Joanna Wiśniewska-Paluszak, PhD
Poznań University of Life Sciences

https://doi.org/10.26366/PTE.ZG.2017.118

Theories of economic network nowadays – assumptions and conceptualization

Abstract

This is a review and conceptual paper. The aim of the paper is to identify the main features of economic network. The main problem of the conceptualization is its complex character and plurality of interrelating ties. The research was conducted on the base of the domestic and foreign subject literature and the descriptive and comparative analysis. The specification of the economic network notion has been based on the theory of economy. The main premise is to specify the economic network theory among other regulators and performance modes of the economy and show the specific nature of the concept. Rationalising the theoretical categories of economic network, the assumptions have been made on the base of which the assessment of its importance in the modern economy is possible to be made. The value added of the paper is the identification of the specific features of the economic network as the basic performance mode of the network economy as well as the indication of the main differences between economic network and other modes of performance in the economy. This paper is organised in the three parts. In the first part, the aims of economic network have been discussed. In the second part, the economic network has been compared with other modes of economic performance. In the last part, the most important premises of the economic network theory have been discussed.

Keywords: economic network, theories of economic network, network economy.

JEL CODE: L14.

Teorie sieci gospodarczej współcześnie – założenia i konkretyzacja[78]

Abstrakt

Artykuł ma charakter przeglądowy i koncepcyjny. Celem artykułu jest identyfikacja podstawowych cech sieci gospodarczej. Głównym problemem konceptualizacji sieci gospodarczej jest jej złożony charakter i wielość występujących w niej powiązań. Badania prowadzono w oparciu o studia krajowej i zagranicznej literatury przedmiotu oraz analizę opisową i porównawczą. Konkretyzacji pojęcia sieci gospodarczej dokonano w oparciu o teorię

[78] Artykuł powstał w wyniku realizacji badań projektu finansowanego z środków Narodowego Centrum Nauki, przyznanych na podstawie decyzji numer DEC-2013/09/B/HS4/01494.

ekonomii. Podstawową przesłanką wyodrębnienia sieci gospodarczej wśród innych regulatorów i sposobów funkcjonowania gospodarki jest jej specyfika. Racjonalizując teoretyczne kategorie sieci gospodarczej przyjęto założenia w oparciu, o które możliwa staje się ocena jej znaczenia we współczesnej gospodarce. Wartością dodaną artykułu jest wskazanie na specyficzne cechy sieci gospodarczej jako podstawowego sposobu funkcjonowania gospodarki sieciowej, a zarazem wskazanie głównych różnic między siecią gospodarczą, a innymi sposobami funkcjonowania gospodarki. Artykuł składa się z trzech części. W pierwszej części omówiono cele sieci gospodarczej. W drugiej części porównano sieć gospodarczą z innymi sposobami funkcjonowania gospodarki. W ostatniej rozważano najważniejsze przesłanki teorii sieci gospodarczej.

Słowa kluczowe: sieć gospodarcza, teorie sieci gospodarczej, gospodarka sieciowa.

Introduction

Economic networks are decisive in the modern network economy. Manuel Castells (2000) believes that the development of the network society is related to the expansion and revival of capitalism, just as industrialism was associated with the establishment of it as a mode of production. In the view of Darin Barney (2004), economic networks are the basic mode of operation on the basis of which new economic systems are or will be built. The network way of functioning of the contemporary economy, which is indicated by numerous empirical observations, raises the urgent need to reconsider, in the field of economic theory, the functioning of the market system, and may even indicate the urgent need to distinguish a new discipline of economics dealing with network economy research.

Economics of networks is a new discipline that appeared in the middle of the 20th century. Analyses of industrial markets carried out at that time indicated the existence of strong and lasting connections in economic structures between independent economic entities, going beyond the scope of ordinary market transactions. This has led to the establishment of the belief that business entities are subject to the direct and indirect impacts of the bilateral or multilateral links to which they are subjected, and in which the related closer and further entities are located. An economic entity does not act alone, and its functioning depends on the activity of other entities, not only through a market transaction, but through the lasting interconnectedness of activities, resources and entities.

