Network Economy: Competition through Cooperation (Theoretical Study)

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Abstract

Network economy has lately become a very popular subject of investigation for many scholars/researchers, engaged in the elucidation of new economic phenomena. Despite its popularity, no universally acceptable theory of network economy has been elaborated yet, since different authors focus on conceptually different aspects of the phenomenon. There is even no consensus on the exact definition of economic networks: In some cases they are perceived as consumer networks, consisting of economic agents that cooperate via a networking product or service. In other cases economic networks are identified with alliances and production networks, where different companies cooperate in the frames of the production of common good. And finally, there are cases, when the cooperation of different parties across a number of economic functions and operations is also viewed as an economic network.

In this article I suggest a new approach to the study and theoretic analysis of network economy, which is an attempt to reveal the logic behind the network-based cooperation irrespective of the functional role of constituent economic agents[1]. To hit that target, the concept of network cooperation was abstracted away from concomitant factors and circumstances—industry, place, scale, composition, etc.—and observed as a separate category of socioeconomic activity. Thanks to that abstraction the further study and analysis of network cooperation became possible, unfortunately, at some sacrifice of practical applicability.

Network effect—the change in the networking value caused by the change in the size of the network—has initially been scrutinised, casting some light upon the sources of added value of economic networking. That served as a pivot for deriving the general functional forms of networking value and networking costs. The combination of the latter two provided with the opportunity to identify the main principles of the formation and development of economic networks, shaping a general subject of investigation of network economy. And as usual, all the findings where supported with examples from everyday life experience and tested against the merciless questions of common sense.

Keywords: Network economy, economic networks, network effect, network cooperation, competition, contemporary logic of economy

[1] Economic agent is a widely used term in economic literature with a wide range of different contextual meanings. As in any of my other articles, economic agent here must be perceived as an entity, engaged in any type of economic activity—consumer, manufacturer, tax payer, employee, investor, resource owner, renter, etc.

Introduction

Network economy is one of the trendiest and most hotly discussed topics nowadays. There is already a huge amount of available academic materials that are devoted to the study and analysis of network economy. However, despite the common title—network economy—the subject matter is differing across the works of different authors, ranging from consumer networks of individual companies up to the economic systems of entire regions.

On the level of consumption, network economy is often related to individual markets of goods, where the consumption is organised via a consumer network—cellular communication, social networking, instant messaging and so on. Networks act on the level of consumption and are comprised of interacting consumers.

On the level of production and trade, the concept is associated with alliances, small business clusters, strategic partnerships and so on, which are comprised of cooperating companies. The classic examples of those networks include the global airline alliances, international banking cards and partnerships between smartphone hardware and software manufacturers.

On the level of business organisation and/or economic system, network economy is clearly observable, among others, in the countries of East Asia and in the northern (industrial) regions of Italy. Networking logic, here, is lying in the core of almost every type of business/economic activity.

It is easy to notice that the central element in all the above-mentioned examples is the economic network, consisting of cooperating economic agents. Simply, in the first case (the second paragraph) the economic agents include only consumers that "cooperated" via some networking product or service. In the second case those agents are business units that cooperate within the framework of the production and marketing of some product or service. In the third case economic networks are comprised of multitype business units, which cooperate on many levels of their socioeconomic activity. And so, the analysis of economic networks in general becomes the key to the understanding of the main concepts of network economy.

Economic networks

Despite the functional difference of economic agents in various networks, all of them obey the same network logic from the organisational point of view. More specifically, any economic network consists of the five requisite components: *cooperating economic agents*, *matter for cooperation*, *connections*, *individual contributions* and *mutually beneficial activity*. Besides, all of these components are the boosters of network value: i.e. the more or better each of the components is, the more valuable the whole network becomes. Below is how it works.

Leaving aside the first mentioned component—cooperating economic agents—let us first have a look at the *matter for cooperation*. Each economic network must have a clearly perceptible matter for cooperation, which serves as a platform for cooperation. The network just cannot exist without it. For example, in automotive industry networks, the matter of cooperation is the development, manufacturing and provision of individual parts of a single car model. As the matter for cooperation is becoming larger (more ways of cooperation) and better organized (each member exactly knows own functions and responsibilities), the network starts acting more flawlessly.

