E-MONEY DEVELOPMENT WITHIN CONTEMPORARY ECONOMIES

Lecturer PhD Student Bogdan-Ion Boldea, West University of Timisoara, Faculty of Economics and Business Administration
bogdan.boldea@feaa.uvt.ro
Professor PhD Maria Boldea, West University of Timisoara, Faculty of Economics and Business Administration maria.boldea@feaa.uvt.ro

ABSTRACT: Development is the upward directional movement of society from lesser to greater levels of energy, efficiency, quality, productivity, complexity, comprehension, creativity, enjoyment and accomplishment. These attributes are both the means for achieving development as well as its most characteristic expressions or results.

Money has played a parallel role at the social level as a medium for urbanization, multiplying economic activities by several orders of magnitude. The forms money has taken on over centuries have always been closely connected with the technological developments in the economy. As simple economies evolved into more complicated economies, money has always adapted to the different economic circumstances. With respect to the latest innovations in the computer industry a new form of money has evolved: e-money.

Key Words: evolution, knowledge, e-money, development

JEL Codes: E00, E60, O11

Theoretical research

The process of social development occurs by increasing the scope and complexity of the organization of this fabric. A continuous process of organizational invention and innovation spurs this movement. During each phase new organizations emerge and existing organizations take on new attributes that enable them to act as spearheads of the development process.

The accumulated knowledge of the society and its increasing awareness of emerging opportunities and challenges determine the overall direction given to this development process. The energy that drives the process is determined by the intensity of the collective social aspiration for higher levels of accomplishment released by this accumulated knowledge and growing awareness.

Money has always been important to people and to the economy. In our world today, money is high-tech. People not only use coins and dollar bills issued by the government as money, but also increasingly cheques and credit cards. Banks are able to move millions of dollars by touching only one button on their computers. As simple economies evolved into more complicated economies, money has always adapted to the different economic circumstances. With respect to the latest innovations in the computer industry a new form of money has evolved: e-money.

This paper examines the current innovations in the payment technologies by exploring how today forms of money have evolved over time. It also reflects the reasons for inventing electronic money schemes.

Definitions and terminology

The range of commodities used over time as money is very wide; it includes cattle, grain, knives, spades, shells, beads, bronze, silver, and gold. The oldest recorded use of money dates back 4,500 years to ancient Mesopotamia, now part of Iraq. About 3,500 years ago, cowries shells from the Indian Ocean were used as a means of payment in China. Passages in the Bible indicate that silver was used as a means of payment in the time of Genesis.

The word "money" can mean many things. It is used with different connotations in our everyday speech. On the one hand, if people say that a person has a lot of money, they usually mean that the person is wealthy. On the other hand, to economists money has a very specific meaning. They define money as "anything that is generally accepted in payment for goods and services or in the repayment for debts." (Mishkin, 1992)

There are many different names which are currently used to specify electronic money: Digital Cash, Digital money, Cyber-coins, E-cash, Digital Token, etc. Electronic money is a digital payment message which serves as a medium of exchange or store of value.

Electronic money products differ in their technical aspects from many conventional forms of payment. At present, there are two basic ways of representing the value of funds stored on an electronic money device: (1) a "balance-based" type in which a single balance is stored and updated with each transaction; and (2) a "notebased" type in which electronic "notes," each with a fixed value and serial number, are transferred from one device to another. Cryptography is commonly used to authenticate messages and devices and to protect the integrity and confidentiality of data, instead of the physical security features applied to cash and other paper-based instruments. Digital signatures are one such application of cryptography used as a security measure in some electronic money products. Some electronic money products allow person-to-person payments without the intervention by the issuer or another central clearing system. The experience in this area is very limited, however, due to the fact that this capability is not offered in most electronic money schemes that are currently operational.

The ECB (1998, 2000), following the first official definition issued by the European Monetary Institute (EMI, 1996), define electronic money in the following terms: 'Electronic money is broadly defined as an electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transactions, but acting as a prepaid bearer instrument.'

Again, the focus in this definition is on the pre-paid aspect of electronic money. The Basel Committee (1998) further divides types of electronic money into the categories of electronic purses (hardware or card based) and digital cash (software, network based). But whether these instruments are 'balance-based' (i.e. account based) or 'token-based' (i.e. involving the expenditure of electronic tokens), the essential characteristic is their pre-paid nature. For this reason, credit cards and debit cards are regarded as access products or electronic payment systems, rather than as electronic money (BIS, 1996; Basel Committee, 1998).

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Constraints on the evolution of e-money

Acceptability: If an e-cash system is to be successfully adopted, it will have to attract a wide constituency, i.e. to become 'outside' money. It is because current e-cash schemes are not widely accepted that they must piggyback on the non-cash money supply i.e. bank deposits and credit accounts.

In conventional cash systems, there is a simple bilateral interaction between buyers and sellers. This bilateral exchange works because it is based upon a trusted social convention: cheap bits of paper/metal represent value. What are the implications for effective virtual cash systems? Most people are too risk-averse to trust their fortunes to the fate of a single private enterprise; history has shown that even the most successful multi-national companies do not necessarily prosper forever. If an e-cash is to survive as a true cash system, then it requires the backing of trustworthy, stable institutions such as central banks – these could implement common protocols and act as unifying institutions.

Anonymity: Many existing e-cash systems, particularly those that can be used with a number of different merchants, are not completely anonymous because the monitoring of their use is actually essential to the proper operation of these systems in order to prevent the double spending of virtual coins. This monitoring may be very costly requiring collusion between institutions. The use of a conventional cash system allows direct interaction between buyer and seller and so it is not possible to monitor transactions taking place mediated using conventional cash. Anonymity is ensured. Conventional cash will be preferred by those involved with criminal activities as long as criminals and tax evaders believe that electronic transactions will always leave some trace (Goodhart, 2000).

