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TRADITIONAL AND MODERN FORMS OF MONEY: EURO AND BITCOIN

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Abstract

This paper attempts at looking into the modern concepts of money both in terms of trans-national, artificial money functioning as a medium in the economic exchange in its physical form (the euro) as well as global, artificial money operating as a medium of exchange in a virtual and immaterial form (bitcoin). For the purposes of better understanding the importance of artificial currencies functioning in the contemporary economic world, a historical background is presented as an introduction to illustrate various forms of money and its evolution over the centuries.

Keywords: money, virtual money, immaterial money, bitcoin, physical form of money

JEL classification: E58

Introduction: the essence of money

Money is a commodity however if it is to function as legal tender, all participants of the market must agree to use it as a medium of economic exchange. If such a consensus is achieved, prices for other goods will be expressed in money terms being an equivalent to other goods and services. This way it facilitates the commercial exchange and circulates between final market participants, countries and corporations, even influencing the decisions to pay or avoid taxes (Kosikowski et al., 2008; Čábelková and Strielkowski, 2013; Strielkowski and Čábelková, 2015).

In the contemporary economy, money performs a variety of functions except for a basic one as legal tender thanks to which it is commonly recognized. People exchange their goods and services into money and then they use it for buying goods and services they need. Fulfilling the function of the exchange medium money is practically applied to all activities. Employees exchange services in the form of labour into money. People buy or sell goods in return for money. Thanks to this function, money facilitates commerce and favours a social production. It simplifies the exchange as compared to barter transactions (a commodity in return for a commodity) in the non-pecuniary economy.

Other functions of money involve treating it as a measure of value as it is the value that measures the value of goods and services and perceiving it as a medium of storing a value, it can be used to make purchases in the future. A person may keep money and spend it later to make a transaction (Mansfield, 2002).

The function of storing a value is connected to stability of money. Houses, collections of stamps and interest-bearing deposits in banks may be mediums of storing the value.

Apart from its role and importance to the economy, money is also an element of social life. On one hand, it determines human behaviour as it is an equivalent to everything that a human being needs for life. It gives rise to desires, a way of thinking, a lifestyle or consumption. It motivates

and encourages one to act. It evokes willingness to develop, improve, multiply measurable achievements.

On the other hand, it became an absolute value, an object of desire which does not always lead to positive phenomena. Money causes a collapse of social structures and builds new ones. The pursuit of wealth creates a lot of differences between social groups. Social stratification is visible in terms of the amount of money possessed followed by the power, influences and fame. This way the power of money may lead to pathology of social relations.

Money also carries information. The society acquires knowledge about financial standing of the state and institutions.

As far as the theory of money is concerned, the literature discusses various views on prices (properties) of money. While attempting to synthesize those approaches, attention should be drawn to a few universal features from the point of view of the knowledge about money. Stability of money's purchasing power seems to be the most important characteristic of money. In practice, it means that the useful value acquired by money should not fluctuate much with time. Money should also be characterized by uniformity meaning that the same denominations are same everywhere and cannot be changed. Nevertheless, it does not mean that in various places the purchasing power of these denominations will be varied. For example, in Libya 50 kg of bread may be bought for \$10, whereas in USA only 5 kg of bread may be purchased at this price. However, a ten-dollar bill will be the same ten-dollar bill (paper money). It also must be recognized and have an identity of its own, an easily recognizable feature which should make forgery more difficult. For the purpose of improving the exchange and possibilities of establishing the value, money should also be divisible into smaller units. In terms of practicality, it should be handy and durable which involves carrying and keeping banknotes made of enduring materials.

Historical background

Money has undergone and is still undergoing an evolution. This evolution may indicate a few "turning points" which might be considered "revolutionary" in the history of money.

The first stage of the evolution consisted in barter and commodity money. At the very beginning the primeval people noticing the need of exchanging transactions traded goods for goods. Such a solution aroused a feeling of injustice considering the fact that goods were indivisible. It was obvious that when an ox was exchanged for a unit of fabric, the person taking the ox was a "winning" party. After first experiences with barter, a need of finding solutions arose which would constitute an equivalent to exchange. Commodity money appeared. Chosen goods began to fulfil the function of legal tender (e.g. cattle in the Mediterranean, horses in steppes of Euro Asia, cereal in Middle East, tea in South East Asia, cacao beans in Central America). Other forms of exchange began to develop such as payment objects symbolizing a value and allowed people to save or buy goods (for example shells in China, India, Japan, Africa, Asia and Oceania, stone axes in New Guinea and Central Europe, marble discs in New Hebrides, agates in Borneo or jades in China).