The main research problem undertaken in the article are the specifics of the economic network and its reflection in theory. The article attempts to answer the basic question, whether

enough effort was theoretically made to conduct further research towards the concretization of the concept of economic network. The aim of the article is to indicate the basic features of the economic network, which should be taken into account in scientific research. It has been hypothesized that the complexity and multiplicity of the features of the economic network leads to the adoption of various assumptions and research approaches in the economics of networks. The article aims to review and conceptualize. The research was conducted on the basis of literature studies, descriptive analysis and comparative analysis.

The article uses foreign and domestic literature on the subject. The article consists of three parts. The first part discusses the goals of economic networks. The second part of the article compares economic networks with other ways of functioning of the economy. In the last part, the implications of the economic network theory were considered.

Goals of economic networks

In economics, quantitative economic goals are increasingly replaced by qualitative ones, not only in economic terms, but also in social and environmental terms. Sustainability of economic development is currently considered in three dimensions, i.e. economic, social and environmental. The macroeconomic goals of balancing economic growth convert microeconomic goals of business entities. The carrier of sustainability is not only a single entrepreneur or consumer, but also their mutual connections and impact within the network of connections (Wiśniewska-Paluszak 2017). Nowadays, the goals of the economic network are considered in the broad economic and social context to be the dimensions of technical and technological (network economy), socio cultural and civilizational progress (network society).

According to the new pragmatism, contemporary economics is descriptive, contextual, complex and multidisciplinary (Kolodko 2014, Bałtowski 2016). In terms of economics of new pragmatism, the goals of the network should therefore be considered not only in a broad economic sense, but also within the social, environmental and political contexts. As Artur Śliwiński (2015) points out, the networks create specific economic, social and political risks, and their goals do not always serve sustainable development. These include: corporate networks for the concentration of ownership, financial capital networks, or networks built as the bridgeheads of political activity. On the other hand, business networks are an important element in the development of small business, in particular in spheres where cooperation is needed to increase the bargaining power of individual entities (Wiśniewska-Paluszak,

Paluszak 2016), for example, in the sphere of open exchange of knowledge, innovation or environmental investments (Sudolska 2011).

In the context of positive economy, the essence of the network is the community of goals forming a network of entities. The main goal of the business is to maximize its benefits, therefore the main goal of an economic network will be to increase the economic efficiency of network entities and the efficiency of the network itself, optimization of resources and decisions taken in the network, economic balance of the network and rationality of behavior within the network. As per Włodzimierz Rudny (2013), the creation of the network takes place mainly in order to implement specific tasks, improve the conditions of functioning and develop the competitiveness of the entities participating in it.

Business entities enter into specific interactions and relationships with each other that are important for increasing their market value. With each new link, new added value is created. Links between enterprises, their resources and competences influence the attaining of synergic network capacity, which enables the delivery of greater value and better satisfaction of consumer expectations. At the same time, the binding properties stimulate the creation of value, part of which is kept by the network entity as profit resulting from staying on the network.

The growing popularity of business networks stems from the fact that they enable economic entities to: reduce uncertainty, increase efficiency, ensure appropriate potential, ensure faster operation, increase the rate of taking advantage of market opportunities, broaden the access to resources and information, furthermore they provide the ability to implement activities that cannot be done alone.

An economic network as a way of functioning of the economy

The name - network economy - suggests that the economic network is the basic way of its functioning. Economic networks are becoming an important regulator of the network economy. As per Walter W. Powell (1990), traditional economic models in which the limits of an economic entity are determined on a hierarchical basis, i.e. resulting from the ownership or contracted resource control, are less and less in line with the rapidly changing network reality.

