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**ECONOMICS**

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**Introduction**

Modern changes in human history are described by the concept of information era. Information is one of the most important resources or raw material in production. Actually scientific-technical progress is the strong basis of visible changes in the nature of economic system and particularly in the financial sector.

Current development of global financial sector is characterized by wide using the Information and Communication Technology (ICT) in its functioning. Actually ICT acts in both ways: a factor of financial market infrastructure outlining informational nature of currencies and instability factor of monetary system.

Basically, the financial sector transition into the electronic field of functioning has same potential benefits for further economic development.

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**THE ELECTRONIC PAYMENTS  
AS A MAJOR FACTOR FOR FUTURE  
ECONOMIC DEVELOPMENT**

**ABSTRACT.** The phenomenon of global financial market transformation in the term of IT influence on the world economy is examined in the paper as the result of Information and Communication Technology and financial market integration. The digital nature of global financial-monetary system is actualized in the term of modern problems. Also the paper investigates possible effects of financial transformation on world economic system. The authors believe that it is necessary to transform the financial system according to its information and digital nature.

## 1. Analysis of recent research and publications

Reviewing recent researches and scientific publication in the field of global finance functioning, it should be admitted the lack of investigation about e-payments increasing and GDP growth correlation, while there are a lot of studies focused on global finance regulation, problems of reserve currencies functioning, problems of over issuing and turbulence of financial system.

So, to regulate financial system it was proposed to introduce tax input per transaction operations to limit speculative profits, to control overissue of reserve currencies it was proposed to introduce global financial institution to control issue of reserve currencies.

However, the information-virtual nature of financial markets, its effects on economic development are poor studied and require further investigation.

*The object of the paper* is to explore new nature of influenced by IT financial market and its consequences for the global economy in general.

## 2. Methodology

This study uses correlation to show statistical relationship between e-payment increasing and economic growth. The relationship is expressed in the follow way:

$$r_{xy} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{(n-1)s_x s_y} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}}$$

where  $x$  is a volume of e-payment and  $y$  is nominal GDP means of  $X$  and  $Y$ , and  $s_x$  and  $s_y$  are the sample standard deviations of  $X$  and  $Y$ .

If there is not any the correlation between e-payment increasing and GDP growth, the correlation coefficient is 0. If e-payment increasing positively influences on GDP growth, the correlation coefficient is up to +1. If e-payment increasing negatively affects GDP growth, the correlation coefficient is up to -1.

To estimate correlation, IMF and Bloomberg data (2009-2012) were used.

Under estimation the coefficient is 0,78. It supports the fact of positive influence of e-payment increasing on GDP growth.

## 3. Discussion

The emergence of new telecommunications and digital technology changes the world order highlighting the informative part of the global economy and monetary relations. The innovative phase of development entails the evolution of *money form* highlighting its credit and informational nature.

Modern characteristic feature of the global financial market is transformation from traditional financial market into electronic moving from the field of physical functioning into virtual environment.

The new dimensions of the modern world monetary system are driven by two major changes, namely: the first one, the money is completely separated from the material dimension, causing currencies destafation, i.e. the disappearance of intrinsic currency value, and secondly, global financial integration under powerful information and telecommunication technology. Actually digital nature of modern monetary system is seen in its the most

important function: the tool of exchange. Money is an indicator of separated intrinsic goods value. It has no own intrinsic value, it is just the equivalent for exchange with virtual transitive goods value.

Digital nature of money is primarily manifested in the actual information that one thing is the equivalent of another, and in fact appears in the transmission of information between economic operators of the individual members of the public debt. This function of money can be expressed in its transitivity. Money transitivity means the movement of separated goods and service values in the framework of global economy system between its participants. Money can be explored as mediator of exchange and exist in the form of information transmitter from one entity to another in the shadow of production-trade relations. Money as a payment means is a tool to provide information on debt between the subjects of credit relations. In addition, credit-digital nature of money is expressed in its form of modern existence, namely as signs of value that are denominated in cyberspace.

*Credit nature of money* is expressed in personal obligation to pay debt that exists in form of separated intrinsic goods and service values.