This phase of the evolution produced a more sophisticated form of money, namely metal money resembling a little contemporary cash however the value was assessed on the basis of its weight and not as in case of contemporary money its denomination. Base metal pieces could be used as metal money: iron, brass or copper and later on precious metals: silver and gold which were weighed (weighted money) and formed into bars (counted money).

The first phase of the evolution ended with metal money. Timeline is hard to define. It would be difficult to establish the date of commencing the process of evolving money. The need arose together with the need of trade off, and the need of trade off originated in the beginnings of the civilization. Even primeval people were aware of no possibility of functioning in an autarchy

where each individual is able to secure the existence and development.

If we want to define the timeframe for this phase in general, we would have to acknowledge that in fact a homo sapiens benefited from the exchange of goods. The homo sapiens appeared about 100 000 years BC. It came to Europe about 40 000 BC. The phase ends 3-4 century BC when Phoenicians developed a new form of money- metallic money. A coin played a key role here – a round object with special marks confirming the value of the alloy. In fact, the coin had an immanent value at this stage of the evolution. It corresponds to the value of the metal used for its manufacturing. It was something intermediary between the barter and the nominal value. On one hand, it constituted an equivalent of the good expressed in metal, on the other hand it was parity of the nominal value.

This shows that the world of exchange was functioning for 20 centuries when first paper money began to appear first in China and later on in Europe. Famous banknotes originating from bonds (depository receipts) that jewellers began to issue for owners of gold and silver became a surrogate of metal.

Depository receipts were financial assets occurring in files of two entities: a goldsmith and the owner of the receipt. The goldsmith was obliged to pay the bearer of the document a specific amount of money. This is how the next form of money – paper money – was created as people paid their debts with depository receipts.

After some time, goldsmiths became bankers as they began to produce more and more receipts. The receipts were no longer backed up with gold or silver – they were introduced as debts towards bankers and they bore interest as an additional income for goldsmiths. As a result, the receipts were accepted by the state which issued a regulation making these “tickets” a common medium of commercial exchange. Then a bank was established for the purposes of issuing banknotes that became legal tender which put an end to a chaos created after each bank started distributing banknotes of their own. During this period money became exchanged. Paper money was perfect for exchanging it into other money. It had a denomination reflecting its value.

Two centuries later the world began to look for more sophisticated solutions using growing possibilities of the financial system. Banks started to develop activities related to settlements of financial operations, payments and first deposits appeared as those who had financial surpluses did not want to keep them in their houses. That is why, this event was a breakthrough in the evolution of money however attention should be drawn to the fact that there was no radical change as non-cash money supplemented the existing paper currency (Bylok, 2001).

An equally important moment in the evolution of money took place when electronic money appeared. This phenomenon was strongly connected to dynamic development of the internet and the growth in the potential of electronic communication. Next to traditional paper money, non-cash money that functioned in the banking system, magnetic cards appeared: credit and charge cards combined to an account that covers a debt on the card as well as debit cards limited by the balance on the account. Electronic money supplemented the money system consisting of cash and non-cash money. At present there is a system of 3 forms of money, each fulfilling a specific role. Paper money seems to be dominant in low value transactions whereas in high-value transactions non-cash settlements are dominant or when it comes to individuals, transactions are made with electronic money. Attention should be drawn to a growing popularity of electronic money which is more often used for high-value small transactions.

Artificial money and its lifecycle

If we want to understand the notion of artificial currency, we should analyse what the contemporary world considers to be a “natural currency”. From the historical point of view, natural money denotes primeval money whose issuance was dependent on the available resources of goods used as money (consumable goods, metals, metal coins). In this case

“naturalness of money” is mostly reflected in the notion of state money (national) as it results from the evolution process described in historical background. Currently occurring the triad of money (cash, non-cash, electronic) functions in the area of transnational money.

We may ask a question whether the transition from national money (natural) into trans-national money (artificial) is the next stage in the evolution of money or it denotes a parallel money system existing next to the system of national money. On one hand, it is a novelty which can be compared to the rise of electronic money which would mean a stage in the evolution. On the other hand, we dealt with artificial money in the phase of primeval money (barter, commodity money) because it was boundless and thus trans-national.

That is why, an introduction of the euro type currency system may be perceived as a return to primeval money which did not have to possess characteristics of international convertibility.

Let us consider an example of an ox as a substitute for money. In fact, all civilizations in the world consider an ox as a domestic animal bred for slaughter. It is a product satisfying life needs. In the period of natural trade off, it was not only a consumption product but it was used as an object of exchange. From this perspective it was legal tender. The parties to the transaction had to agree to this fact. Payments with oxen was accepted by inhabitants of the Mediterranean, to a lesser extent by inhabitants of steppes of Euro Asia who preferred to use horses as legal tender. So naturally, an area of currency came into existence being different however from the current one functioning in the euro zone due to the level of formality.