According to Adam Noga (2014), the basic economic institutions that are autonomous regulators of the economy form a part of the network. The basic economic institutions include: enterprise, household, market and state. Their basic way of functioning is hierarchical

dependence or market independence. An economic network characterized by community interdependence, can be a substitute for traditionally understood ways of functioning of the economy such as hierarchy or competition; it can also be a complementary way of functioning for the hierarchy and / or competition, providing greater benefits that cannot be achieved in a traditional manner.

Thus, the economic network emerges in a situation of unreliability of traditional economic regulators, which are the market and hierarchy. The role and impact of the network on the regulatory system of the economy is primarily of a qualitative nature. The networks support the economy in the following dimensions: micro (enterprise), meso (industry), local (region), macro (state) and global (world). The networks strengthen the household, enterprise, market, state, increasing their flexibility, specialization and innovation.

The most important features of the functioning of the economic network that distinguish it from other economic regulators include: striving to connect the strengths of network entities, relational forms of communication between network entities, the respect for the principle of reciprocity and maintaining high reputation (credibility), commitment and common values, flexibility, openness and the pursuit of mutual benefits, transfer and creation of common knowledge and interdependence of parties (Table 1).

Table 1. The way the market, hierarchy and network function

Lp.	Characteristics/Regulator	Market	Hierarchy	Network
1.	Normative basis	Contract - property rights	Employment	Strong points complementing each other
2.	Instruments of communication	Prices	Predetermined order of functioning	Relational
3.	Conflict resolution methods	Price negotiations or legal proceedings to enforce rights	Administrative orders and oversight	The reciprocity principle, concern for own reputation
4.	Degree of flexibility	High	Low	Medium
5.	Degree of commitment between the parties	Low	Medium to high	Medium to high
6.	Environment and climate	Precision and/or suspicion	Formal, bureaucratic	Openness, flexibility, mutual benefits
7.	Relations between the parties	Independent	Dependent	Co-dependent

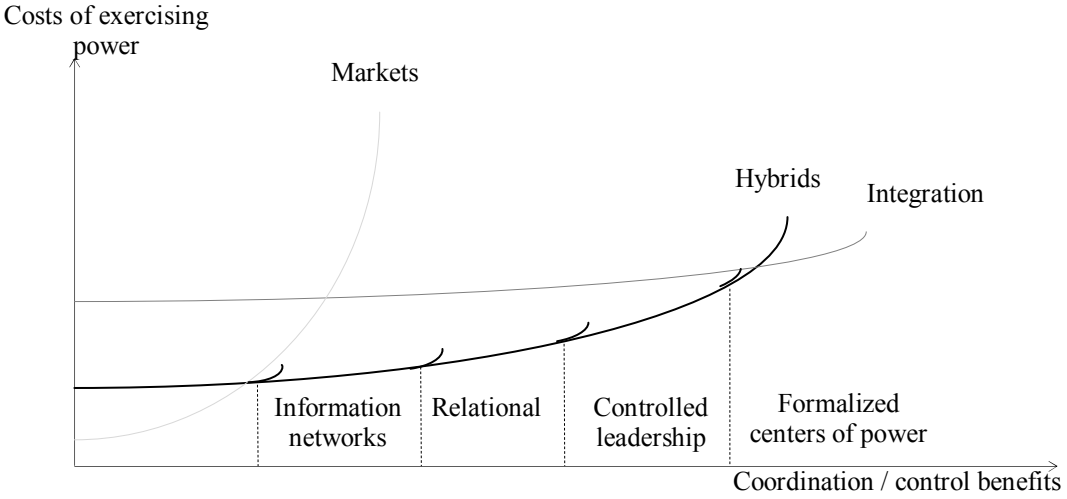
Source: own study based on: (Powell 1990).

