

〔論 説〕

## **Digital Cash and Local Currency : Have New Forms of Money Been Profitable?\***

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Law ; Local Currency ; Monetary policy

### **Abstract**

The purpose of this paper is to analyze the characteristics of digital cash/local currency and the relationships among these money, financial institutions, financial authorities, and law. It shows that these have many advantages on the one hand while posing a number of thorny problems on the other. As digital cash transactions become ever more widespread and global, financial institutions must adapt their businesses and roles at the risk of losing key opportunities and possibly losing even their viability as an established market entity. The use of local currency has been introduced by Nonprofit Organization (NPO) or other similar groups in some countries around the world. Welfare, nursing, and the connection with nonpaying work, such as bringing up a child, are among the most popular reasons for introducing a local currency. Various problems are also involved with the spread in the use of local currencies. However, use of local currency will not create major obstacles to interfere with other economic activity as long as the sizes of transactions do not increase greatly. Policy authorities must address

difficult issues of financial industry oversight in this age, and in doing so they should closely follow the trend and carefully analyze its effects.

## **1. Introduction**

About ten years have passed since the words such as “digital cash,” “digital money,” “electronic money,” and “e-cash” have been introduced. Progress in the fields of communication and information technology (IT) has been very rapid and the field of digital cash is no exception. Its use and transaction volume have been increasing.

The use of local currency has been spreading gradually. The NPO of some countries have introduced local currency, for example, to support welfare programs, nursing, and nonpaying work such as childrearing. In some countries, expectations for economic recovery have been supported by the introduction of a local currency.

However, little analysis has been done about these phenomenon especially from the academic field. The continued increase in their use is inevitable, and it is important to investigate their influence and problems from both practical and theoretical perspectives. The spread of these use impacts economic activity and social structure. This paper considers important issues of digital cash and local currency.

This paper analyzes characteristics of relationships between digital cash/local currency, financial institutions, financial authorities, and law.

## **2. Background**

### **2-1 Digital Cash**

Digital cash may be classified into electronic wallet and online types (Kurihara, 2003). IC card type digital cash has value in itself ; the network type is maintained on the personal computer or the host computer. Both types of digital cash have appeared

recently. The distinction between the two types has begun to disappear. Internet cash is one example.

This classification permits an examination of cost reduction and price cutting from the demand factor of the former for the reason of the cause to which digital cash spread, a technology of IC card reformation and price cutting from the supply side (U.S. Department of Commerce, 1998). The spread of the personal computer and the Internet have also prevailed, as well as Internet commercial dealings from the demand factor as an online type personal development factor. Equipment cost reduction (typically computers) has been also ongoing, which has helped to promote online transactions from the supply side.

Electronic commerce all over the world has risen greatly. Moreover, it seems that the spread of mobile telecommunications (e.g., cellular phones) has contributed to the development of digital cash. In the near future, television or mobile phone will be used to complete financial transactions (Hammersley, 2004).

The difference between closed-loop and open-loop transactions is important. In the closed loop, the transfer of the value is the same as with digital cash. For instance, when the user who receives the issue from the issue subject (typically a bank), and digital cash is allotted to pay for the commodity or service, the seller (typically, a retailer or service provider) completes the transaction for the transfer of value. Value cannot be moved among users in the closed loop, which is used in both IC card and network digital cash transactions. On the other hand, digital cash issued once can be used for other transactions even if the value does not return to the issuer in the open loop. Rolling liquidity exists there. The IC card type of the closed loop is most common in the early 21st century.

Though credit cards, checks, and debit cards have become remarkably widespread for making small payments electronically, the difference between them and digital cash is important. These transaction types should not be classified as digital cash. Considering

monetary policy, the distinction from digital cash is very important. Digital cash builds information on “near cash or itself” into the card, the network, and transactions. To qualify as digital cash, five characteristics must be present: a settlement, generality (use for any purpose), the transfer of funds, circulation (i. e., free availability), and anonymity. More concretely, digital cash is a legal currency and is legal as deposit currency. Time deposits, certificates of deposit (CD), trust money, and so on must not be included as digital cash. Debit, prepaid, and credit cards and checks do not comply with the forgoing definition and are different from digital cash in spite of being traded in electronic form.

Though the generality of digital cash is much greater than that of prepaid cards (e. g., phone cards), it is inferior to usual money, and the transfer does not exist in the closed loop compared with current cash either. Circulation is also low, and it is doubtful whether anonymity exists with deposit currency. Moreover, digital cash does not have the same legal status as cash. However, the examples of our statement comply with the above definition and should be classified as digital cash.