*Digital nature of money* is transitivity that provides circulation of monetary system in cyber space, that is the virtual existence of debt cycling.

Combining two distinguished features of money in information era we have to outline that money is only sign of separated intrinsic transitive value. And informative monetary system is system of circulation the separated intrinsic goods and services transitive values.

Graphical expression of theoretical uploaded dimension of credit-digital nature of money is shown below (*Figure 1*).

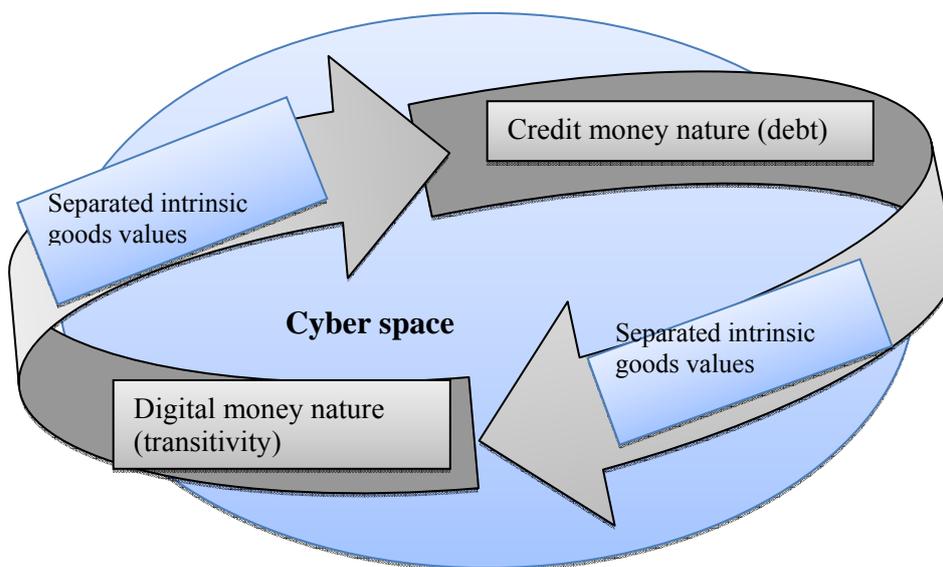


Figure 1. Modelling the credit-digital nature of money

*Source:* elaborated by the authors.

The main driven forces in changing the form of money is the development of economic relations and technology. If commodity production and exchange relationships become to be limited by money value or transaction costs are too high, equivalent of goods would be changed. This transformation is objectively defined by information and technological level at each stage of development (Ermolenko, 2013, Sharapov, 2013).

The use of precious metals initially as a means of payment (in the form of coins) and later as a means to storage the value guaranteed stability of the financial system. The

emergence of the gold standard was caused by the need to address the financial relations between countries, the establishment of a single equivalent in international payments. Gold legally was acknowledged only form of world money from the Paris Conference, 1867. Beginning from the Bretton Woods agreement in 1945, the role of world money began to provide the U.S. dollar with the intrinsic value equivalent to 35 dollars per one troy ounce of gold, and all other currencies were assimilate in it. The system of fixed currency exchange rates provided the stability of the international monetary system until the U.S. currency could serve global monetary relations and be exchanged for gold. But after the claims of Charles de Gaulle to exchange all dollars for gold, the United States unilaterally terminated the exchange. The floating rates system came in place of the fixed exchange rate system, which was legally established by Jamaican Conference in 1976. In result universal equivalent form began performing loan money: banknotes, checks, etc. (Shvaika, 2011). Current lending money is devoid of intrinsic value because their intrinsic value began to slow down production and commodity exchange relations at modern stage of socio-historical development.

Thus, qualitative evolution of money nature is actually caused by amalgamation of IT or infocommunication with financial sector.

Infocommunication is a relatively new term for the inextricable link information and communication elements of information exchange, developing in the process of convergence, i.e., the mutual penetration. Infocommunication is defined as an association of information, telecommunications and computer technologies. Infocommunication is one of the major areas of innovation and is the most important factor of creating the financial market infrastructure because they play initial role in performance the traditional communication functions that are transmission and storage of information, and allow the formation of new services.