Contemporary institutionalists include networks for hybrid forms of economic coordination. According to Claude Ménard (2004), networks are based on mutual regulation, the purpose of which is to obtain mutual benefits from the coordination of the entities forming the network. The benefits of coordination / control cause an increase the costs of exercising

power, however they are lower in the informal economic network than in the formalized economic integration. As the costs and benefits increase, the forms of economic coordination change, i.e.: from information networks, through relational contracts, monitored leadership, to formalized power centers (Figure 1). The emergence of hybrid forms of coordination, such as the economic network, therefore depends on the magnitude of costs and benefits of control and coordination.

Anna Grandori and Giuseppe Soda (1995) similarly defined the network as a way of organizing economic activity through coordination and cooperation between economic entities. The network as a way of regulating dependencies between economic entities differs from simple aggregation within one network and from other forms of economic coordination, such as, for example, the following market signals: prices, strategic moves, and silent collusion. The network regulation method is based on cooperative games and a certain type of communication between partners.

Figure 1. A network as a hybrid form of economic coordination



Source: C. Ménard (2009).

Milena Ratajczak-Mrozek (2009) believes that a network is a set of connections connecting at least two entities. The main feature of links is their continuous interaction and durability. They lead to an increase in interdependence in terms of resources, entities and activities while blurring the clarity of their borders and structures. Networks also do not have a dominant entity that would take over free decision-making rights, and the role of each participant is not proportional to its capital, as is the case, for example, in a partnership.

Effectively, networks do not fit into traditional organizational structures, hence they can potentially be implemented in an infinite number of direct and indirect links between

economic entities. By definition, the network is a set of independent entities, which has a significant impact on the complexity, multi-aspect and uniqueness in a different arrangement of connections.

The implications of the economic network theory

Networks and network connections are of interest to many fields and disciplines, including sociology, economics, management, marketing, law, social psychology and many others. As part of economic sciences, particular interest in the concept of network is present in the disciplines of economics and management. According to Jerzy Niemczyk (2012), in economics, the subject of research are mainly the economic objectives of the network and criteria for assessing the degree of their implementation, while in management, the networks are analyzed primarily as a way of achieving economic goals.

Economics explores the concept of network in the conditions of growing complexity and diversity of economic realities. The development of economic networks is accompanied by a large diversity of their forms and types. Economic networks are not only corporate arrangements dominated by the internally decentralized connection of large enterprises, or multinational, divided into production and distribution sections of supply chains operating within outsourcing paradigms, but also links between the smallest economic entities, networks of small and medium-sized enterprises, which specialize in niche activities, and in the links of industry enterprises implementing, for example, joint ventures, as well as the connections between small and medium-sized suppliers connected with large producers, intermediaries or trade networks.

As a result of research into network phenomena, in the theory of economics, the influence of network effects on the change in the shape of the demand curve, the change of the cost and supply curve and the change of economic regulators was established. The theory of economics has previously indicated primarily the phenomenon of networking, as a phenomenon of linking the behavior of economic entities, which was the main cause of multiplier effects, or network effects, related to the growing number of recipients, for example, of a given telecommunications service; the emergence of those effects was explained by Nicholas Economides (1996).

Traditional economics, in its models, abstracts from the network, based on the mechano-reductionist research methods developed in mainstream research, in which the importance of institutional regulators of the economy is considered a permanent condition of the functioning

of the economic entity (ceteris paribus). Frequently, the mainstream theories of the organization of the industry, or even some institutional theories, already recognized in modern economics as traditional, such as the theory of property rights or the theory of incomplete contracts, or the theory of transaction costs, do not precisely explain the reasons for the cross-border economy, or explain only some of them.

Alternative trends in economic science, which analyzed widely understood reasons for behavior and decisions of economic entities, have put economic networks in a new light. The new research perspective is fostered, in particular, by paradigms of evolutionary economics, behavioral economics and complexity economics. As per Andrzej Wojtyna (2008), complexity economics examines network phenomena in the perspective of open, dynamic and non-linear economic systems in which business entities learn and adapt to dynamically changing economic conditions. In the new complexity economics, interactions between entities are explicitly modeled and change over time, whereas traditional economics assumes that entities interact only indirectly through the market mechanism. According to Bogusław Fiedor (2009), the new complexity economics calls into question the traditional way of understanding the balance and dynamics of economic systems. The assumptions and theorems of the complexity economics cause changes in traditional understanding of dependencies between the micro and macro spheres, and in the way institutions are recognized in economic analysis. Therefore, the network theory will be a theory of complexity.