Connections between network members are the next vital component of economic networks. Network cooperation cannot be limited to casual one-time deals between its members. It surely demands the presence of well-established and actively working relationships, which are usually based on mutual agreements (oral or written). Active relationships, in their turn, require a high level of communication and information sharing, supported by a heavy usage of ICT (Information and Communication Technologies). Obviously the quantity and quality of network connections are in direct relationship with the efficiency of the entire network, directly affecting the value of the network.

Since economic networks are non-hierarchical formations, evolving on a voluntary membership basis, the *individual contributions* of network members to the growth and expansion of the whole network are of much importance, especially during the initial growth phase. That is clearly visible in consumer networks such as social networking services. If the first few members of the network do not make some contributions—sharing of interesting content, promotion of the service through online recommendations and/or word-of-mouth, donation of own free time, etc.—the social networking service will never gain enough popularity to enter into its growth phase. In the same manner, each member-organization in regional networks

of tourist industry should somehow be involved in the maintenance of clean and comfortable infrastructure, which will contribute to the growth of tourism in the whole region.

The three above-discussed network components play a crucial role, particularly in the initial stages of network formation, whereas the last mentioned component—*mutually beneficial activity*—guarantees the persistence of the active economic network. No matter how well the economic network has been established, how tight the intra-network connections are and how much contribution has initially been made, the network will fail sooner or later without a mutually beneficial activity of its members. Any rational economic agent will abandon the network, if s/he does not get any benefit from it. In the same way, an individual network member, which brings no benefit to other members, will soon be dropped off the network, because of the loss of all the connections with those other members. Nevertheless, the value of an economic network increases significantly, as the activity of its members becomes more mutually beneficial.

Now, let us return to the first mentioned component—*economic agents* that cooperate within the network. At first glance this component may seem rather ordinary, without any need to be observed separately. It is more than obvious that without economic agents it is senseless to speak about any cooperation: their presence is required physically and that's it. However, just that very component contains "the mystical power" of economic networks—the famous *network effect*. Network effect is the impact of the change in the number of network members on the attractiveness and value of the whole network. Usually there is a positive relationship between the number of cooperating economic agents and the network value. For example, currently very popular online games become more attractive to public, as more people are engaged in them. The same story goes with airline alliances: the one, embracing more airlines, is more attractive for other companies to join to.

Thanks to network effect, each new member increases the value of the whole network, which in its turn attracts new potential members. Newly joining members "raise" the network value higher, attracting newer and newer potential members. The economic network enters into the phase of self-development, promoting the increase of the network, and hence its value, without any extraneous effort. The latter fact brings much attention and interest towards the phenomenon, turning it into an actual issue to study. That is why the following section is fully devoted to the scrutiny of networking value, generated by network effect, as a key to the understanding of the value creating properties of economic networks.

Networking value and costs

The challenges

First of all, let us see why the change in the number of network members directly affects the attractiveness and value of the network. Where that impact is coming from?

The answer to this question is rather simple: since economic agents join networks for some sort of cooperation and/or interaction, it is straightforward that the greater the number of network members is, the more there are different possibilities for cooperation/interaction. The expansion of network brings about a growth of the potential for network cooperation, entailing an increase in the attractiveness and value of the whole network. Interestingly enough, networking possibilities increase exponentially as the number of network members grows. Here is how it works.

When, for example, the number of existing network members is 4, there are 3+2+1+0=6 connection possibilities[2]. If one more economic agent joins the network, making the number of the existing network members be equal to 5, there are now 4+3+2+1+0=10 connection possibilities. When the number of the existing network members equals to n, the new joining member will create n new connection possibilities.

The above-mentioned logic of exponential relationship between the number of network members and networking opportunities substantiates the existence of network effect, but in no way it does provide with a measure of value for network effect, since it does not include the qualitative properties of cooperation. That is the reason that network effect is quite difficult to measure in terms of gains or losses. The latest argument is surprisingly omitted from some discussions about network effects, which are simply measured

[2]Three connections can be established between the first and the other three members. Two new connections can be established between the second and the other two members, since the second member has already got an established connection with the first one. One new connection can be established between the third and the fourth members, and that's it: everyone has connections with all other members.

by networking opportunities. Stating some reasons as to why the number of potential network connections cannot serve as a proper measure of network effect, the following paragraphs reveal some important features of network effect in action, which leads to a better understanding of the phenomenon.