Electronic financial markets development is influenced by new technologies, networks. The Internet is the most dynamic one (*Figure 2*).

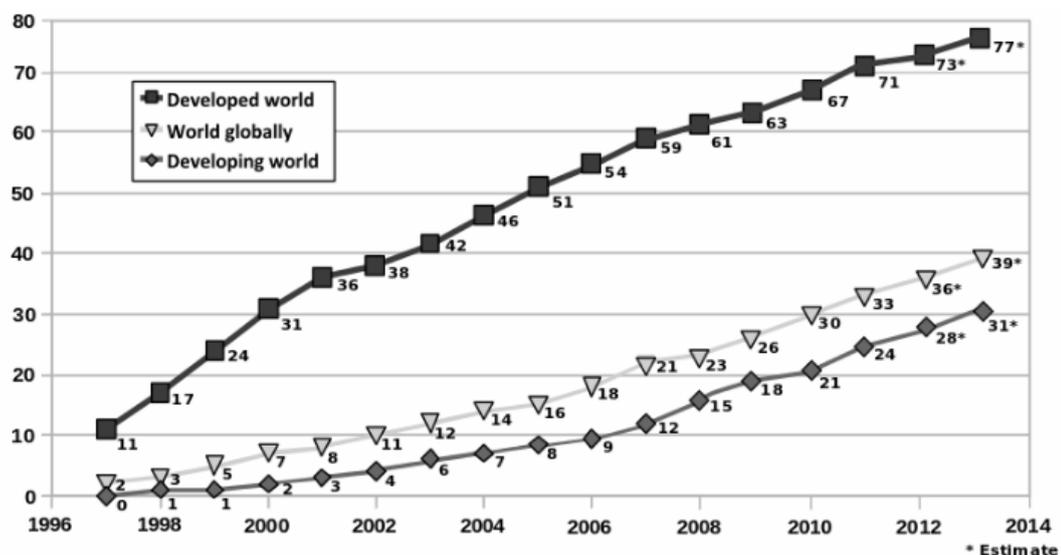


Figure 2. The dynamics of Internet users increasing  
*Source:* International Telecommunications Union Report, 2012.

The usage of electronic money demonstrates developed information society. It is generally accepted that information society is based on principles of information technology penetration in all sphere of human activity (financial sector is not exception) and knowledge as background.

Besides, electronic financial market is more efficient than traditional because, above all, it provides global access from everywhere in the world, secondly, financial market subjects are provided by complete updated information, and the third important factor is the high-speed of operations (Machek and Hnilica, 2014, Laužikas and Mokšėckienė, 2013).

Web and FTP servers, as tools of financial market, provide information and give us possibility to work on monetary, foreign exchange markets, the market for government securities and the market for corporate securities (Koval, 2013).

IT provides development of electronic financial markets infrastructure electronic payment systems (Internet.Dengi, GlobalMani – Ukrainian, WebMoney, E-Gold, Bitcoin, Liberty Reserve, PayPal, Moneybookers – international) electronic trading systems, virtual banks, big business portals (e.g., Bloomberg), websites of stock exchange markets, brokerage, investment and commercial companies, and so on.

Conceptually, electronic money is a kind of so-called “fiduciary” money with the aforementioned relevant characteristics. The “fiduciary” money is obligations of the issuer to pay certain sum of money, it is issued for the purpose of calculations, but it does not have their own intrinsic value (as opposed to, for example, coins made of precious metals). Fiduciary money (from Lat. “fiat” – a decree, order) is money that does not have its own intrinsic value, or is incommensurate with their specified rating (Ershov, 2012). This money is taken as economic agents who are confident that they can use them for further calculations and the money will keep its value over time. This can occur due to trust the issuer, and perhaps law enforcement by the state, recognizing that money only legal tender in the territory. Currently, all national currencies are fiduciary, including the U.S. dollar, euro and other currency reserves. This position underlines the digital nature of money.