Both types of digital cash reduce cost, time, and human error. These advantages accrue both to the user and the donor of the digital cash (Davis, 2002). With IC transactions, people do not have to carry about small change and have the advantage of high privacy buying. In network-type transactions, the buyer does not have to be present at the seller’s establishment to conduct business. Furthermore, security against theft or loss is high. Even small retailers or sellers can reduce handling costs and increase business opportunities. International transactions benefit in particular (Davis, 2003).

On the other hand, there are some problems in spite of having a lot of merit, with the local currency. There are a lot of common points in local currency, and these points are examined later.

## **2-2 Local Currency**

The original local currency was the “labor note” introduced as a form of payment

by Robert Owen in the 1830s. A hundred years later, stamp scripts came into use in the United States, Austria, Germany, and other countries. Since that time, use of local currencies has spread all over the world. Some estimates indicate that in the early twenty-first century, local currencies are being introduced in 2,500 to 3,000 regions in the world. Typical cases from around the world are described below.

The Ithaca HOURS used in the United States is a paper coupon that equates one hour with 10 US dollars and can be used to purchase goods and service in a limited region within a 20-mile radius of downtown Ithaca, New York. The purpose of this local currency is to help recirculate wealth within the community, strengthen the commitment of local enterprises to the people who live there, add to local spending power, reduce the need to transport goods and for excess packaging, and create jobs (Glover, 2002).

Similarly, Time Dollars is also famous in the United States. This organization equates one hour of service with one Time Dollar, so that Time Dollars are a type of currency that empower people to convert their personal time into purchasing power by helping others and by contributing to the rebuilding of family, neighborhood, and community. Every act of helping leads to another act of helping, creating a web of support and caring that rebuilds trust and enhances community. Time Dollar Exchanges use Time Dollars in two main ways. Generalized exchanges of Time Dollars are most often found in Neighbor-to-Neighbor Time Dollar Exchanges in which people contribute their efforts to assist their neighbors. Time Dollar also are used to reward specific contributions that are deemed to be of special value to the community. In Washington, D. C., the Time Dollar Youth Court uses Time Dollars to recognize and reward teens who serve as jurors. In the Chicago Cross-Age Peer Tutoring program, youth earn Time Dollars for tutoring younger youth and the tutees also earn Time Dollars (Time Dollar Institute, 2004).

Toronto Dollars are used in Canada, and the method of this organization has been

introduced all over the world. The scheme involves a paper ticket, or a Toronto dollar, which is equivalent to is one Canadian dollar, and can be used for commercial transactions in the region. Participating community organizations are also eligible to receive grants from the 10% Community Fund. Any participating community and charitable organization can receive 110 Toronto Dollars for every 100 Canadian dollars by contacting their treasurer. In addition, community organizations that send volunteers to work at the booth in the St. Lawrence Market on Saturdays earn 5% of the funds exchanged for their organization, for example. Other examples of activities supported by Toronto dollars are free dance classes for youth, nutritious breakfasts for school children, food and clothing for street people, furniture transportation for low income people, camping trips for children, thank-you gifts for caring services and so on (Toronto Dollar Community Projects, n. d.).

LETS (Local Exchange Trading Systems) are revitalizing communities throughout Britain. As grassroots initiatives, they are open to people of all ages, skills and abilities; local clubs and associations; voluntary groups, charities, and community initiatives; housing cooperatives, small businesses and local services. LETS facilitates the give and take of currency and services, assists in the connection of its users to new resources, and in establishing a genuine community identity (UK LETS, n. d.). People earn LETS credits by providing a service and can then spend the credits on whatever is offered by others using the scheme for services and products such as childcare, transport, food, home repairs, or rental of tools and equipment.

Local currency can be classified into economical motive, designed to activate the regional economy, and out-economical motive, designed to promote community reciprocal help and unity by facilitating personal exchanges in the region. The out-economical motive is more common than the economical motive. In some cases, the function of local currency is payment for all or part of services provided by regional shops and producers. In many cases, the use of local currency is limited to service

transactions that are not easily accommodated in the volunteer work and markets such as welfare, education, environment, and cultural activities. This type of system helps to renew forgotten skills among community members and to champion community resources. This interweaving of service and economics helps promote prosperity and unity in the community.