First of all, extra connection possibilities are valued differently across the network: any extra connection is obviously valued more for more active existing users. Hence, the extra connection, brought by a new network member, may be valueless for some very passive network members.

Secondly, the impact of new connection on the value of network depends directly on the nature of the joining member. From that standpoint, the more "desired" is the new member to the existing network members, the more valuable are the extra connections, created by that new member. For example, consider a network of cooperating airlines, which provides combined flights for the members of its network. It is obvious that the existing network members are more enthusiastic about a large airline company that has already got flights to multiple destinations, since each of the current airline companies may be able to offer more flight directions via the new combined flights. One "customerful" and/or "resourceful" partner is preferable to several small start-ups. So, the network effect of a large airline company can be much greater than the effect of multiple small ones, even though the number of new potential connections is greater in the latter case.

Thirdly, time plays a very important role in the formation of networks. Usually, the existing members of a newly formed network do value joining members more. If the network is not growing over time, the connections between existing members tighten. Those tightened connections are hampering to the smooth establishment of new connections with new members. Hence, the value brought by a new potential connection is declining. In other words, as more time passes before a new member has joined the network, less the resulting network effect is.

Fourthly, similar to any other recurring economic phenomenon, the value of each joining economic agent (and hence the network effect) is gradually declining, because of the economic law of declining marginal utility. And despite the growing number of potential network connections (as the network grows), the value increase of network effect has a negative dynamics.

And finally, when networks become too large, newly joining members imply some "overload", which may lead to an increased level of complexity and confusion inside the network. Those complexities and confusions deteriorate the efficient communication and coordination inside the network. In other cases, too large networks may cause some loss of competitive advantage in favour of "partner" network members. For example, in regional clusters of knitwear manufacturing the benefits of networking may not be enough to compensate the loss of own customers in favour of partnering manufacturers. That is especially true in situations, where the number of homogeneous member-companies is too big and the customer base is limited. In all those above-mentioned cases, each new joining member adversely affects the value and attractiveness of the network.

The five above-mentioned paragraphs provide with an insight into the action of network effect. More precisely, the arguments, mentioned in the first two paragraphs—more active members value new networking opportunities more; one member can be far more favourable than several others—emphasize the ambiguity and subjectivity of the perception of network effect and networking value. Each economic agent values network effect differently, which in its turn is rather situation-dependent. That eliminates the point in attempting to deduce a universally acceptable and applicable exact formula for measuring networking value. However, the arguments, mentioned in the last three paragraphs—the important role of time, declining marginal utility of network effect and possible negative impacts of network overexpansion—provide with some clues on what the functional form of networking value may look like in the presence of network effect.

The functional form

Let $NV(n)$ correspond to the networking value, dependent on the size of the network (denoted by n). The shape of the networking value function, denoted by $NV(n)$, can still be found without the derivation of an exact formula, based on the former inferences.

1. There is no network and, hence, no network effect and/or networking value, if no single member has joined the network: $NV(0) = 0$.

2. Since the expansion of network is accompanied with a growth of network effect, $NV(n)$—the function of networking value—is an increasing function of n: $NV'(n) \geq 0$.

3. Because of the law of declining marginal utility and the negative impact of time, each consecutive joining member must bring progressively less value. Hence, the increase of $NV(n)$ must have a negative dynamics: $NV''(n) \leq 0$.

4. Since, in some cases, the overexpansion of network turns the positive impact of network effect into negative, there may be an overexpansion point n^{oe}, so that any further increase in the network size leads to a progressive decrease of the networking value: $NV'(n) < 0, NV''(n) \geq 0$ for $n > n^{oe}$ (Figure 1a). However, in many networks (e.g. e-mail), there is no overexpansion point: networking value just does not grow after a certain maximum level, since the existing and potential members are becoming indifferent to the further expansion of the network (Figure 1b).