It should be noted that the financial markets virtualization is related with financial engineering through functional links, in other words financial engineering develops new financial instruments, operational schemes (new financial technology) and virtualization “provides” infrastructure for their implementation that is environment of their "existence". E-payments and financial markets are interconnected and have mutual influence on each other: the rapid growth of financial markets requires adequate infrastructure. There is a clear interdependence between GDP growth and electronic transactions. This tendency is shown on the graph below.

The *Figure 3* demonstrates interdependence between GDP growth and e-transaction in 2011. This figure describes the correlation on the ground of 40 countries’ data (each dot is a country), namely the USA, UK, Germany, Belgium, Italy, the Netherlands, France, Dania, Austria, Ireland, Greece, Spain, Portugal, Australia, Finland, Swiss, Estonia, Cyprus, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, Hungary, the Check Republic, Canada, Singapore, Switzerland, China, Russia, Brazil, India, Korea, Mexico, South Africa, Turkey, Romania, Bulgaria, Saudi Arabia. In accordance with the graph, the usage of cashless payment is closely related to the level of economic development (Analytical report of the Institute for Economic Research and Policy Consulting "Electronic Money in Ukraine", 2012). The figure above reveals the higher GDP per capita the larger number of non-cash payments.

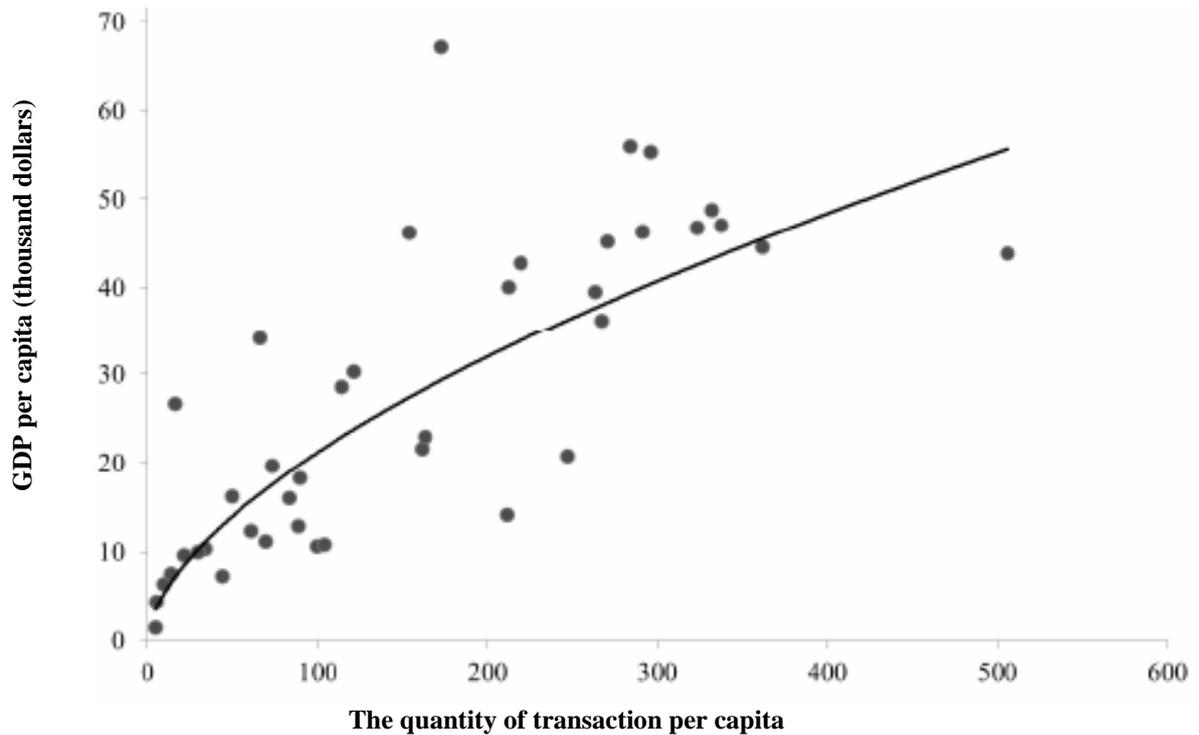


Figure 3. Interdependence between GDP and electronic transaction growing  
 Source: Analytical report “E-money in Ukraine”, 2012, the Institute of economic investigations and political consultation.