The development of local currency is progressing gradually as indicated above. The economical impact of the use of local currencies is difficult to quantify and cannot be fully analyzed. This section addresses several economic issues associated with the use of local currencies.

### **2-2-1 Economical Features of Local Currencies**

Local currency is used in a defined, limited region. However, it is difficult to define the feature by this single meaning.

### **2-2-2 Regional limitations and non-exchangeability with national currency**

The use of local currency is limited to a specific region and cannot be used as legal tender, as with the U. S. dollar or the Euro and yen. Local currencies are not guaranteed by national governments and cannot be exchanged for the national currency. Traditional economic theory assumes that money is a value standard, a medium of exchange, a means of storing value, and a means of speculation. The name currency is not necessarily suitable for local currency, even though it is used all over the world, because local currency does not serve the latter two functions mentioned above.

### **2-2-3 Independent issue and management**

Local currency is independently managed and issued by the community in a specific region. It is not issued by the government or the central bank.

### **2-2-4 No interest**

The interest does not attach to local currency<sup>1</sup>. Some local currencies collect the 'staying fee'. It can be said that local currency accrues zero or negative interest.

### **2-2-5 Issue form**

Local currencies are issued in various forms, not necessarily as paper notes. There are many advantages to the use and spread of notes. Moreover, paper notes, such as the Ithaca HOURS and Toronto dollars discussed above, mimic the anonymity, for example, of paper currencies. Convenience is enhanced when local currency can be deposited in bank accounts. Accurate recording and registration of currencies as well as protection against abuse are important. The LETS currency discussed above is the best example.

Finally, local currency may be issued as a bond (bill and check). This method is difficult to manage though it offers many advantages.

Now eco-money and local development coupons are prevailing in some countries. Let me explain in some detail. The use of eco-money is limited to informal dealings such as payment for volunteer services and limits the use of local currency by the one used for eco. For instance, when welfare, nursing, cleaning, and using personal computers are performed as a volunteer work, payment can be tendered with local currency. The recipient of the local currency can then use the local currency to obtain other services or exchange it for products, as pioneered by the Time Dollars organization. Such local currency can be used in market and non-market dealings and for services. The Local Development Coupon is an alternative that differs from local currency in that the benefactor is public institutions, such as cities, towns, and villages rather than NPO or individuals. These coupons have limited application for specific purposes as defined by the issuing country.

## **2-3 Present and Future Problems of Both Forms of Money**

There are of course pros and cons in both money. Problems are described as follows.

### **2-3-1 Who pays the cost?**

The cost of creating digital cash is high, especially in the case of digital cash. The technology to manufacture cards and provide infrastructure against commitment is expensive.



### **2-3-2 How are users protected?**

This is a legal problem as well as an economic and technological problem. For instance, it is common all over the world to construe that illegal use is the user's own responsibility in the case of online transactions. In the United States, there is a rule by which the liability is limited to \$50 after the consumer's loss is borne.

### **2-3-3 Problems of the issuing body**

Emergencies on the part of the issuing body are cause for concern. For instance, the European Central Bank (ECB) assumes that the issue of digital cash is the same as the acceptance of deposits for those who issue it. The issuing body must (1) defend the settlement system, (2) protect the consumer, (3) support the execution of monetary policy, and 4) promote competition. Only financial institutions should be able to issue digital cash.

### **2-3-4 User equity**

People who do not or cannot use equipment such as personal computers, for instance, are at a disadvantage relative to other consumers.

### **2-3-5 Questions and standards of taxation**

There is a possibility of avoiding taxes incurred by digital cash. The World Trade Organization (WTO) and the United States are not inclined to tax network trading. However, the stance varies all over the world.

### **2-3-6 Counterfeiting**

Dealing with the problem of counterfeiting with digital cash is not as easy as with the present currency. The IC type of digital money has high privacy but it also the disadvantage of being easy to lose and easy to steal. In addition, money laundering has been an issue. However, digital cash transactions are not large, especially for IC type (Berger, Hancock, & Marquardt, 1996). This problem may apply more to the network type with its larger average transactions.

### **2-3-7 Privacy**

It is difficult to solve the problem of privacy because of the consequences of interfering with the security of network-type transactions.

### **3. Digital Cash/Local Currency and Financial Institution Management**

Almost all of this section only applies to the case of digital cash. Many banks in developed countries have adopted several kinds of Internet banking services. The possibility of cost reduction of customer services, severe competition, and increases in the number of Internet users have contributed to the prevalence of Internet banking.

