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ECONOMIC FEATURES OF THE NOWADAYS NETWORK

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Abstract

The people we interact with on a regular basis, and even some we interact with only sporadically, influence our beliefs, decisions and behaviors. Examples of the outcomes of the social networks on the economic activity are abundant and pervasive, and they include roles in transmitting information about jobs, new products, technologies, and political opinions.

In this paper the author aim to present terms and basic notions of economics of networks: the added value created by the Internet, economic concepts associated to the Internet (network effects, economies of scale, principle „Winner take all", internet influence on the phenomenon of „Winner takes all"). These are to be presented as to understand what is a network good.

Keywords*: network effects; financial systems; network approach; internet added value.*

1. Introduction

All human activity is being based on cooperation. We can distinguish the following main areas:

1. personal and social life;
2. economic activity;
3. financial relations;
4. education dissemination of knowledge;
5. research development.

The people we interact with on a regular basis, and even some we interact with only sporadically, influence our beliefs, decisions and behaviors. Examples of the outcomes of the social networks on the economic activity are abundant and pervasive, and they include roles in transmitting information about jobs, new products, technologies, and political opinions.

In one part of the United States an experiment was conducted, the subjects were instructed to write a letter to a person in another part of the country [6, p. 2]. The subjects were told limited information about the target, such as the target's name and some information about where the target lived (but not an address). They were instructed then to send the letter to someone who might be able to forward it to someone with the purpose to reach the target. About a quarter of the letters reach their targets, with a median number of five links. This sort of result has also been followed up by many studies on larger data sets, across countries, and with more detailed analyses of what strategies people used in selecting whom they forwarded messages to.

The small average distances in networks have important involvements for things like diffusion and contagion. Connections within the financial world are varied. The dependencies between financial institutions stem from both the asset and the liability side of their balance sheet. The intricate

structure of linkages between financial institutions can be naturally captured by using a network representation of financial systems.

Within the context of financial systems, the nodes of the network represent financial institutions, while the links are created through mutual exposures between banks formed on the interbank market, by holding similar portfolio exposures or by sharing the same mass of depositors.

A network approach to financial systems is particularly important for assessing financial stability. It can be instrumental what externalities the risk associated with a single institution may create for the entire system.

Financial institutions are indirectly connected by having similar portfolio exposures. When they share the same mass of depositors, banks are connected in a network through the liability side of the balance sheet.

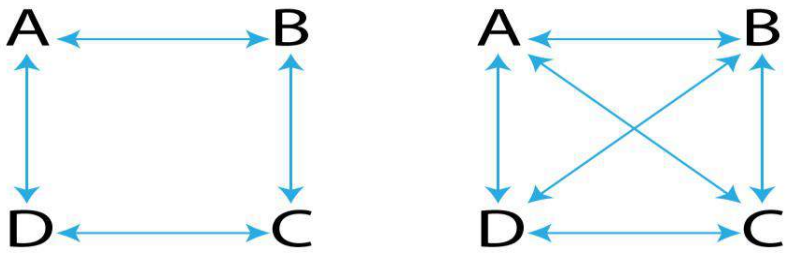

Figure 1: Correlation of the banks

As we can observe, case A is a less stable network. In case a bank collapses then the whole network will collapse.
In case B the network is more stable due to the fact that we have a third insurance that if a bank collapses the interconnectivity between banks will distribute the impact among all of the other banks.