The scheme works in both ways. On the one hand, higher level of well-being and development of the financial system in richer countries encourages cashless transactions. On the other hand, cashless payments contribute to accelerate economic development: through the spreading electronic payments that can cause consumption growing (e.g. by credit card).

However, electronic payment instruments give access to all the funds in the account, making the usage more convenient and cause the increase of its volume and therefore it proves the growing (Bilan, Gazda, & Godzisziszewski, 2012).

As electronic payment instruments are often individualized, they also allow issuers and merchants to offer their programs to stimulate consumption.

Retailers use data on payments for each individual user discounts and bonuses to their customers. Issuers may offer programs for bonuses card users to encourage the use of this tool. Thus, the retail also gets an extra boost to development.

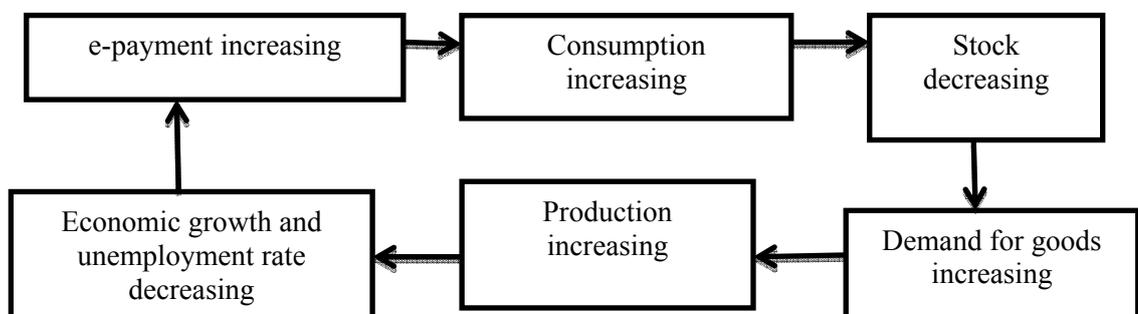


Figure 4. Influence of e-payments on economic growth: logical circle  
 Source: the authors’ findings.

Thus, adequate e-transactions regulation can be used as an instrument for growing.

The findings that there is correlation between e-payment and GDP are supported by the data at the beginning of the paper.

The development of electronic payments has a positive impact on the financial system and monetization of the economy. The introduction of electronic payments helps to attract people's and companies' funds into the banking system and reduces cash flow. Widespread non-cash payments are more accessible and necessary for the general population. Thus, the e-payments encourage the development of small businesses, reduce the role of shadow operations.

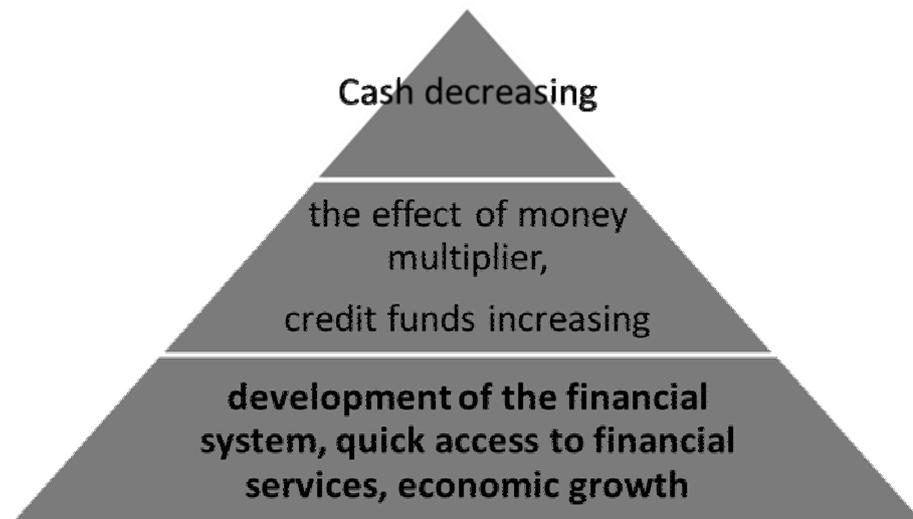


Figure 5. Economic effect of e-payments transition on the economy  
*Source:* the authors' findings.

