

**Mesoeconomics and  
Complexity Economics:  
what is common and what is different?**

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# Motivation

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- Investigating the Meso level in Meso-economics (ME) is not regarded as necessary within the micro-macro dichotomy, especially by mainstream economists. These include *Thomas Shelling* – the Nobel Prize Winner and specialist in game-theory analysis; *Robert J. Barro* – the founder of New Classical Macroeconomics; *Jochen Runde* – from the University of Cambridge, UK and others.
- Complexity Economics (CE) is regarded as mostly "mere metaphor" (*Horgan, 1997; Poppy, 2013*), where the findings, rather than being surprising, just confirmed "already-observed facts" (*Rosser Jr, Barkley, 1999*).
- How do ME and CE meet the challenges facing modern economic science and what are they useful for?



# Outline

- Ontological factors of dissatisfaction with the traditional simple micro-macro dichotomy.
- Epistemological factors and new research paradigms.
- Complexity Economics (CE): the basic premises.
- Meso-economics (ME): some features of the approach.
- Commonalities of CE and ME.
- CE and ME: what is different.
- Conclusion and discussion.

# **Ontological factors:**

**dissatisfaction with the simple micro-macro dichotomy**

## **Neither complexity nor cyclicity is explained**

- The micro-macro dichotomy in economics does not take into account the growing complexity of the economy.
- Also, mainstream economics cannot predict and explain the causes of recurrent and increasing global crises.

## Crises and Structuring of Economics

- Microeconomics: 1870-1920s (before the Great Depression)
- Microeconomics+ Macroeconomics: 1930-1980s (before the energy crises of the 1970-80s)
- Microeconomics+ Macroeconomics+ Meso-economics and Complexity economics 1990 onwards (after the dot-com bubble and especially after the 2008 crisis)

# A lack of understanding - *why*?

- There is a lack of research on which mechanisms (process-tracking) generate observed effects (Libman, 2018). Not enough explanation of *why* certain economic phenomena occur, and the observed processes proceed in a certain way.
- The fact that the identification of mechanisms in principle requires the use of a qualitative approach.
- But the theoretical core of the mainstream was formed with an orientation toward the general principles of building knowledge in mathematised natural science – Leon Walras (1834-1910) attributed pure political economy to the physical and mathematical sciences.



# **Epistemological factors:**

## **new research paradigms**



# Reflections on the economy are also becoming more complicated: a new "episteme epoch" (M. Foucault)

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- A synergetic (self-organisational) paradigm has come from chemistry and physics. It takes into account the complexity, non-equilibrium, hierarchy and nonlinearity of the processes occurring.
- Development is understood as an irreversible process of evolution with successive changes in the hierarchy of structures and mechanisms of increasing complexity ("the Other Canon").



# New view of the economic world (B. Arthur)

The increasing complexity of economic reality and dissemination of new theoretical concepts have, together, contributed to the development of ME and CE.



# **Complexity Economics (CE):**

## **the basic premises**

# Roots of CE

- The approach of considering the economy from the perspective of complexity theory began to develop in the late 1980s as part of a wider study of complex adaptive systems conducted at the Santa Fe Institute, US. These studies were of an interdisciplinary nature and contributed to the penetration of complexity ideas into social science and economics.
- The term Complexity Economics was proposed by Brian W. Arthur who worked in the Santa Fe Institute in 1999 (Arthur, 1999).



# The basic CE prerequisites

- Not equilibrium but the nonequilibrium of economic processes.
- Not only diminishing but also increasing returns are equally included in the descriptive model of the economic system.
- Economic rules are not fixed. Economy is considered as a constantly evolving set of institutions, mechanisms and technological innovations.
- This view “gives us a world closer to that of political economy than neoclassical theory, a world that is organic, evolutionary, and historically contingent” (Arthur, 2013).

# Meso level in CE

- In CE a meso level between the micro and the macro becomes important. Because all changes are localised: “they appear in one part of the network or the stock market, possibly to diffuse from there. They operate typically at all scales — network events can involve just a few individual nodes or they can be felt right across the economy. But usually **they take place in between the micro and macro, so we can rightly call them meso-phenomena**” (Arthur, 2013).

# **Mesoeconomics (ME):**

**some features of the approach**



# Mesoeconomics in Heterodoxy

- The spread of the term *Mesoeconomics* dates from the 1980s. ME has become popular mostly among heterodox economists (Kruglova, 2017) and supporters of the systemic approach (Volynskii, 2017).
- The development of the meso-economic approach results from dissatisfaction with the restricted analytical possibilities of neoclassical mainstream economics with its postulates of equilibrium and rationality of economic agents.



# Meso level as an object for analysis

- The supporters of ME share the idea of self-organisation and believe that **self-organisation occurs mainly at the meso level**, because it is here that economic decisions are constituted and, above all, the properties of a "complex economy" are manifested.
- The meso level of the economy can be defined as **a set of ways to achieve the ultimate goals** of the macro-economic system (Matkovskyy, 2012)
- It is at the meso level that the endogenous mechanisms of economic growth and/or the main obstacles to its achievement, resulting **from the cooperation between micro-level economic actors**, are consolidated.

# Increasing returns and path dependence in ME

- The very fact of the consideration of the meso level assumes that there are increasing returns since, in the long-term dynamics, economic structures (institutional, spatial and the like) are established that ensure this effect in the economic system. Increasing returns are connected with the inclusion of an increasing number of economic agents in the scope of these structures, acquiring the necessary functional significance.