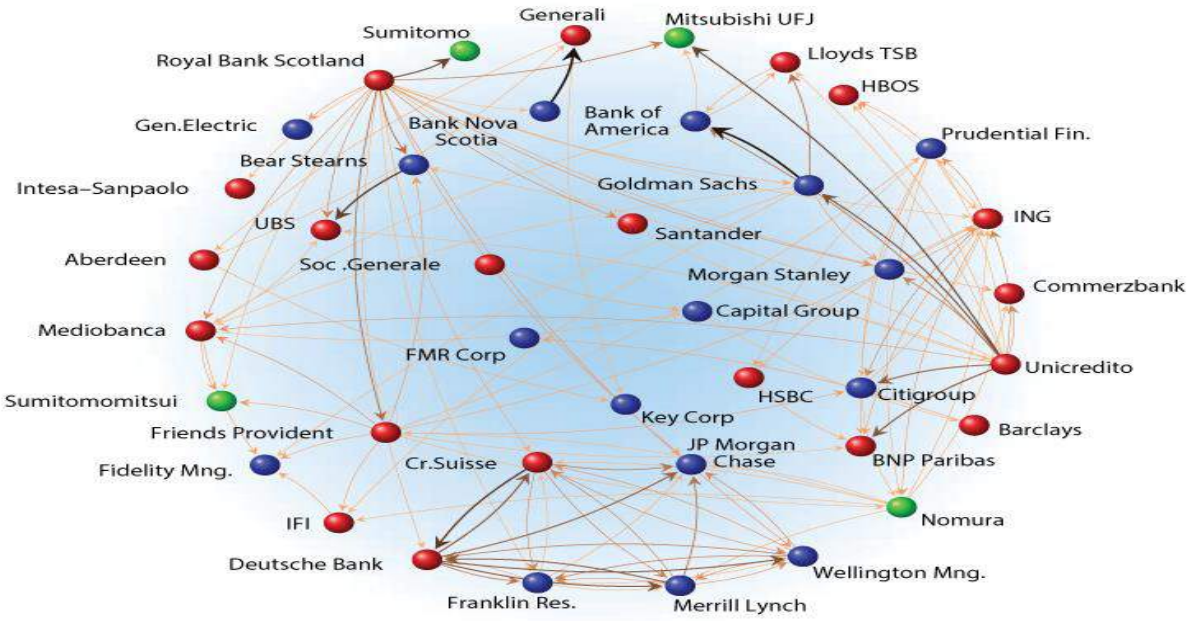

Figure 2: Sample international financial network

On the previous scheme [2, p. 5] we have a sample of the international financial network. Nodes represent major financial institutions and the links are the strongest existing relations among them. Vertex colors express different geographical areas: European Union members (red), North America (blue), other countries (green).

The diagram shows a dense connectivity among the financial institutions. There are mutual loops involving multiple nodes. This indicates that the financial sector is highly interdependent. That might affect market competition, increase systemic risk and make the network vulnerable to instability.

The Internet presents the possibility of a radical reversal of this long trend. It is the first modern communication medium that expands its arrow by decentralizing the distribution function. Much of the physical capital that embeds the intelligence in the network is being diffused and owned by end users.

We call the combination of these two trends-the radical decentralization of intelligence in our communications network and the centrality of information, knowledge, culture, and ideas to advanced economic activity-the *networked information economy* [5, p. 5].

Network effects are present when a product becomes more useful to consumers, if the more other people are using it. For example, the owner of a fax machine benefits from the fact that there are lots of other people with fax machines. If there were no other users of fax machines you couldn't send a fax to anyone.

Note that there not necessary be anything particularly high-tech about network effects. Automobile owners benefit from having a ready supply of parts and mechanics that make it easier to have their cars repaired should they break down [3].

The more units are of a particular automobile model, the more likely that any single owner can find such repair facilities. Therefore, to the extent that consumers value the ease of repair, automobiles should have network effects.

Each additional user increases the utility of the network for the others. Therefore, the demand curve for the benefits of network has a completely different look than for usual goods. Willingness to pay increases as the number of new members connected to the network is bigger.

Almost all manufacturing exhibits some economies of scale. But usually, at some point, these economies tend to run out and are superseded by other components of production costs that raise the average cost of production as output increases.

When a software product is developed, for example, the total cost of development is a fixed cost that does not depend on whether ten or ten million units are actually sold. The costs of duplicating, shipping, and servicing units that eventually land in the hands of consumers are often considered to be close to zero [4, p. 3].

The cost structure of network assets differs from that of ordinary goods. The main part of the cost falls on the initial period of production. Subsequent copying costs are negligible as compared to the cost of the original.

The effects of scale for ordinary goods are gradual and linear; networks increases value exponentially.

The effects of scale for ordinary goods are result reached by one big company. The network allows multiple users to obtain a significant increase in usefulness, and only the multitude participating of businesses create economies of scale [4].

2. The degree of investigation of the problem currently, and purpose of research

The internet is a rather popular topic among the researchers, due to the fact that it is yet unclear the extent to which it is different from the physical market. One of the best ways to describe the web is via the economics of networks, due to the importance of connection in the description of this market. The connections for the web play a crucial role in the understanding of the way linkages are created. The majority of the researchers however, prefer to refer to the web only as the e-commerce segment, but the segments of the web are much more diversified than this.