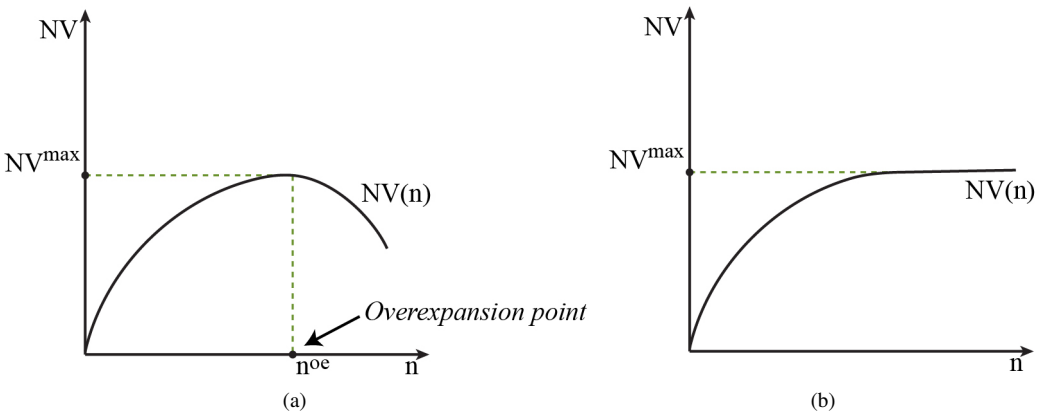

Figure 1: Networking value with (a) and without (b) the overexpansion point

It is obvious that networking implies not only extra value, yielded by network effect, but also some networking costs. These are costs for the purchase and maintenance of technical facilities, provision of necessary staff to coordinate the network cooperation, as well as some loss of competitiveness (loss of customers in favour of competing network members), as a consequence of cooperation. In contrast to networking value, networking costs are clearer and more straightforward. They usually consist of an initial investment and a small increment per each additional networking partner.

In consumer networks like mobile communication service the initial investment is comprised of mobile device purchase and service subscription. The costs associated with each new networking partner are shown up in the service fee: usually, as more people are available over the mobile network, more is the probability of making a call and paying for the talk time. However, the number of potential people that may be called by a certain consumer is limited. As soon as all those potential people have joined the mobile communication network, the further expansion of the network will not cause any extra costs to that certain consumer.

Note that in free consumer networks like social networking and/or blogging services there is a very little or almost no initial investment, whereas the networking costs mostly include consumer's free time, spent on networking. And as the network becomes larger, more time is demanded from the network member.

Generally, the function of networking costs is a growing function with negative dynamics. For example, taking the case of airline alliance, once a special department for networking coordination is established and the necessary technical stuff is purchased, there is no need to proportionally increase resources as the network expands. Besides, taking into consideration the specialisation effect (the competence level of the existing staff grows over time), it is clear that each new partner requires less increment in networking costs.

So, if the function of networking costs is denoted by $NC(n)$, then $NC'(n) > 0$, $NC''(n) < 0$ and $NC(0) \geq 0$ (since an initial investment is usually reuqired). Based on these assumptions, the curve of the networking costs function must be similar to the one, shown in Figure 2.

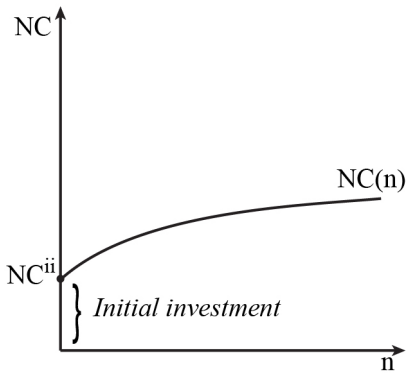

Figure 2: Networking costs

It is natural that the next step of the current analysis is the observation of the combination of the curves of networking value and networking costs, which reveals the key points in the process of network formation and development.

Network formation and development

Three different situations may be observed, when the conjectural curves of networking value and networking costs are put together: 1—networking costs are always higher than networking value; 2—networking costs are always lower than networking value; 3—the curves of networking value and networking costs intersect.

For the first two cases the situation is more than clear, since it is obvious that too high networking costs will preclude every means of network formation, whereas too low costs (or virtually no costs at all) will let the network quickly grow and develop with no economic impediment. The latter argument, by the way, can be viewed as an important factor in the turbulent growth of social networking and microblogging services.