# **Commonalities**

## **of Meso-economics and Complexity Economics**

# Commonalities - 1

- The understanding of the economy **as a holistic phenomenon and its analysis from systemic positions**: the economy loses its basic properties in decomposition into its component parts and can function and develop structurally only through the interaction of its elements.
- Therefore, **from the behaviour of individual elements** - if the systems are emergent, and modern economic systems are just such (not additive) - **it is impossible to deduce the behaviour of the system as a whole.**

# Commonalities - 2

- The necessary interaction of elements develops according to certain rules (manifested in how these interactions are structured), and these rules are not static. They vary **in time, depend on the external environment and the conditions in which the economy functions, and depend on cultural, political and other contexts.**
- Unlike neoclassical economic theory, CE and ME imply that **not only market interactions**, but also other, for example, redistributive types (Zezza, Llambí, 2002, Dementiev, 2018) are developing in economies.

# Commonalities - 3

- **The attention to increasing returns, the cause of which are positive feedbacks in the economy** (self-enforcement effect). Such effects are observed in systems capable of self-organisation.
- Economy is regarded **as a self-organised complex system** that emerges as "order from chaos", not so much according to a plan or wishes, but as a result of adapting to the environment the created structures of production, using limited resources. The long-term existence and self-reproduction of these economic structures (actually forming the meso level) are a result of the effect of self-enforcement.

# Commonalities - 4

- The recognition of **the hierarchical nature of the economy**, because it is the effect of the self-organisation of any sufficiently complex system (Chernavsky, Kurdyumov, 2010. P. 97)

# **What is different between Mesoeconomics and Complexity Economics**



# Predictable or not predictable?

- In CE economies, because of the complex and dynamic character of their development, **become so unpredictable** that they are characterised as the space of "unknown unknowns", the space of continuous flow and unpredictability where there are no right answers but only emergent reactions exist (OECD, 2015).
- However, for ME the economy is the space of structured processes and dynamic structures. If we know them and understand the characteristics of how they work, it allows us to **foresee long-term trends (but maybe not short term fluctuations)**. Analytical instruments from heterodox economics (beyond mainstream) such as path dependence, cumulative causality, block-in effects, is evidence of this.

# Different focuses of analysis

- CE concentrates on the study of **the process of formation of structures**: how from the individual behaviour and interaction of many participants in economic activity the general regularities, patterns, templates of behaviour, and institutions are formed, and how these structures, in turn, affect the behaviour of economic entities. In short, in CE the spread of changes through interrelated behaviour is studied.
- ME considers **the changeable structures themselves**, the networks and the institutional space in which these changes arise, are structured and distributed. ME studies the "structured processes", during which the coordination of micro level economic agents' activities is carried out in order to obtain results which can be found at the macro level.

# Conclusion and Discussion

# CE – Orthodoxy, Mainstream or Heterodoxy?

- *Colander (2000), Colander, Holt , Rosser (2004) and Davis (2008)* classified CE as mainstream but non-orthodox, because it adds to mainstream recursive economics and a dynamical system approach.
- *Fontana (2010) and Arthur (2013)* noted that CE does not mean just the addition or expansion of neoclassical economic theory by adding agent-based behavioural models to standard econometric models. It gives a new view closer to classical political economy.

# ME – Orthodoxy, Mainstream or Heterodoxy?

- From the neoclassical orthodox point of view **the study of the meso level of the economy is based on micro-foundations** (the same as for the macro level). Among them are the prerequisites of the rationality of economic agents, the profit maximisation and equilibrium principle (micro level - individual actors and their behaviour; macro level - an aggregate at the level of national or global economies; meso level as an intermediate level - large corporations, industries or regional economic complexes).
- Within heterodoxy **the meso level includes structures and mechanisms** that determine the patterns and rules of interaction, as well as the processes of economic reproduction, which ensure the development of the economy as a whole. **They depend not only on the economic agents' activity but also on history, culture, geography and similar aspects.**

# Different premises >>>different Maths?

- CE and ME are characterised by the use of algorithmic computational procedures (computation), probabilistic and statistical models, game theory, models of nonlinear dynamics, as well as specially developed models based on microeconomic foundations.

# CE and ME for economic policy

CE and ME research is useful to understand the balance between market and redistributive mechanisms; the depth of privatisation, nationalisation (or *publicisation* - Andrew Purves); competition or cooperation (the creation of alliances); regulated prices or free pricing, etc, for the effective development of entire economic systems.

# Conclusion

- CE and ME draw attention to the endogenous disequilibrium of the economy, in which the principles of not only diminishing but also increasing returns operate. They study phenomena - rules, patterns, structures - that arise as a result of interaction between parts of the whole and spread in the economic system. These processes occur mainly at the meso level which, according to B. Arthur, is the most important level in analysing the economy as a complex system (Arthur, 2013).
- Representatives of CE and ME, developing ideas of self-organisation, simultaneously restore the traditions of classical political economy, since they take into account the organic (systemic) nature of the economy, evolutionism and historical conditioning. Also they rely on a new synergetic paradigm.
- CE and ME are challenged to develop mathematical models which have to reflect the premises which they use.



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Thank you for your attention!  
Спасибо за внимание!

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