Economic effect on the economy is chosen triangle as a form to demonstrate causal relationship between items. So, the effect of money multiplier is caused by financial system development and cash decreasing is caused by the effect of money multiplier. At the same time the background and the main aim of such process developing is achievement of sustainable economic growth.

According to the report of the International Telecommunication Union (ITU) of the United Nations "Measuring the Information Society" 2013 leaders in the development and use of IT are South Korea, Sweden, Iceland. In South Korea, the share of cash weight does not exceed 2% in Sweden it is only 3% in the U.S. – 7%, while the EU average – about 9%. Even in Russia the "paper" money in the total turnover reached 25%. As for Ukraine, then 60% of settlement is still by cash, although there are countries where the figure is 30 times smaller (Press Service, 2013). However, Ukraine has shown the positive dynamics in development of the IT sector. Thus, according to the State Statistics Service of Ukraine, at the first half of 2013 the share of the IT sector in GDP was 1.8%, compared with 1.6% in the first half of 2012 (Press Service of the Cabinet, 2013).

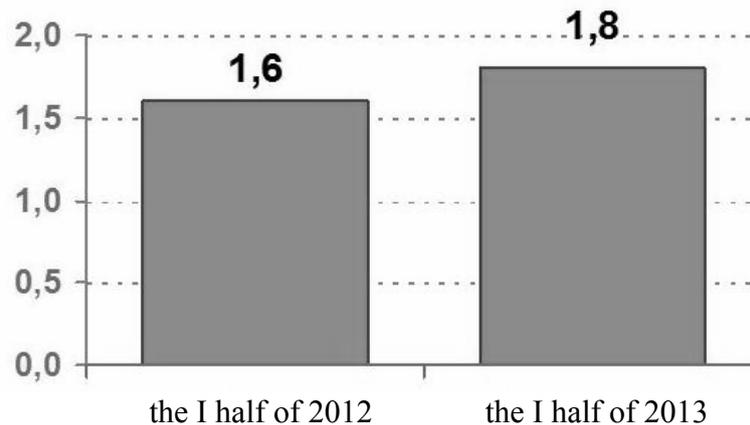


Figure 6. Development of IT in Ukraine

Source: the State Statistics Service of Ukraine report, 2013.

The gains from trading in financial markets dominate in structure of today's global GDP and occupy a leading position in the structure of total income. In addition, the share of financial services in international trade is growing. This conquest in the economies of many countries is caused by leading role of the financial sector in recent decades, no doubt, is due to virtualization of the world market. In particular, Sweden, that occupies the first rank of social security level, is a visible example of the financial system virtualization. It is planned by government to move economy into the Internet by 2015 (Press Service, 2013). Another important performance of financial system virtualization is the development of electronic money (financial transactions through information technology), which in today's world have a dominant position in the developed countries, such as Japan and Canada where it is observed 95% of all financial resource in the form of electronic money (Statistics Canada, 2013).

The main positive effects of IT influence are quick access to financial markets, rapid transactions between entities everywhere in the world, the increase of financial activity. However, the development of virtual infrastructure creates more opportunities for speculation, which leads to the destabilization of the global financial system. This process has already called financial production. The negative effects were demonstrated by the global financial crisis in past decade. Thus, the role of financial institutions is crucial (Zwolankowski, 2011, Findreng, 2014).