The spread of digital cash has upgraded consumer access to and satisfaction with transactions. First of all, consumers need not even go to a retail establishment or ATM. With digital cash, former restrictions such as the geographical location of a shop and business hours no longer hamper consumers' ability to obtain desired goods and services. Economies of scale benefit both sellers and buyers. Even if it costs more to introduce the system for financial institutions, the customer channel can be secured widely (Davidson, 1997). SET is one example.

Some big companies are announcing an interface standard to be used for bank services. The construction cost of the system is expected to decrease further as a result. Certainly, at least handling costs of money will decrease. Movement toward the standard is becoming active in the United States. There also is some possibility that some types of settlements, particularly those beyond the type generally handled by banks, will grow with the spread of digital cash. Another possibility is a decrease in the number of branches and bank clerks required by banking institutions. Cline (1998) noted that advantages accrue to banks with fewer branches (mega commercial banks and some trust banks). The spread of digital cash may further influence financial institution management by permitting decreases in commission fees if the net settlement or the settlement at the same time is arranged. For the individual, it will be possible of losing

by using the HD of a computer.

Additional management considerations are (1) banks' acquisition of business information concerning commercial distribution of creating monopoly, (2) possibility of tie-ups of institutions such as credit card companies with a set infrastructure, (3) participation by institutions other than banks may cause systemic risk. Changes in this kind of risk have been widely forecast. Operations risks may outweigh those imposed by traditional interest rates, liquidity, and market risks (Basle Commitment, 1998). Reducing the cost of acquiring information and the trend toward globalization makes it difficult for banks to monopolize technology and risk management operations (Salomon, 1996).

However, it does not seem that such a movement accelerates unilaterally. There is a view that the move to help banks obtain their vested right to profit from certain types of transactions disturbs the development of electronically managed settlement. Humphrey and Pulley (1998), BIS (2000), and Weiner (2000) stated that paper-based transactions are still mainstreams.

## **4. Digital Cash/Local Currency and Policy Authorities**

### **4-1 Policy Authorities**

New money, especially digital cash influences the policy authorities. However, it is thought that digital cash is debt issued (i. e., deposited) by banks. It circulates under the assumption, guarantee, or trust that 100% of it can be changed into cash (in the form of a central bank note). Digital cash itself does not have the finality of the settlement. Policy authorities will not be greatly influenced by it in the near future. Areas of influence include the following.

### **4-2 Management of the Money Supply**

Management of the money supply becomes difficult if settlements using deposit

currency decrease as settlements with digital cash increase. Some fear the effects of the decrease of the function of deposit creation. However, there is no change in the money supply if the issued digital cash is immediately converted to currency. The problem might be the amount of money involved and the length of the time that it remains in the digital state. For instance, there is no change in the multiplier of money if the digital cash is issued against a bank deposit, but the multiplier increases if digital cash is issued against a national bond, for example. Moreover, there is some possibility that the multiplier becomes unstable at the diffusion period of digital cash. However, in the case of increasing the substitution of digital cash for paper money, authorities can manage high-powered money and even the national debt.

It is important to consider payment preparation for the deposit. The effect of the multiplier exists as long as demand for the cash (issued by the central bank) or the preparation deposit is not extinguished. However, as digital cash prevails, the ratio of the payment preparations for the deposit becomes small. Though the spread of digital cash certainly decreases a necessary payment preparation, the multiplier rises and at the same time the effect of the monetary policy may also increase.

There is some possibility, however, that the side effect of the rise of the inter-bank market interest rates may result from a lack of preparation deposit. Moreover, the confidence multiplier expands to infinity because a legal preparation does not exist now. However, the issuing body has the payment preparation, part of it is converted into cash and a deposit, and lending demand is limited. So the one-sided acceleration of such a movement may not happen.

When the digital cash of the home country is converted into the digital cash issued in the foreign country, the management of the money supply becomes difficult.

### **4-3 Money Demand**

Again, the function of money is as value standard, payment instrument, and stored value. Digital cash chiefly accomplishes the function of payment instrument. Tobin's

stock theory Tobin is useful when considering this aspect of digital transactions. The cost of going to a bank, changing a deposit into money, and cash demand are positively correlated. Using this theory, digital cash decreases the money demand. However, use of digital cash increases liquidity, so digital money may render money demand unstable.