Anyway, the most interesting situation to be scrutinised is the case with networking value outbidding networking costs, when a certain network size is achieved (Figure 3). As shown on the graph, in the most general case, when initial investment and negative network effect are also present, the two curves intersect in two points of equilibrium—n^* and n^{**}—also known as *critical sizes of network*.

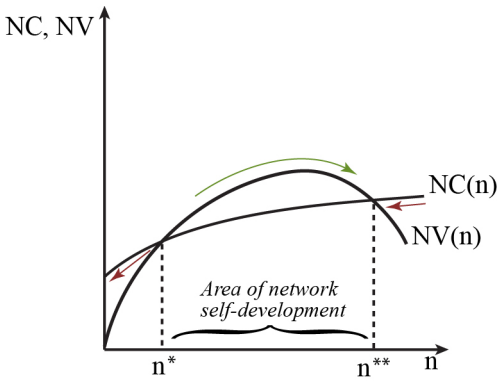

Figure 3: Network formation

The critical point n^* is the smallest non-zero size of the network, where networking costs are not higher than networking value; it is the smallest size for the network to persist. In contemporary economic literature the concept of the smallest feasible size of network is often called *critical mass*. However, it is an unstable equilibrium point, since any slight increase or decrease in the size of the network will cause it to respectively expand or shrink.

The critical point n^{**} is a stable equilibrium point, since any slight change in the size of the network will eventually revert it to the equilibrium size n^{**}. Consider, for example, a situation, when the existing network size equals n^{**}, and one more economic agent joins the network. Networking costs, in that case, become higher than the networking value, which will naturally make the newcomer (or maybe some other existing member) leave the network. When the existing network size equals n^{**} and one of the existing members suddenly leave the network, networking value becomes higher than networking costs, attracting new economic agents to join the network. So, theoretically, once the network achieves the critical size of n^{**}, its size will vary around that level, until any major event happens.

The arrows in Figure 3 represent the potential directions of network development. As soon as the network overpasses its first critical size n^*, the positive net value of networking $(NV - NC)$ attracts new economic agents to join the network. Each new member adds more value to the network, attracting more economic agents. Network enters into its self-development phase, which continues, until its second critical size, the stable equilibrium, is achieved. If the size of the network is more than n^{**} or less than n^*, the negative net value of networking makes the existing members leave the network. Depending on the initial size of the network, it will eventually reach either its second critical size n^{**}, or it will finally collapse.

For many economic networks that do not exhibit negative network effect and, hence, do not have an overexpansion point, the curves of networking value and networking costs intersect only once and there is only one critical size of the network—the first non-zero equilibrium point n^* (Figure 4). In that case, right after the first critical size of the network is overpassed, the network enters its phase of long-term growth, ceteris paribus. And that is one of the main factors of the fast and consistent growth of various network-based internet services, immediately after they have succeeded in attaining a certain number of service subscribers/users (free to play online games and social networking services are the best examples).

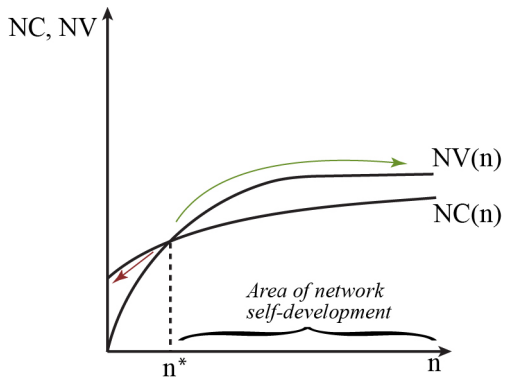

Figure 4: Network formation with no overexpansion point

In the both above described situations, it is easily noticeable that the first critical size of the network plays a crucial role for its formation: it is the starting point of an economic self-development and self-promotion process. Obviously, the elaboration of feasible methods for identification and proper calculation of that "magical" network size could have been the central subject of investigation of network economy, had not the perception of networking value been too subjective and ambiguous. The latter argument eliminates the reasonableness for the elaboration of univerally applicable methods of networking valuation: each decision making economic agent has to analyse and estimate the networking value and costs from her/his own perspective per each specific networking case. Thus, from this point on the general theory of economic networking splits into narrower focused in-depth studies and analyses of specific networks together with their idiosyncratic methods of networking valuation.

