CURRENCY, FINANCIAL SYSTEM AND VIRTUAL SPACE.
A MICROECONOMIC APPROACH

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Abstract

The 21st century will be strongly marked by the emergence and development of virtual space. The international financial system will make full use of the benefits of this artefact. What will be more difficult to accept is that everything related to virtual space means collecting, processing, using and storing information, and so! What is currently the subject of many studies under the name of virtual currency is based only on users' trust in a symbol, information.

At the level of companies, the use of this virtual space has many advantages but also risks. This paper attempts to formalize, in the form of additional costs and revenues, the result of companies' actions in the virtual space.

Keywords: virtual space, information, virtual currency

JEL classification: C81, D85,E42

Real Space – Virtual Space

One of man-made products is also virtual space, a space where the only element is information. In the virtual space, only information is exchanged between the different exit points in this space based on specific protocols. Over time, with the introduction of new technologies, the amount of information gathered, processed, used and stored increased exponentially. In this context, in the virtual space one can talk about the economy, a virtual economy only insofar as it accepts as one object only one resource - the information. What is important is the transfer between this virtual space and the real space.

Based on appropriate protocols, "exit" information from virtual space can be transformed into actions to transfer the state of other resources (including financial resources).

At present, based on changes in the structure and mechanism of virtual space operation, a subspace is created autonomously to human action (see the Internet of Things!) And attempts to engage directly with real space without human intervention (subspace of human existence or other subspaces).

As the currency is, virtual space information is an intermediary, often more user-friendly than currency (fewer regulations and depersonalization of transactions).

In this context, the financial system takes full advantage of the existence of such a virtual space, with the direct goal of making financial transactions as profitable as possible.

Gradually, the currency as an instrument of the financial system took on a new form: the electronic currency, which, according to the Law no.127 / 2011, has the following meanings: "the electronic currency is an electronically stored monetary value, including magnetic, representing a claim on the issuer, issued to receive funds for the purpose of performing payment transactions and which is accepted by a person other than the issuer of electronic money. "

Along with electronic money, the virtual currency also appeared, a tool used in financial transactions, only in virtual space, and not regulated by all the world's states.

Electronic coins and virtual coins have common features: they are used in virtual space and are based on user trust.

The use of virtual coins as an alternative means of payment poses potential risks to the financial system, linked to lack of regulation and supervision, money laundering, terrorist financing, price volatility and lack of adequate security.

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"If the authorities do not act preventively, cryptomonas would interconnect with the financial system and could become a threat to financial stability," warned Augustin Carstens, general manager of the Basel International Bailiff.

The money is printed, stripped, and whatever you call it, it's nothing more than just a figure on a computer, because the vast majority of the money we use today is digital.

When talking about cryptomon, we are talking about a purely digital coin. It is created using cryptography, making it almost impossible to counter it. The way Cryptomoneda began to exist is very interesting because it was and is a "rebellious" element in the current financial system that people see as a "bad evil".

Criptomoneda is the practice of creating algorithms developed around computerized hypotheses. Essentially, it is a packet of information, and cryptographic security surrounds it to keep the information secure. According to initiators, these information packs are almost impossible to "break" even the best-paid hackers.

The idea of the "cyberphunk" movement was incredibly innovative, and it is centered on the idea of creating an alternative to the traditional currency that would not require a central authority for its management that would be easy to transfer that would work beyond political limitations and which belongs to people everywhere.

This idea was so strong that it began to materialize back in 1995 when Seth Godin wrote in his book "Presenting Digital Cash"[102] about Jon Matonis (a popular commentator of the Alternative Coins for Forbes Magazine). "Matonis contradicts the fact that what is going to happen in the world of money is nothing more than the birth of a new era of knowledge about industry: developing, securing and managing private coins."

All those who have and have the idea of alternative coins have imagined online information marketing, a place where buyers and sellers can trade anonymously using undetectable digital money, all from state secrets to various reports be bought for the right amount of money.

All the virtual coins up to 4 years ago were based on intermediaries such as banks. And we say 4 years ago, because in 2009 there were the first signs of a change in the field: the emergence of the Bitcoin, a decentralized 100% digital currency.

Bitcoin is not the only example, though. In the last year, other digital coins appeared, some more important, others more jokingly, such as Ethereum, Ripple, Litecoin, Monero.

Bitcoin is a cryptomoneda that was invented in 2009 by an anonymous programmer who used the nickname Satoshi Nakamoto. Why has Bitcoin become so famous in recent years, and why is it so profitable? First of all, Bitcoin is a cryptomonade, a virtual coin that uses blockchain technology. Blockchain is a decentralized technology, the money is transferred in real time from one person to the other, without being controlled by a central system, which does not allow the occurrence of fraud. What can you do with cryptomon? First of all, you can buy goods such as airplane flights, hotel accommodations, cars and much more, because more and more manufacturers and suppliers of goods **trust** in cryptomonades.

Initial public offering of virtual currencies are unregulated operations, similar to the initial public offerings of shares on stock exchanges, through which cryptomonas operators raise funds in exchange for electronic assets. Recently, the SEC, the institution overseeing the US capital market, announced that it had identified a transaction of this kind that fraudulently raised $ 600 million.

Rob Leathern, Product Management Director, did not rule out the possibility of legitimate business with cryptomones in their blog posting on the social media platform.

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[102] *Seth Godin, Presenting Digital Cash, Sams Net Pub., Indiana University, 1995, 256p*

What is Happening at the Microeconomic Level?

In the current age, every business uses virtual space for transactions of all kinds: supplying goods with the object of activity, production, selling products ("online" sales), management.