The purpose of this research is to present the economics of networks approach toward different subjects, as well as the internet itself, and to show the advantages of using economics of networks for research purposes in different fields. Due to the fact that networks show an interconnected economy and phenomena, these can be used to more precisely and lively illustrate a market, or a resilience of a banking system etc. Another aim of this paper, is to present the added value created by the internet to the nowadays economy, such as diminished costs of economy of scale, the appearance of a phenomenon called „network goods".

3. Methods and techniques applied

One of the main research methods used is the analytical method. This method includes the analysis of literature reviewed by the author in order to give the reader a full idea of the development of the field. Another method used by the author is inferring the ideas developed from observation of the real market phenomena and extrapolating them to theories about the internet and the network aspects.

4. The added value created by the Internet

Internet creates value by reducing transmission costs of Information. The methods and speed of information dissemination hold an important position in economy. These issues demonstrate supremacy of the Internet upon previous technologies used to reduce the costs of spreading information. The first means of transmitting information were: travel pigeons, postal letters that were in written form and presented low speed transmission disadvantage.

Later came other quicker but limited modes of information transmission: Morse code and the telegraph exactly, but they had many disadvantages. They were not accessible to everyone and at the same time assumed special places designed for sending and receiving the message, which means increasing costs.

A new innovation in communications accessible to more people was the phone which involved lower cost of message delivery and the shorter time of transmission. This feature has spread more difficult because new infrastructure should be implemented to operate the system. Even with this impediment, telephony communications significantly changed previous modalities. Subsequently,

radio and television have had a different impact on communications due to transmission of information in only one way direction.

All they needed an infrastructure of increasing complexity so that technological evolution has led to the emergence of the Internet. Mostly, it is based on the same mechanisms of information transmission as television or telephone, so, at that time, the existing infrastructure only required development. Being a combination of television and telephone, the Internet brings many advantages. Individuals can enter a virtual environment for information, socializing, fun and relaxation.

Over time they have created numerous social media (Facebook, Hi5, and Twitter), blogs etc. We may say that the Internet is a combination of newspaper and telephone.

5. Network effects

A phenomenon where a good or service becomes more valuable when more people use it can be associated with the network effect. The Internet is a good example. The more users have access to the Internet, there are several web sites that could be visited and more people to communicate.

Therefore, network effects occur when the value of a product increases by increasing the number of users of the same product. This phenomenon is named by economists the network externality, in the sense that additional consumers increase the existing external network benefits for consumers.

The decline of social network „classmates" - which lost over the summer about 20% of traffic - in favor of new networks such as Facebook or Twitter – is explained by the network effect. Other examples of products are fax and phone that meet major benefits with their use by more people. The effects of the network can be identified on the Microsoft Office products such as Word or even cars - the more people have a certain brand of car, the easier and more inexpensive is to repair it.

The net effect is based on accelerating the circulation of information on explosive gain information flow, facilitating communication act, and the network capacity to assimilate, to multiply, and to influence, to change the philosophy of social relations.

In most cases, the network effect is associated with positive network externalities, but also may happen the negative externalities – overcrowded network. An example of this would be phone lines crowded during holidays. It is assumed that many products and companies associated with the Internet present an economic feature called the network effect.

6. Economies of scale

The economy of scale is an economic principle that the average cost (unit) of a product decreases with the increasing number of units manufactured. Many high-tech products show significant economies of scale due to the high costs required during their launching and incredible low cost for their multiplication. In such a way the economies of scale present much more value for Internet associated products.

Principle „Winner take all".

It is obvious that when the effects of the network are issued, presenting an extensive network companies have an advantage over those characterized by small network. Considering that other factors are the same in both cases, consumers would tend to pay more to join the largest network. This is due to the fact that large networks, by definition, have stronger network effects. In this situation, you may notice increased profitability of large networks in relation to profitability of smaller networks. [7]

This advantage - the biggest rules over the lowest – refers to the principle of „winner takes all", although consumers tend to have different tastes, and market shares are almost never 100%. Nowadays the preferred term is „winner-take-most" as long as market quotas never are 100%.