Common Sense Questions

CSQ #1: **Does this general theoretic study of economic networks have any practical importance and has it been commonly accepted?**

Let me first answer the second question. No, the networking theory suggested in the current article has not been commonly accepted for three reasons: First, network economy has only recently become a

full-fledged and popular subject of economic investigation. Different scholars and/or researchers suggest different approaches to the study of the phenomenon and neither of them has been commonly accepted as the conventional theory of network economy. Moreover, there is no unanimity over the subject of inquiry of network economy, which is ranging from network-based product/service consumption to organisation of network based economic relationships in a whole region.

Second, the theoretic approach suggested in the current article is in some way extraordinary and unprecedented; it is, actually, an attempt to identify the logic behind economic networks, regardless of the functional role of their constituent economic agents. It is based on the premise that network cooperation exhibits common traits and patterns at all the levels of economic activity. Hence, those common traits and patterns can be conceptualised in a general theory of network economy, applicable to any type of economic network—consumer network, production network, industrial cluster, alliance, etc. In the same manner, the current theoretic study has never been limited to the observation of certain types of networks, in order not to diminish the generalisation and applicability of the underlying theory. However, that type of generalisation is possible at the sacrifice of practical application. And here comes the answer to the first question about the practical importance of the current theoretical study.

It has already been mentioned more than once that the subjectivity in the estimation of networking value impedes the elaboration of a universal model for network valuation. It is only possible to provide with some practical methods of networking valuation, which must be adapted and customised for each specific networking case. The focus goes on individual economic agent and specific networking situation s/he is in. As a result, the theoretic study of economic networks, with its general macro view, seems practically useless, when dealing with real valuation problems.

Certainly, that seeming uselessness is fallacious, since the theoretic analysis of any phenomenon is essential for acquisition of insights into it. The same story goes here. The current theoretic study helps anyone to understand the power and dynamics of economic networks: how they emerge, why they are popular, what they can grow into, how they develop, where their added value comes from and so on. More precisely, it reveals the key characteristics of economic networks:

- Economic networks, formed by economic agents of any functional type, create extra value, utilising the hidden potential of intensified economic cooperation.
- Thanks to network effect, the size of the network directly impacts its value, bringing in the self-promoting processes of network expansion and contraction.
- As economic network grows larger, less is the positive effect of each additional joining member, eliminating the possibility of infinite growth of networking value.
- There are certain critical sizes of economic network that serve as turning points between beneficial and detrimental areas of networking.
- Economic network is a dynamic category, with an ever-changing composition and size.

Besides the above-mentioned key characteristics of economic networks, the current theoretic study provides with a full dynamic picture of network formation and development, represented by a single concatenation of networking processes. It helps decision making economic agents to assess current situation and future possibilities more accurately, arriving at a reasonable decision on joining or leaving the network.

CSQ #2: **At the beginning of the current article, five requisite components of economic network have been mentioned—cooperating economic agents, matter for cooperation, connections, individual contributions and mutually beneficial activity—that also serve as network value boosters. Scrutinising value creating properties of the first mentioned component, this theoretic "networking model" was elaborated. What about the other four components? How do they boost networking value in the current theoretic framework?**

The answer to the question is rather simple, since the reasons of why they boost the value of network have already been discussed at the beginning of the current article. They do impact the value of network directly, irrespective of the size of network. It is obvious that facing with two similar networks, regardless the size, economic agents prefer to join the one, where the matter of cooperation is larger, connections are more, individual contributions of the members are greater and mutually beneficial activity is present. So,

the improvement or increase of each of those four components will raise networking value at all non-zero sizes of the network, shifting the whole curve of networking value up.

It's also worth mentioning that the joint action of the two mentioned requisite components—connections and mutually beneficial activity—add an extra self-filtration property to economic networks. As it has already been described at the beginning, no one would like to establish or hold connections with the members that do not act mutually beneficially. The reduction in the number of active connections leads to a decrease of networking value for those "non-beneficial" members, forcing them to leave the network and freeing space for new "beneficial" members. As a result, the composition of the economic network self-rationalises.

CSQ #3: **What is the point of usage of the word "network"? Can't the described cooperative economic activity be called "group economy"?**

The short answer: No. There are essential differences in the concepts of group and network, which eliminates their interchangeability.