Efficiency: The costs involved in exchanging e-cash are relatively high in comparison with the costs involved in exchanging conventional cash. Switching from one money to another necessarily involves a costly process of financial adaptation. Considerable effort must be invested in creating and learning to use new instruments and institutions, with much riding on what other market agents may be expected to do at the same time. As attractive as a given money may seem, therefore, adoption will not prove cost-effective unless others appear likely to make extensive use of it too.

Uncertainty: is the exceptionally high level of uncertainty that is inherent in any choice among alternative monies. Since, as indicated, the appeal of any money ultimately rests on an intersubjective understanding, one can never truly be sure of its future value or usability. Uncertainty thus encourages a tendency toward what psychologists call "mimesis": the rational impulse of risk-averse actors, in conditions of contingency, to minimize anxiety by imitative behavior based on past experience. Once a currency gains a degree of acceptance, its use is apt to be perpetuated -- even after the appearance of powerful new challengers -- simply by regular repetition of previous practice.

Some possible implications of e-money development

Network effects: E-money, as a network good, could achieve a diffusion deemed sufficient to substitute for traditional money. The utility derived from the use of an electronic payment system by a given consumer is dependent upon the fact that other consumers are using the same system: if other consumers are not using the same payment system, then the value of the system will be reduced accordingly. The price of a network good increases with the expected size of the network and decreases with the number of participants. In a dynamic context, this means that multiple equilibria can exist in which a producer will have all the potential consumers within the network – or none of them.

Networked goods are affected by a number of distinctive but related characteristics including complementarities, externalities, switching costs, lock-in and economies of scale. As electronic payment networks grow, the utility derived by each consumer will grow with the growing acceptability of the system. Switching cost and lock-in may apply if existing a payment system is relatively more costly than entering it (Shapiro and Varian, 1999). economies of scale will mean that whilst there are high sunk or fixed costs involved in developing an electronic payments infrastructure, the marginal costs of copying and distributing electronic payment devices or tokens will be low. This generates a natural monopoly in which the average cost function declines sharply and limits the operation of competitive forces.

Financial stability: Those institutes issuing the stored-value cards or network money, or clearing the transactions in hem, could fail to make good on the promise of convertibility. The situation would be like that of banks ssuing private notes under a gold standard. Bank failures presumably resulted from the effects of poor, dishonest, or excessively aggressive bank management, as well as the impact of adverse economic shocks on poorly diversified credit institutions. If the issuers were not banks, however, then the introduction of new types of private money could increase financial instability and pose difficulties if – and this is a big if--the scale of operations were large relative to the financial system.

Consequences for monetary policy: Once market agents gain a choice among currencies**,** the direct connection between nominal demand and the supply of national money is broken. The central bank may still be able to exercise a degree of influence over the stock of its own currency, however measured. But to the extent that transactors and investors have access to alternative currencies, variations of reserve supply will now have correspondingly less effect on the overall level of spending. The practical impact of monetary policy becomes attenuated, and the economy becomes more vulnerable to frequent bouts of inflation or recession.

The implications of the spread of e-money for monetary policy would arise from the substitution of e-money for both currency and deposits, shrinking the size of the monetary base. A decline in the demand for currency would, however, lower the monetary base and hence reduce the size of the Central Bank's portfolio of securities. The size of the Central Bank's portfolio, in effect, determines the seignorage the government obtains through the issue of the monetary base. To the extent that the demand for currency declines, the monetary base and hence the Central Bank's portfolio would shrink, and the interest earnings on that portfolio would diminish.

There are two avenues (Friedman 1999) through which emoney may escape being included in minimum reserves - avenues which have been blocked in the euro area (see above):

- ✓ first, the issuance of electronic money by non-banking firms (telecommunications operators, transport companies8, etc.).
- ✓ second, the growing number of transactions – in addition to the initial purchase of electronic monetary units in exchange for cash or bank money –, carried out via open electronic purse schemes without posting a new entry on a bank account, and which do not therefore generate new minimum reserve requirements for banks.

The spread of network e-money might dramatically reduce the demand for deposits and hence correspondingly reduce the amount of bank reserves.

The income velocity of base money will increase. A large increase in velocity is troublesome, even if measured correctly. Failures in achieving monetary targets have larger unwanted effects on nominal income. higher velocity of money makes it more difficult to maintain Digital money could also affect the income velocity of the narrowly defined stock of money, *M1*. However, the effect depends on the actions taken by central banks. During the transition to a cashless society, the various velocity measures could be less stable. This could complicate monetary policy decision making for countries that rely on monetary aggregates as targets or indicators because they would be more difficult to define and achieve.

The return of the "New monetary economy" utopias: The idea of the end of central banks authority is, to a large extent, inspired by the "New monetary economy" proposals – where the financial assets, permanently priced, replace bank money and are used as means of payment. Banks either disappear because economic agents trade goods and services in real time against financial assets through electronic entries on a very large centralized electronic system, or become mutual funds.

Conclusions

Each stage of the evolution of money can be done by fully exhausting the potentials for building and extending trust as a principle for money creation. The internet is emerging as the ideal organizational mechanism for this purpose.

The development in electronic money can be considered as the outcome of a long "money deregulation and privatization" process (see Guttmann 1998). The anticipated era of electronic money, though an entirely natural development in the context of today's rapidly globalizing world economy, will indeed have a profound impact on the effectiveness of monetary policy - less so in countries with weaker currencies, where control of aggregate spending has already been compromised by the accelerating deterritorialization of national monies. With the arrival of electronic money, money creation will become increasingly privatized. Hayek's vision of a world of unrestricted currency competition could, for better or for worse, soon become reality (Hayek, 2006).

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