a system based on the existence of the set of elements it is comprised of. It is therefore clear that one can use the knowledge of the inner workings of one system in order to explain another entity as a system.

A system can therefore be defined in more general terms as: a set of elements and components (with their inherent properties) that are combined under a goal (idea) and that create a new integral unit. This new integral unit is therefore new in essence or in quality.

The definition of a system’s goals is closely associated with the differences in performance criteria. The goal includes the determination of the final state of a system together with the desired intermediate states, which should be undertaken in the process of achieving the ultimate goal.

The goal in terms of its function, leads to relationships among the elements in the proposed system, which in turn provides the system with inherent properties. Once these relationships among elements of a system are systemised, it is possible to determine the system’s structure and quality.

The term “meso” refers to a system that is the intermediate link between micro- and macro-systems, and binds them.

According to a system approach and the logic of functioning of systems on various levels, macro-systems can be defined as in Figure 1 (Matkovskyy, 2010).

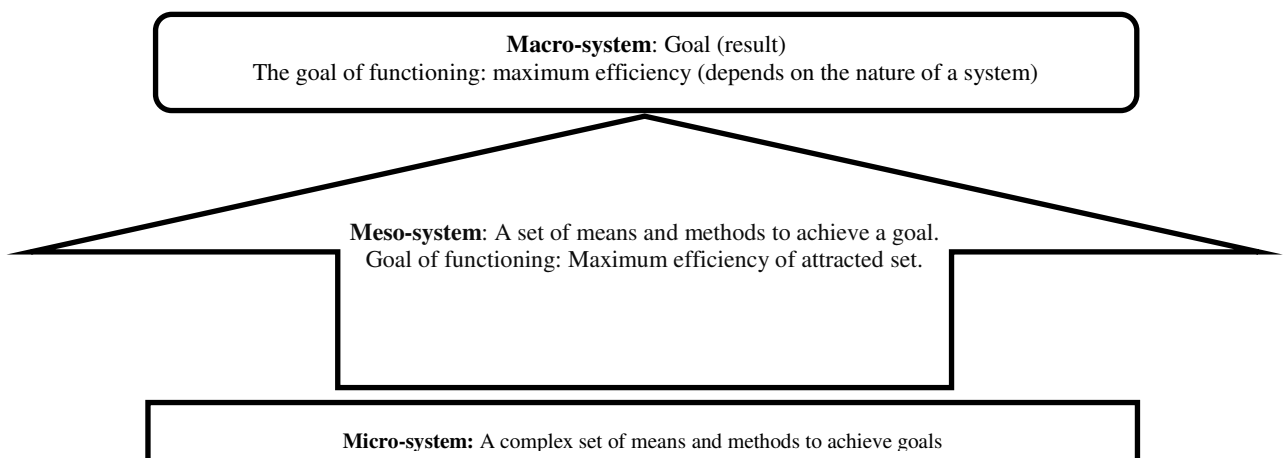


Figure 1. The structure of a macro-system of varying nature

The different levels in a system vary as the point of view changes. For example: if the European Union is the focus of the observer, then the union is regarded as the macro-system and the different countries would be regarded as the micro-system. The way in which these countries interact with each other within this union, can be regarded as the meso-system. However, when considering one of these countries as a macro-system, the different economic entities (firms, individuals etc.) can be regarded as the micro-system. In this case, the interaction between them can be regarded as the meso-system, thereby forming the sectoral and territorial structure of the economy.

Therefore, the category “meso-economic system” can be defined as a set of ways to achieve the ultimate goal of functioning of a macro-economic system in the frame of the selected scale.

In meso-economic systems one may distinguish various aspects, among others: legal, social and political ones. The legal aspect of meso-economic systems (a national economy is a macro-system) is the right of legislative bodies to approve regulations that define organisational forms of meso-systems and the territorial structure of a country. The social aspect of meso-economic systems reflects the process of formation and development of social strata. This aspect also includes the interaction among the different social groups (in terms of wealth) and how they evolve into these groups through a meso-economic system mechanism. This mechanism can be characterised by the way of distribution of national wealth. The political aspect of the meso-economic system refers to the identification of the impact that different subjects in the meso-economic system have on macro-policy.