Most importantly, group is usually described as a closed, homogeneous and static whole of elements with tight connections between them. Groups are being formed around the preliminarily set common goals, which are superior to the objectives of its individual members. The common goal is also the driving and guiding force for the whole group, and, as soon as the goal is achieved, the group either breaks up or sets a new goal. The existence of the group is highly dependent on the physical availability of its certain (essential) elements. Groups are more purpose-focused, prioritising the achievement of the common goal. Besides, groups are more prone to the emergence of internal hierarchical structures of regulation and control.

In contrast to that, networks are usually described as open, dynamic and flexible formations, consisting of variety of different elements. The connections between network members are easily "interswitchable". Networks do not have a clearly defined long-term common goal; the common goal forms spontaneously on the mix of the objectives of all its members. Networks do not have essential constituents, since their composition changes over time. Networks are more process-focused, prioritising the economic efficiency and the added value of cooperation. And above all, networks are non-hierarchical flat structures without any central unit of regulation and control.

Confronting the argumentations and examples of the current theoretic study with the above-mentioned attributes of networks and groups, I think it is clear that the discussed economic formations can in no way be called "groups". Similarly the contemporary phenomenon of ubiquitous economic cooperation can in no way be called better than "network economy".

CSQ #4: **Is the rise of economic networks consistent with the progress of free market economy (capitalism)?**

Yes, it is. Taking into consideration the fact that intensive cooperation is at the heart of network economy, it may seem, at first sight, that the latter is incompatible with market competition, which is the pivotal element of market economy and capitalism. Quite the contrary, the rise of the network economy roots itself in the rapid development of competitive markets. Surprisingly, free market competition is a pivotal element of network economy as well. Moreover, competition based economic processes are indispensable to the formation, development and proper operation of economic networks, as substantiated by the paragraphs below.

Because of the existence of self-filtration property of economic networks (see CSQ #2), a fair level of competition is observed between the members of network. Network members compete to achieve a higher level of cooperation, absorbing more networking value. The flexibility of network connections creates an intra-network competition between networking members, requiring them to be as "beneficial" as possible, in order not to lose active connections with other members and, hence, their place in the network. That is why in many economic networks there is usually a set of requisitions for economic agents that wish to join that network. The latter, in its turn, brings in competition between the economic agents outside the network.

In his book—"The Network Economy: Strategy, Structure and Management"—Ard-Pieter de Man provides with the following definition of economic networks:

> Networks are defined as selected sets of multiple autonomous organizations, which interact directly or indirectly, based on one or more alliance agreements between them. The aim of networks is to gain a competitive advantage for the individual organizations involved and occasionally for the network as a whole as well.[de Man, 2004, p. 4]

Although the above-mentioned definition of economic networks does not fully coincide with the concepts of the current article, it provides with an interesting idea that besides all its hidden potential of added value, economic networking affords an opportunity to gain a competitive advantage. And as the number of economic agents grows in a certain industry, more of those agents are willing to join the respective industrial networks in order to gain competitive advantage over the others. Market competition goes beyond the scope of individual organisations, transforming into a competition between economic networks. Thus, the intensive cooperation of networking economic agents does not eradicate competition; It creates new, more complex and more competitive economic units—economic networks—which gradually become the new key competitors in contemporary markets.

Summarising the previous paragraphs, we can state that economic networks do really form and develop in a highly competitive environment. The emergence of economic networks is stimulated by increasing competition, which takes on a global scale, demanding more competitive advantages from individual economic agents. As a result, the competitive economic unit transforms from individual organisation into an economic network, creating a qualitatively new and higher level of market competition—a complex competition between the networks of cooperating economic agents.

So, the rise of the network economy is fully consistent with the progress of free market economy. Moreover, it is also the result of the natural evolution of capitalist system of economy and society—a thesis, best described and explained by Manuel Castells:

> However, this evolution toward networking forms of management and production does not imply the demise of capitalism. The network society, in its various institutional expressions, is, for the time being, a capitalist society. Furthermore, for the first time in history, the capitalist mode of production shapes social relationships over the entire planet. But this brand of capitalism is profoundly different from its historical predecessors. It has two fundamental distinctive features: it is global, and it is structured to a large extent around a network of financial flows.[Castells, 2000, p. 502]

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Conclusion

It has been more than a decade, since mankind has stepped into the 21st century, which is often marked as a historical period of abrupt and radical global changes in almost all the spheres of human life. Different astrologists have predicted various global events of spontaneous force, with some of them getting as fatal as the full apocalypse of the Earth. However, until those prophecies come true (Heaven forbid:), each of us have time to analyse the past events within the scope of own competences and try to answer a simple yet important question: What has really changed?