As far as “the exchange of oxen” is concerned, it was a conventional scheme without marking boundaries of this artificial currency functioning whereas the euro zone functions in formal frames and results from the Maastricht Treaty signed in 1991. Economic terms were established to be met by all states wanting to join the euro zone – the so-called “convergence criteria”. This huge undertaking was prepared in a few stages:

Stage 1 – the so called transitional period started in January 1999 when the euro was adopted by members of the Monetary Union as a currency of non-cash settlements.

Stage 2 – the so called double circulation of money began on 1st January and finished 28th February 2002. During this time the euro was used in the EU states in parallel to national currencies which gradually were withdrawn from the market.

Stage 3 – began on 1st March 2002 when the euro became legal tender in 12 EU states.

The following years witnessed further extensions. At present, out of 28 UE states 19 are in the euro zone: Austria, Belgium, Cyprus, Estonia (since 01.01.2011), Finland, France, Greece, Holland, Spain, Ireland, Luxemburg, Latvia (since 2014), Lithuania (2015), Germany, Malta, Portugal, Slovenia, Slovakia, Italy. The euro zone has not been yet joined by 9 countries: Poland, Czech, Hungary, Denmark (ERM2), Sweden, Great Britain, Romania and Bulgaria and Croatia (in the EU since 1st July 2013), 1 state remains in ERM2: Denmark (since 1999). On 1 May 2004 – Cyprus, Czech, Estonia, Lithuania, Latvia, Malta, Poland, Slovakia, Slovenia and Hungary joined the European Union. On 1st January 2007 the European Union was joined by Bulgaria and Romania and in 2013 by Croatia. Out of 10 countries that joined the European Union in 2004 only Poland, Czech and Hungary did not join ERM2. The euro has so far been adopted by seven countries: Slovenia – 2007, Cyprus, Malta – 2008, Slovakia – 2009, Estonia – 2011, Latvia 2014, Lithuania- 2015. Today Denmark remains in ERM2 – since 1999 (www.strefaeuro.pl, 01.02.2016).

We should ask a question whether on the basis of analyses of a product lifecycle we can define the life stage of the euro. It is worthwhile to remind a product life cycle.

A classic product lifecycle comprises the following stages: introduction, growth, maturity denoting full development, decline, withdrawing an old product.

Money is a very specific product, so it would be difficult to analyse it in terms of the phase of a consumption product lifecycle. However, there are a lot of correlations in this model.

After the introduction phase of the euro in 2002 into the circulation in 12 EU countries there was a growth phase which led to accepting the euro by 19 EU countries. After the financial crises in Greece and Portugal more sceptical opinions appeared in view of further operation of the euro zone. Various concepts of restructuring the euro zone were developed including the concept of disintegration of the group of countries using this currency.

Can we say then that the life cycle of the euro has reached maturity and will enter the decline phase? Such a situation seems possible however its confirmation requires detailed analyses and observations of short-term economic cycles in the countries of the Euro Land.

Bitcoin

Bitcoin is an innovative Internet currency. It is a decentralized currency as there is no central issuance institution independent of banks, governments and institutions. This currency is boundless, accessible with an internet connection (mobile telecommunication). Bitcoin may be sent from any place in the world avoiding banks and intermediaries collecting expensive fees. Bitcoin operates in the peer-to-peer network which in fact nobody controls nor governs, it has no administrator nor an owner, nobody generates profits from it. Bitcoin is created and maintained by people for people.

All changes made in the protocol of bitcoin must be confirmed democratically by an appropriate number of users.