Building an economic network requires that economic entities undertake activities that go beyond usual practices in internal, hierarchical relations as well as in external market relations. Adam Glapiński (2013) believes that the connection of economic entities usually arises in a situation of imbalance and its result is the success or failure of a given combination of factors or goods, as well as of the participants of economic life themselves, as the process of economic evolution is non-deterministic, non-teleological and irreversible. The economic relations are dynamically shaped, according to the changing conditions of management, they evolve in a flexible manner, without creating permanent economic structures. Thus, the theory of the network will have an evolutionary character.

According to Ireneusz Dąbrowski (2015), economic links are created by people and informal institutions. For example, the analysis of linking can be reduced to analyzing the ability to overcome limitations in behavioral information, such as building trust. It makes sense only in the conditions of strategic complementarity, when coordination defects appear

in the economic system. Networking is therefore a measure of the ability to cooperate and eliminate coordination defects. Thus, network economics are also behavioral.

Conclusions

Network economy goes beyond the framework of traditional economics, becoming an autonomous theory against other trends in research in economics. In network economics, the meaning, nature and basic principles of running a business in the network are examined. In the study of economic networks understood as interaction between economic entities alternative trends in economics are most often used. Speculations on economic relations concern economic reality, which is more and more distant from the model of perfect competition or even from the model of imperfect competition and monopolistic competition. Due to that fact, research into the interrelations between entities in terms of specific economic structures and systems must be contextual.

Undertaking network research significantly extends the research field of mainstream economics and is an attempt to reform, but not to reject microeconomic foundations, by gradually opening up to new trends in complexity, behavioral, evolutionary economics, or going further in experimental economics. Research on economic connections is interdisciplinary, reconciles issues from the fields of economic and social exchange, and in this regard constitutes an important element of discourse regarding sustainable development.

The specifics of an economic network as a mode of operation are partly reflected in the theory of the network. The economic network is identified as a set of entities and links between them that serve to achieve common economic and social goals. By definition, business networks are characterized by high dynamics of operation, are flexible in response to changing conditions, are innovative, evolve, are based on mutual trust, communication and mutual exchange of knowledge and information, commitment, interdependence, reciprocity and adaptation. They are of a non-market and non-hierarchical character. At the same time, they are characterized by the lack of clear boundaries and structures.

The basic assumptions stem from the fact that evolution is connected with factors and processes lying outside the economic system, i.e. in the ecosystem of the economy, i.e. they are exogenous in relation to the hierarchy and the market. Economic networks are an important element of the ecosystem of the economy, i.e. a characteristic environment in which an economic entity operates, in which it has a specific position and fulfills specific roles. Economic networks create specific rules and norms of economic and social behavior, are

informal and often based on interpersonal relations. Thus, in the network ecosystem, the decision-making processes of economic entities are simultaneously connected with the standards and principles in force in the economic network and in the social network.

It should be noted that networks nowadays constitute a significant share of the economic and social ecosystems in which economic entities function, thus constituting an element of economic and social order, evolution and radical changes taking place in them. On this basis, it was concluded that the economic network understood as a means of economic exchange and coordination explicitly constitutes the essence of the economic problem and the subject of economic research. The complexity of network systems, network connections and behavior of entities in the network requires developing a new approach in economics, an approach combining the achievements of different research traditions and scientific disciplines, but also seeking new avenues of interpreting the dynamically changing network economy environment, its closer and further dependencies, strong and robust ties existing between economic operators.

References

Bałtowski M. (2016), *Ekonomia przyszłości. Wokół nowego pragmatyzmu Grzegorza W. Kołodko*, Wydawnictwo Naukowe PWN, Warszawa.