However, there may be cases where the effects of the network foster characteristics „winner takes all". The software industry falls under this specification. A good example of the principle of „winner takes all" is Google offering the most popular online search engine. It is clearly known by competitors that Google has a strong network effect, which prevents them to seize market share. For example, once an application has been created, it can be made available for users almost immediately via the Internet and for an unlimited number of users at a cost that is almost insignificant.

Internet influence on the phenomenon of „Winner takes all".

Many computer components, such as software or processors tend to have specific characteristics associated with the phenomenon of „winner-take-all". For example we have as dominant products:

- Windows
- Excel spreadsheet.

It is believed that companies whose business is based on using Internet have this characteristic, because technology is a very dynamic field.

It is generally considered that most businesses operating on the Internet tend to be the topic of the network effect, because the Internet itself is a network.

The economy of networks presents a new phase of emerging development. The features of that economy are important to be understood for doing successful business.

7. Conclusions

Finally we can say that the Internet has clear evolution over radio or television in terms of infrastructure equipment that requires new transmitters and receivers.

Internet performs two-way transmission of information, which is not very revolutionary, because television, radio and phone together could do the same. What is really revolutionary advent of the Internet is the ability to quickly retrieve information stored on computers, phones and TVs using one device and at the same time.

All along, the Internet offers a new experience through two-way communication combining telephony with television and display information storage capacity calculus system.

The Internet is a benefit in any field. The companies are using online to attract customers (advertisers) to its present or sell products. Customers can search for the most suitable product

according to need, price and features. All these by using a computer, smartphone, laptop etc. connected to the Internet.

In terms of business environment, it may suffer from activity on the Internet in that they no longer benefit from the monopoly to be physically close to the consumer. Also the trade margins applied by different companies may not differ too much as long as the consumer will always be able to compare prices from different companies just with a mouse click.

Doing business on the Internet does not necessarily mean that their offer features „winner take all".

The internet has drastically changed the means of responsiveness and doing business, due to the speed of information transmission as well as the speed of the transmission of feedback to that certain information. However, the network itself has created means for appearance of a certain type of goods, known as the network goods, that otherwise would not be possible.

The „winner takes all" principle is a principle that doesn't benefit all companies operating on the internet, as already stated. This is due to the so-called locking mechanism, the weak lock in and the strong lock in. These principles consist of users according a higher value to the most used product in a certain network, basically speaking.

As a conclusion we would like to state that this paper, although theoretical, poses an importance for further exposure of the importance of economics of networks for modeling and studying the nowadays, all so growing digital economy.

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Rezumat

Oamenii, cu care interacționăm în mod regulat sau chiar doar episodic, influențează convingerile noastre, deciziile și comportamentul. Exemple de influență a rețelelor sociale asupra activității economice sunt variate și pretutindeni, acestea îndeplinesc rolul de furnizor al informațiilor cu privire la locurile de muncă, noile produse, tehnologii și opinii politice.

În această lucrare autorul își fixează scopul prezentării termenilor și noțiunilor de bază ale economiei de rețele: valoarea adăugată creată în Internet, conceptele economice asociate Internet-ului (efectele de rețea, economiile de scară, principiul „Cîștigătorul ia totul", influența Internet-ului asupra fenomenului „Cîștigătorul ia totul"). Acestea vor fi prezentate pentru a înțelege ceea ce este o rețea bună.

Cuvinte-cheie*: efectele de rețea; sistemele financiare; abordare de rețea; valoarea adăugată creată în Internet.*

Аннотация

Люди, с которыми мы взаимодействуем регулярно или только эпизодически, влияют на наши убеждения, решения и поведение. Примеры влияния социальных сетей на экономическую деятельность в изобилии и повсюду, они выполняют роль передатчика информации о рабочих местах, новых продуктах, технологиях и политических взглядах.

В данной статье автор ставит себе цель раскрыть содержание основных понятий и определений экономики сетей: добавленная стоимость созданная в Интернете; экономические концепции ассоциируемые с Интернетом (сетевые эффекты, эффект масштаба, принцип „Победитель получает все", влияние Интернета на феномен „Победитель получает все"). Они будут представлены для понимания, что означает хорошая сеть.

Ключевые слова: *сетевые эффекты; финансовые системы; сетевой подход; добавленная стоимость созданная в Интернете.*