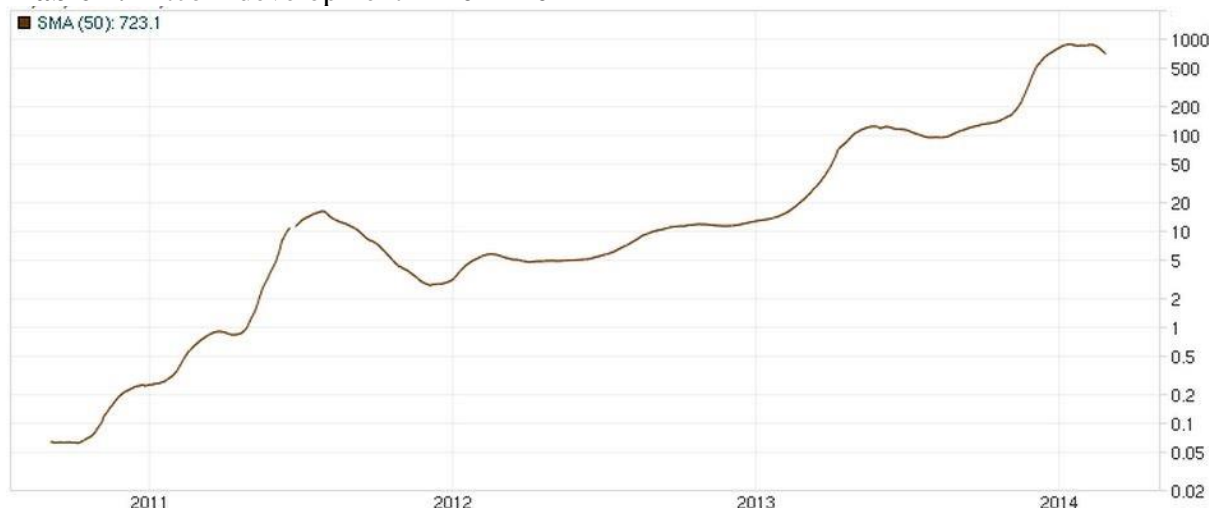
Bitcoin is based on mathematics and cryptography which makes it the safest currency in the world that cannot be artificially printed, blocked or forged.

Bitcoin is anonymous, all transactions on the internet are overt but those who make transactions or receive them not.

Bitcoin fulfils them and solves problems more efficient than any other currency thanks to two cryptographic mechanisms:

- digital signatures based on a public key allowing us to verify transactions between nodes on the internet,
- a hash shortcut to have a proof of work in the Bitcoin's network namely a calculation problem which proves that work has been done to solve it.

Bitcoin is the first in history perfect money based on mathematical laws. It is an opposite to fiduciary money. It cannot be printed, it is inflation-proof and its value is independent of governments and banks. Bitcoin is more similar to gold, it is rarer, hard to obtain and limited. It is based on mathematics and cryptography and trust is substituted by a mathematical proof. The value of bitcoin depends on its popularity, usefulness and difficulty to get it. The greater the bitcoin society and the more people use it, the greater its value. Within 5 years the number of users has increased to a few millions and has been growing exponentially. A similar thing is happening to the value of bitcoin that out of a few cents went up to over 1000\$.

Table 1: Bitcoin development in 2011-2014

Source: Polski Portal Bitcoin (2016)

The largest advantages of this crypto-currency are as follows:

- A possibility of making instant transaction to any place in the world.
- Very small fees or no fee at all.
- Anonymity of transactions.
- No intermediaries in transfers. The transfer goes directly to a recipient omitting banks and other financial institutions.
- The number of coins is limited. There is no possibility of printing coins above their maximum number so bitcoin is much more immune to inflation than traditional currencies.
- Your account cannot be blocked. The system operates in the p2p network so there is no owner or an administrator.
- It is really simple to use.
- One cannot withdraw a transaction.
- Safety. When complying with necessary safety measures and coding a portfolio, the risk of losing coins is marginal.
- Very comfortable to use. Just after the installation of the programme, you can use bitcoins without any registration without setting up an account or any red tape.
- Bitcoin solves the problem of long and costly domestic and international transfers even in places with limited banking (e.g. African countries).
- It works well with micro-payments online and in international trade. Bitcoin is a digital currency and works best on the internet.

Let us imagine we want to get a chargeable access to a foreign website, pay a subscription for online games or buy a programme available only in a foreign store or support an open source project. Payments with traditional currency require time, conversions, an expensive fee for a transfer, complicated procedures. Banking operations usually double the value of a purchased service especially when it comes to small amounts. In such case we most often give up a transaction.

This gap is filled in by bitcoin. Within a few minutes one can pay for access to a website in any part of the world, we may buy a programme/game, use an online store abroad, pay for hotel accommodation or buy a ticket. Possibilities are limitless. Thanks to bitcoin the entire world is

within reach without costly transfers and unnecessary red tape. Money is transferred quickly and easily to the recipient in any place in the world (Polski Portal Bitcoin, 2016).

Similarities and differences of the euro and bitcoin currencies

A payment role is the basis of each currency. As far as the role of legal tender is concerned, a traditional currency and a modern one are similar quite significantly. Quantifiability and convertibility are the common feature for all currencies. Both the euro as well as bitcoin meet the criteria assigned to each currency in the contemporary world. When it comes to all currencies we may say that:

- It is possible to show that a particular amount of money is owned by a user.
- It is possible to transfer the ownership of a particular amount of money from one user into another.
- Having transferred the amount, the owner loses the right to the transferred money.