Since I am an economist, the scope of my competencies encompasses the observation and analysis of the socioeconomic events that may have left a considerable impact on the lives of people worldwide. However, since the current article is fully devoted to the theoretic study of network economy, I would like to briefly pass through some major socioeconomic events that have fundamentally changed the global socioeconomic order, creating a new space for the formation and development of network economy. Finally, what it is all about?

First of all, it's all about the transformation of socioeconomic changes into a continuous, self-promoting process, calling for a higher degree of mutual connectivity between various economic agents—consumers, employees, tax payers, manufacturers, etc. The advancements in the fields of information and communication technologies have fostered the instantaneous and continuous spread of information across the globe. When a socioeconomic change is taking place, a vast number of economic agents instantly learns about it and reacts to it by making necessary changes in their own socioeconomic activity. The information about the changes in the socioeconomic activity of individual economic agents, by the same information channels, instantly reach other economic agents, who make further changes in their own socioeconomic activity. As a result, socioeconomic changes have turned into a single continuous process. And in order to coordinate their own socioeconomic activity in concordance with those continuously occurring socioeconomic changes, economic agents have to establish mutual connections that provide continuous flow of information.

In addition, it's all about the functional alienation of economic agents from their physical location and substance, stimulating economic cooperation between geographically scattered economic agents. The increased portability has brought in a change in the perception of economic agents: they are no more identified with their physical locations. When, for example, you write an e-mail, post a comment or make a mobile phone call to someone, you are no more interested in the real location or physical identity of the person you want to contact to or share information with; often you may not even fully know who you are contacting with. Moreover, similar changes are observed in the sphere of technologies: most of the value of technologies is being contained in their non-material components, as they are becoming more science intensive. As a result, physical limitations of economic activity (local availability of resources) disappear, stimulating the emergence of economic networks, which form around the functional qualities of economic agents: competences, skills and capabilities take the decisive role in the choice of an economic partner.

And finally, it's all about the worldwide standardisation of socioeconomic relationships: a global process, taking place at two levels—formal and informal. At the formal level various international organisations are working hard on the elaboration and application of various acceptable regulations, to facilitate economic activity across borders. At the informal level, the standardisation of socioeconomic relationships arises out of the global spread of the western (capitalist) style of socioeconomic activity, which, in each region, confronts and intermingles with the local culture and traditions, creating a specific type of socioeconomic order that contains a lot of elements of capitalist society. Those latter elements, in their turn, serve as common points of interaction between the economic agents of different socioeconomic systems. Thus, the cooperation between economic agents of different regions encounters less objective and subjective obstacles.

Taking into consideration all the above-mentioned argumentations, it becomes clear that the rise of economic networks is a natural and inevitable process of the global economic evolution. Network logic penetrates every nook and corner of socioeconomic relationships, adding new challenges for the economic agents of this turbulent and uncertain world. That is why, it is very useful to memorise the main principles of network economy, since it is the key to the firm grasp of the contemporary logic of economy:

- Economic networks are dynamic (growing or diminishing over time) and flexible (composition changes over time);
- A certain critical size is required initially for the network to persist;
- As soon as the first critical point is overcome, economic networks enter their phase of self-development;
- Despite the existence of self-promoting properties, the growth of economic networks is finite.

At the very end, I would like to quote Kevin Kelly, whose comparative description of the current spread of the network logic is one of the best:

> The atom is the icon of the 20th century. The atom whirls alone. It is the metaphor for individuality. But the atom is the past. The symbol for the next century is the net. The net has no center, no orbits, no certainty. It is an indefinite web of causes. The net is the archetype displayed to represent all circuits, all intelligence, all interdependence, all things economic, social, or ecological, all communications, all democracy, all families, all large systems, almost all that we find interesting and important. Whereas the atom represents clean simplicity, the net channels messy complexity.[Kelly, 1998, p. 9]

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