Today's problem of the financial sector regulation can be seen as a tool to combat the crisis. However, only right steps lead to the expected results. So, in 2013 as a regulator, the USA carry out a policy characterized by "pumping" liquidity, that is facilitated by virtualization of the financial markets, with simultaneous reducing interest rates below inflation rate (FRD, 2013). There is the inception of excess liquidity with simultaneous shortage in some sectors. In addition, the USA Federal Reserve has proclaimed interest rates at a certain level for several years. Initially it was announced (FRD, 2013) that interest rate will remain at the current level in the range of 0-0,25% by mid-2014 (currently level – 0,15%) but this term was postponed to 2015. This is an evidence of bad expectations of market participants. To revive situation it is obligatory not only to establish the lowest price for financial resources – lower than inflation, but it is also necessary to be announced for the future period (Ershov, 2012). In addition, it will warm the use of financial resources with a speculative purpose.

In response to the financial and economic crisis, almost developed countries, such as the USA and EU have significantly reduced the cost of their financial resources by reducing interest rates below inflation (*Figure 7*).

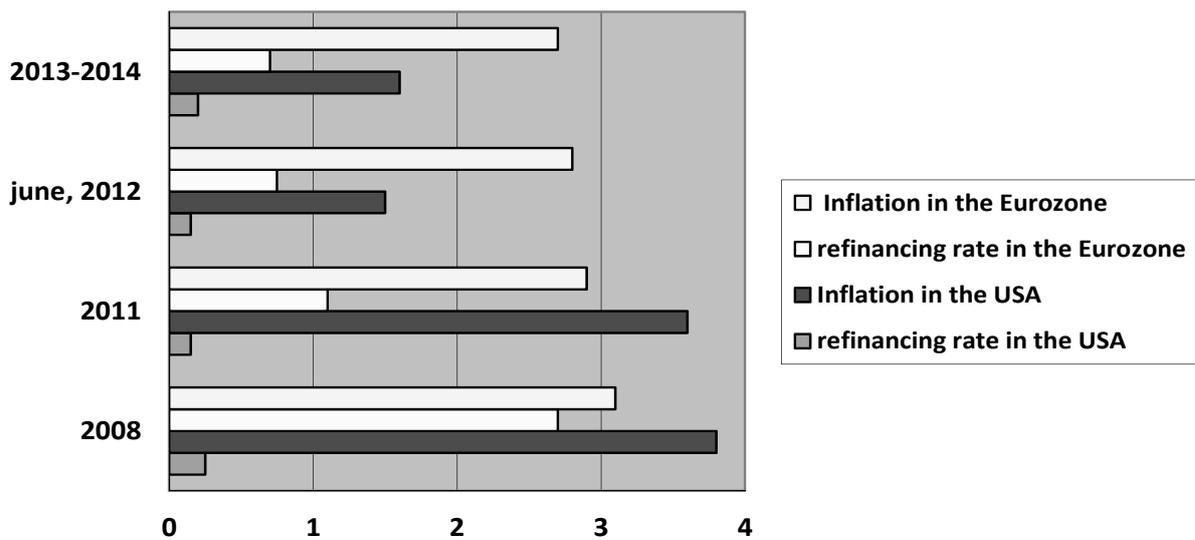


Figure 7. The refinancing rate and inflation in the U.S. and Eurozone (in%) (2013-2014 – forecast)  
Source: IMF Report, 2012.

In the result of taken measures balances of the main emission centres – central banks were increased significantly, because the primary goal is to stimulate demand in the present conditions for economic recovery.