More attention should be drawn to the differences between the euro and bitcoin systems.

The euro is an artificially created currency but still it is paper currency. Traditional currencies such as the euro are not subject to dynamic fluctuations as there is a series of economic factors which influence their stability.

Bitcoin is contrary to fiduciary money and its value is established by a free market. Bitcoin cannot be printed, it is immune to inflation and its value is independent of governments and banks. Bitcoin is more similar to gold, is rare, hard to obtain and is limited. It is based on mathematics and cryptography and trust is substituted by a mathematical proof. Bitcoin does not have a central bank and is not an ingredient of a monetary policy.

Looking at artificial currencies like the euro or virtual ones like bitcoin, we have to say that surely they have basic functions of money involving an ability to pay and a measure of value.

The remaining attributes constitute a difference between the analysed advantages. However, from the point of view of the product life cycle, the euro is in the maturity phase whereas bitcoin is being introduced in the market.

However, it is very difficult to forecast how long the maturity phase of the euro may last and if bitcoin may go through the introduction phase.

Bill Gates, head of Microsoft is fascinated by the crypto currency. It may denote involvement of big business into its development. Such a scenario is possible as bitcoin is not based on any business system, has not got a specific issuer, its economic situation cannot be defined or assessed.

It may mean an easy possibility of implementation in a turbulent environment and on the other hand it may be subject to speculations.

We pay with bitcoin in Amazon, Subway, Victoria's Secret, Sears, App Store and Gap according to Adamkiewicz (2016). He also claims that it can be used to subscribe Bloomberg and even pay for a flight with PLL Lot. The forecast for Bitcoin is a speculation but I think that the most famous crypto-currency may benefit. With its limited supply Bitcoin resembles gold and in the event of resetting world finance it has got a chance to become a global currency (Ciaian and Rajcaniova, 2016).

The role of money in the financial system

The financial system is part of the economic system allowing money to circulate in the national economy (Raczkowski et al., 2016). The system consists of:

- households and companies operating in the market
- regulations of the financial system
- infrastructure of the financial system
- financial institutions
- central bank
- investment funds
- open pension funds
- insurance companies
- entities conducting brokerage activities
- financial markets (Rackowski et al., 2016)

The financial system functions in a turbulent environment with various risks having an impact on:

- system-related economic risk + political risk + financial risk
- structural (economic imbalances + institutional inefficiency)
- legal (loopholes)

Are Poles aware of what the financial system is, what is the financial market that comprises a money, capital market as well as derivatives market? All research done on this shows that Poles have very poor knowledge about this subject.

For the purposes of this paper I am preparing the following working definition of financial consciousness understood as: *Economic culture connected to managing resources of one's own purchased and multiplied as a result of life experience, upbringing and the impact of the external environment.*

Let us remind everyone that today economic development depends on the culture rather than on physical capital. Enhancing financial consciousness called in English *financial literacy* consist of:

- development of saving culture
- forming investment habits
- being aware of the role of finance as a long-term factor of wellbeing of an individual and only short-term usefulness
- an ability of measuring effects of product offers in the financial market to make proper individual choices.

Financial education as part of economic education that we analysed in chapter 2 is provided for these purposes. OECD presented recommendations for the principles and good practices concerning education and financial literacy. These are as follows:

- government and other stakeholders should promote objective, ethical and coordinated financial education,
- financial education should start in schools to educate people in this respect as quickly as possible,
- financial education should be a good practice in financial institutions which would enhance their credibility,
- financial education should be clearly separated from the commercial message; specific procedures for employees of financial institutions should be elaborated;
- financial institutions should check if the customer understands information especially when it comes to long-term liabilities or financial services having significant financial consequences: small print or incomprehensible documentation should not be used,
- financial education should focus on particularly important aspects of personal finance such as: basic forms of savings, debts, insurance, pensions,

- programmes should be directed at building *financial capacity* and when justified at specific segments and adjustments to personal needs,
- future pensioners should be aware of the need to evaluate existing pension solutions national information campaigns should be promoted as well as websites and information services free of charge, free websites warning of issues related to high risk (e.g. embezzlement) for consumers using financial services (OECD, 2006).

In the light of all of the above, one can stipulate that money is the most important factor in the financial system security in each state.

Conclusions

The first conclusions that stems from this research is that virtual money affects the system risk of the state and therefore the central banks must carefully analyse their amount in circulation. The second conclusion that is less obvious is that money the EU finding the Euro oneself in final phase and behaves the way a theory of the product life cycle is telling about it. In this sense, money behaves as every product.

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