3 Structural identification of meso-economic systems

System identification involves the determination of the structure and parameters of models. The structure of meso-systems is characterised by a multi-level hierarchy with self-similarity properties. During the evolutionary process of a meso-system, links among its elements are fixed. The decomposition of the structure of a meso-economic system allows the determination of a meso-system’s ‘primary’ elements or special relationships, which provides meso-system integrity (i.e. a specific relationship between cost and economic efficiency).

The structure of a meso-economic system determines the ability to predict its possible states. Prediction is usually possible through a well-known set of apprehended organisational forms of meso-systems.

The elements of a meso-system are those that are typical of relevant macro-systems and are organised in a certain way to achieve the macro-goal.

One of the features of economic systems, including meso-economic systems, is that their economic agents have the ability to act in terms of: understanding their own behaviour in terms of forming their goals; implementing these goals in the most profitable way; and reflecting on the result. Inactive elements of meso-economic systems are related to economic objects (such as equipment, technical systems, information systems, etc.).

Therefore, a meso-economic system can be represented by:

- a set of its elements (economic agents and economic objects) and their properties;
- structural links and relationships among economic agents and objects;
- the structure of goals; and
- changes in an environment and effects on impulses outside the meso-system.

Taking into account that a meso-economic system is an open system that interacts with other systems, a complex but extremely important issue is the identification of the robust boundaries of a meso-economic system. The boundaries of a meso-economic system that distinguish it from surrounding systems do not always coincide with specified organisational boundaries. In meso-economic systems, the boundaries are defined by the ways of achieving macro-economic efficiency. In addition, meso-economic systems may have the highest level of hierarchy, which is not directly subject to external control (the hierarchical paradox) and would be considered as the upper limit of the system.

In an analysis of meso-economic systems, there is the important aspect of the variability of their functions during the meso-system's 'life cycle'. At the same time, there is the priority of function over structure in a meso-economic system. In turn, the functions of meso-economic systems are derived from existing economic potential. Therefore, in analysing the macro-economic level, the rational definition of boundaries of the meso-system will be based on the limits of the available elements that are of dominant economic potential. The potential of the meso-economic system depends on the degree of organisation in this system, and its implementation provides the development of a system.

Each meso-economic system can exist in more than one state; each state is represented by a set of values. Only a number of these values are vitally important for the existence of the system. These values are usually measures of economic efficiency. The homeostasis of an economic system, like any other system, fixes these values and supports the existence of the system. There is systemic homeostasis, which retains the integrative property of a system, and partial homeostasis, within the context of certain system components. Therefore, an example of a violation in system homeostasis is the disappearance of certain structural elements of the organisation, territorial entities, territorial-administrative units, etc. The illustration of keeping system homeostasis with violations in partial homeostasis may be a partial reform of certain structural elements of the organisation, the reform of territorial organisation, improvement of some processes within the existing methods of manufacture etc.

In a meso-economic system some local interaction may result in an emergent macro or global behaviour, which is a nonlinear combination of these local behaviours. In the case when the structure of meso-economic system is designed with the “button-up” approach (integration of the elements and components) it is quite difficult to define how the local rules go together with macro-behaviour. When the structure of meso-economic system is designed with the “top-down” approach, it is hard to figure adequate local rules out of a desired global behaviour.

Based on the general structure of meso-economic systems, the type of macro-economic system and the dominant form of ownership in it, it is possible to determine the types of meso-economic systems. Meso-economic systems can be divided according to the nature of communication among elements and the borders of meso-economic systems.

The nature of communication among elements includes the following:

- meso-economic systems with dominant horizontal relations between/among elements (e.g.: flat organisations; agglomerations);
- meso-economic systems with dominant vertical relationships between/among elements (e.g.: “tall” companies; clusters); and
- meso-economic systems with mixed connections between/among elements (hybrid structures; agglomerative clusters).

Based on the borders of a meso-economic system, the system can be divided into:

- internal meso-economic systems (therefore the borders of a meso-economic system will not step outside of that macro-system); and
- cross-border meso-economic systems (borders of a meso-economic system will step outside of that macro-system).

4 Conclusion

Meso-economic systems are complex open systems with dynamic hierarchical self-similarity elements that reflect the complex ways in which macro-goals are achieved. The purpose of their operation is to obtain maximum efficiency from the engagement of their means and methods. Their efficient design will promote the rational use of the available economic potential of a macro-system, balance its development and minimise the risks of functioning.

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