The problem is how much it costs to use virtual space and what effects.

a. determining the cost of using virtual space

It is obvious that the use of virtual space is directly related to the concept of information, to the value of this information at the firm level.

There are a number of obvious costs, such as:

- for fixed assets: initial investment and depreciation costs for IT equipment and electronic data transfer networks, as well as software for access and security in virtual space (denoted as A)

- concerning the salaries of employees directly involved in collecting, processing, using and storing information (marked with B)

But there are also a number of costs that are not directly apparent and are related to the operation and utilization of the virtual space interface. The only element that can be "commensurated" is the timeline used to ensure and maintain a connection with virtual space (denoted by C).

Under these circumstances, a total cost (CT) of the virtual space link can be formalized using the formula:

$CT = A + B + \Omega C$

where

A = initial investment and depreciation costs for IT equipment and electronic data transfer networks as well as software for access and security in the virtual space

B = total expenditure with employees directly involved in collecting, processing, using and storing information

C = the timetable used by employees to ensure and maintain a link to virtual space (without employees directly involved in collecting, processing, using and storing information)

Ω = average cost paid by the firm for a time unit C

b. determining revenues from using virtual space

For companies, turnover can be a source

a. directly:

- "online" sales (V_o)

b. indirectly:

- by increasing the number of transactions (number of sales) V_{t1}

$V_{t1} = (N_{SP} - N_t) * p$

where

N_{sp} = number of sales using the benefits of virtual space

N_t = number of sales traditionally

p = average price of the products offered by the firm

- by reducing trading time (V_{t2})

$V_{t2} = (T_t - T_{sp}) * N_{sp} * p$

Where

T_t = time used by the firm to trade a sales traditionally

T_{sp} = the timeline used by the firm to trade a sales using virtual space

N_{sp} = number of sales using the benefits of virtual space

p = average price of the products offered by the firm

- through a more effective creative (advertising in virtual space and network effect, respectively V_{t3})

$V_{t3}= (V_{spr}-V_{tr})$

Where

V_{spr} = additional revenue earned through the creative in the virtual space

V_{tr} = additional earnings earned by advertising in real space

c. Determining benefits from using virtual space

Of course, the benefit from using virtual space (Bsp) can be determined directly as follows:

$B_{sp}=V_o+V_{t1}+V_{t2}+V_{t3}-C_t$

Where

V_o = sales "online"

V_{t1} = additional sales due to the increase in the number of transactions

V_{t2} = additional sales due to shorter trading time

V_{t3} = additional sales as a result of a more efficient advertising (advertise in virtual space and network effect

C_t = total cost of the virtual space link

Conclusions

Of course, some of the costs associated with the use of virtual space can not be formally measured (such as those related to information security) and no additional revenue (it is not efficient to strictly track the revenue obtained from the use of virtual space only) but, at least indicatively, this way of thinking can provide management with a useful tool in better management of material, human and informational resources, and increasing the performance of the whole activity at microeconomic level.

Bibliography

Barrdear, J. and M. Kumhof. 2016. "The Macroeconomics of Central Bank Issued Digital Currencies." Bank of England Staff Working Paper No. 605

Chen, H., M.-H. Felt and K. P. Huynh. 2017. "Retail Payment Innovations and Cash Usage: Accounting for Attrition by Using Refreshment Samples." Journal of the Royal Statistical Society: Series A (Statistics in Society) 180 (2): 503–530.

Dyson, B. and G. Hodgson. 2016. "Why Central Banks Should Start Issuing Electronic Money." Available at http://www.positivemoney.org.

Engert, W., T. Gravelle and D. Howard. 2008. "The Implementation of Monetary Policy in Canada." Bank of Canada Staff Discussion Paper No. 2008-9.

Engert, W. and Ben S. C. Fung, 2017, Central Bank Digital Currency: Motivations and Implications, Central Bank of Canada, Ottawa, Ontario

Freedman, C., 2000, "Monetary Policy Implementation: Past, Present and Future – Will Electronic Money Lead to the Eventual Demise of Central Banking?" International Finance 3 (2): 221–27.

Fung, B. and H. Halaburda. 2016. "Central Bank Digital Currencies: A Framework for Assessing Why and How." Bank of Canada Staff Discussion Paper No. 2016-22.

Fung, B., K. P. Huynh and L. Sabetti. 2014. "The Impact of Retail Payment Innovations on Cash Usage." Journal of Financial Market Infrastructures 3 (1).

Lagos, R. 2006. "Inside and Outside Money." Federal Reserve Bank of Minneapolis Research Department Staff Report 374.

Martin, A. and J. McAndrews. 2008. "An Economic Analysis of Liquidity-Saving Mechanisms." Federal Reserve Bank of New York Economic Policy Review 14 (2): 25–39.

Raskin, M. and D. Yermack. 2016. "Digital Currencies, Decentralized Ledgers, and the Future of Central Banking." NBER Working Paper 22238.

Rogoff, K. 2016. The Curse of Cash. Princeton University Press.

Sams, R. 2015. "Which Fedcoin?" https://cryptonomics.org/2015/02/05/which-fedcoin/.

Segendorf, B. and A. Wilbe. 2014. "Economic Commentaries: Does Cash Have Any Future as Legal Tender?" Sveriges Riksbank Economic Commentary, no. 9.

Seth Godin, Presenting Digital Cash, Sams Net Pub., Indiana University, 1995, 256p

Skingsley, C. 2016. "Should the Riksbank Issue E-Krona?" Remarks to FinTech Stockholm 2016, 16 November.

Stevens, A. 2017. "Digital Currencies: Threats and Opportunities for Monetary Policy." National Bank of Belgium Economic Review (June): 79–92.