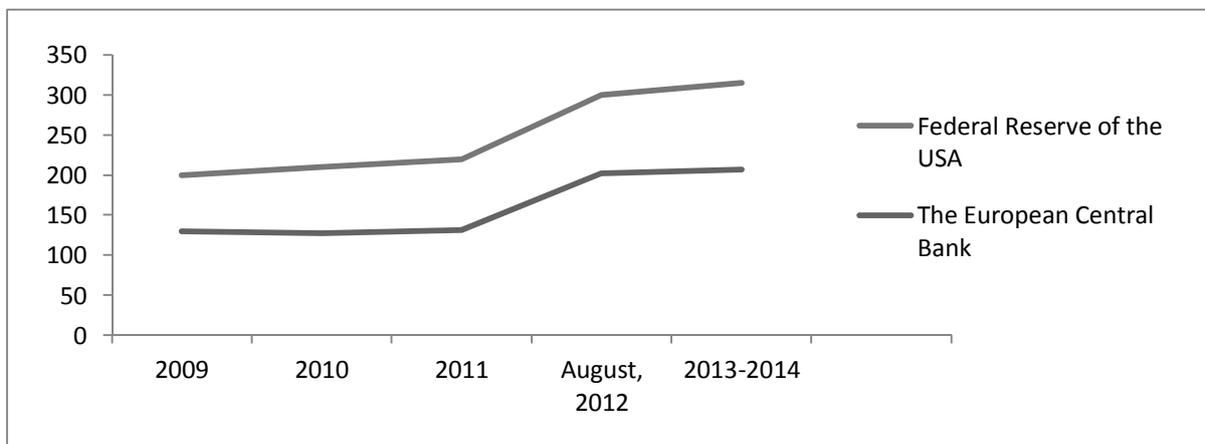


Figure 8. The growth of the balance sheet of the ECB and the USA Federal Reserve 2008-2012. (2013-2014 years – forecast) (index 2008 = 100)  
Source: the Fed and the ECB, 2012.

In turn, the chain reaction occurs in the growth of consumer prices. So, from February, 2012 to December, 2012 the average world consumer prices have risen from about 11% (February, 2012) to 14.8% (December, 2012) (Ershov, 2012). A consumer price increasing nullifies all prior policies and brings us back to the starting point. Higher solvency needs more liquidity.

Another reason for financial instability is hidden in financial instruments. Thus, according to the estimation one of the most popular securities is "trash" bond that is poor quality instruments with a higher profit than others. However, growth in demand for these instruments reduces their profitability, which is approximately 4.5% (instead of 10% and above). An increase in the volume of derivatives causes significant excitement. For example, the 6 largest American banks (JP Morgan Chase Bank NA, Citibank National ASSN, Bank of America NA, HSBC Bank USA National ASSN, Wachovia Bank National ASSN, Bank of New York), which take 50% of the U.S. financial system, has higher volume of derivatives by more than 1.5 times the pre-crisis. In 2007 the volume of derivatives of these banks was estimated at 141 trillion dollars of USA, and in April, 2012 it exceeds 220 trillion dollars of USA.

The instrument for limit speculation has already been suggested by James Tobin in 1971 as input tax (it was offered 1%) per transaction operations to limit speculative profits. In September last year, the European Commission proposed to introduce the tax in all 27 counties of the European Union (EU) in 2014.

The need for this emerges because during the crisis about 4.6 trillion euro of taxpayers' money was spent to rescue the banking sector and now it is time to repay debts. However, independent experts believe that such tax would help to stabilize the public finances – especially in the case of its introduction in time of economic and financial turbulence (Trushina, 2012).

The stability of the financial system can be ensured only through conscious discipline and internal ethics financial institutions as well as through the established judicial system, laws of state regulation of the economy and finances. And the complexity of the task is to eliminate cons, but leave the gains and don't undermine the system of established financial and economic paradigm.

## Conclusions

Thus, the paper reveals correlation between e-payment increasing and GDP growth. It was researched how digital nature of money influences on the financial system at whole. Besides, uploaded dimension of credit-digital nature of money is given. The usage of cashless payment is closely related to the level of economic development. On the one hand, higher level of well-being and development of the financial system in richer countries encourages cashless transactions. On the other hand, cashless payments contribute to accelerate economic development: through the spreading electronic payments that can cause consumption growing. The adequate e-transactions regulation can be used as an instrument for growing.

The paper describes the latest trends in IT development and its influence on financial sector (especially cashless payment) global economy faced. So, South Korea, Sweden, Iceland are leading countries. In the cause of Ukraine, there is a positive IT dynamic. If we talk about the USA and EU, cashless payments are 93% and 91% respectively.

The benefits provided by e-payments are: rapid access to financial markets, immediately transactions between entities everywhere in the world, the increase in financial activity and the most important – they are one of the items to support further economic development.

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