Barney D. (2004), *The Network Society*, Polity Press, Cambridge.

Castells M. (2000), *The Rise of the Network Society*, The Information Age: Economy, Society and Culture, Volume I, Blackwell Publishing Ltd, Oxford, England.

Dąbrowski I. (2015), *Wybrane aspekty behawioralne modelu równowagi ogólnej*, w: Fiedor B. (red.), *Nauki ekonomiczne. Stylizowane fakty a wyzwania współczesności,* PTE, Warszawa.

Economides N. (1996), *The Economics of Networks*, „International Journal of Industrial Organization", no. 14.

Fiedor B. (2009), *Wprowadzenie – Nauki ekonomiczne wobec wyzwań współczesności*, w: Fiedor B., Hockuba Z. (red.), *Nauki ekonomiczne wobec wyzwań współczesności*, VIII Kongres Ekonomistów Polskich, PTE, Warszawa.

Glapiński A. (2013), *Kwestie metodologiczne podejścia ewolucyjnego w ekonomii*, „Gospodarka Narodowa", nr 5-6.

Grandori A., Soda G. (1995), *Inter-firm Networks: Antecedents, Mechanisms and Forms*, „Organization Studies", no. 16(2).

Kołodko (2014), *Nowy pragmatyzm czyli ekonomia i polityka dla przyszłości*, „Ekonomista", nr 2.

Ménard C. (2004), *The Economics of Hybrid Organizations*, "Journal of Institutional and Theoretical Economics", nr 3(160).

Ménard C. (2009), *Hybrid organisations*, http://organisationsandmarkets.files.world Press.com/2009/09/menard-hybrid-organisations.pdf (data dostępu 18.09.2016).

Niemczyk J. (2012), *Skąd się wzięły sieci?*, w: *Studia Ekonomiczne Regionu Łódzkiego. Formy i uwarunkowania współpracy we współczesnej gospodarce*, Wydanie specjalne, PTE oddział w Łodzi, Łódź.

Noga A. (2014), *Sieci w ujęciu teorii ekonomii,* w: Koźmiński A.K., Latusek-Jurczak D. (red.), *Relacje międzyorganizacyjne w naukach o zarządzaniu*, Wolters Kluwer.

Powell W.W. (1990), *Neither market nor hierarchy: network forms of organization*, „Research in Organizational Behavior", no. 12.

Ratajczak-Mrozek M. (2009), *Główne cechy relacji sieciowych przedsiębiorstw (podejście sieciowe, network approach)*, „Organizacja i Kierowanie", nr 4(138).

Rudny W. (2013), *Organizacja sieciowa jako model biznesu*, w: Rudny W., Woźniak-Sobczak B. (red.), *Procesy kreowania wartości w strukturach sieciowych*, Wydawnictwo Uniwersytetu w Katowicach, Katowice.

Sudolska A. (2011), *Uwarunkowania budowania relacji proinnowacyjnych przez przedsiębiorstwa w Polsce*, UMK, Toruń.

Śliwiński A. (2015), *Ekonomia sieci. Jak globalne sieci opętały świat*, Iota Unum, Warszawa.

Wiśniewska-Paluszak J. (2017), *Koncepcja sieci w badaniach zrównoważonego rozwoju agrobiznesu*, „Gospodarka Narodowa", nr 1(287).

Wiśniewska-Paluszak J., Paluszak G. (2016), *Sieci i spółdzielnie jako formy kooperacji gospodarczej*, w: Główka G., Sobiecki R. (red.), *Przedsiębiorstwo w strukturach sieci. Doświadczenia i perspektywy rozwoju w Europie Środkowej i Wschodniej*, Wydawnictwo KUL, Lublin.

Wojtyna A. (2008), *Współczesna ekonomia - kontynuacja czy poszukiwanie nowego paradygmatu?*, „Ekonomista", nr 1.