It is difficult to forecast accurately the shift of the multiplier and the money demand. Policy authorities must consider these factors. In a standard theory of economics, if the shock of the economic fluctuation is real, stabilizing the amount of the money supply rather than the interest rate reduces the change of real gross domestic product (GDP) (Poole, 1970). Therefore, when such shocks are not anticipated in the money market, in the appearance of digital cash, comes, it becomes important for policy authorities to stabilize the interest rate.

There has been much discussion whether or not monetary authorities should set money supply (or exchange rate) as an intermediate goal in the attainment of price stability or economic growth. The typical case in which money supply had been taken as intermediate goal was Germany (Gerlach, 1999). However, if authorities took such an instrument, they could control money supply with confidence. There should be a stable relationship between money supply and inflation. So it should be better for monetary authorities to control interest rates instead of money supply when the used of digital cash is dominant.

#### **4-4 Increased Use of Foreign Currency**

If a part of domestic economic activity is accomplished using foreign currency, it may decrease the “real economy,” provided by the domestic currency short-term interest rate. The influence of monetary policy then decreases because it can only influence bank lending by the domestic currency. Moreover, changes in the prices of goods and services in the foreign country may also influence the domestic economy.

#### **4-5 Taxation Issues**

Reductions in taxation may decrease revenue.

#### **4-6 Restriction and Supervisor's Problems**

Use of the Internet accommodates deposits to financial institutions in foreign countries, especially those with limited restrictions and supervisions. Monetary policy much consider the possibility of the spread of corruption from the foreign country. Moreover, there is a problem of the scope of the financial institution. Financial systems are different in each country. In addition, there is a problem of the scope of deposit insurance.

#### **4-7 Money Laundering**

Government intervention regarding code keys and other transactions may arise. It is natural for authorities to want to take to such measures ; however, a conflict with the individual's privacy surfaces (Mester, 2000).

Finally, the authorities lose profit, because money is a debt with no interest and the authorities get interest from asset. Yet, this is not their pursuit of profit for them.

Openness of the economy and the mobility of labor and capital are standards of the optimum currency area theory proffered by Mundell and MacKinnon. For instance, consider the implications of an exchange between a national currency and local currency and the effect of shock on the region<sup>2</sup>. According to Reynolds (2004), the region is likely to encounter certain negative effects in this circumstance. If the usage and region of a local currency are very limited and conversion to the legal currency is not permitted, the negative effects will be diminished by a common legal currency because of the small scale. Given the present economic situation in most countries, there is little advantage in local currencies exceeding the status of supplementation of the legal currency.

It is important to consider the legal implications of the use of both money. For local currency, legal issues are complex. There is no legal prohibition of local scrip, community currencies, or private exchange systems in the United States. In the U. S., HOURS are legal. Federal officials have repeatedly stated that there is no prohibition of local currency, provided that it does not physical resemble dollars, the denominations are at

least \$1.00, and it is regarded as taxable income. Standard legal tender must be used to pay taxes on income in local currencies. There is, however, a possibility of colliding with the law on matters surrounding the issue form of local currencies as discussed below.

The position of financial authorities all over the world concerning local currency is that the function of currency is to serve as a means of payment for everything or settlement of transactions by everyone and anywhere. The definition of legal tender includes general availability to many people throughout the country and use to settle transaction. Because local currency circulates only in the region of issue and is limited to use by small groups, it can be argued the local currencies are not currency at all.

Even with the limitation that the locally issued currency may be used only in the region of issue, it is tricky to determine whether the local public entity is legally permitted to issue local currency. One view is that the local public entity is the same as a private individual in terms of the legal right to issue currency. The chief difference between a private individual and a local public entity in terms of currency issue is public confidence, influence, and power. Whereas some believe that issuing currency is a national matter because of its impact on the nationwide monetary system, there is also some sentiment that the issue of local currency by a local public entity is a peculiar activity. No clear conclusion can be drawn regarding the legal right to issue currency.

Laws concerning the restriction of prepayment-type certificates may impact the issue of local currencies. In Japan, this law is not usually applied to certificates that are limited to a 6-month use period.

Laws governing acceptance of contributions, money deposits, and interest, particularly those regarding transfer of value by the legal tender through local currency may limit or prohibit the use of local currency for certain types of interactions.

Labor Standards Law dictate that payment for labor pay must be for the full amount by legal tender. Trust and banking laws may likewise limit the use of local currencies

taxable, but the laws are sometimes difficult to interpret. When individuals receive local currency for remuneration for labor, the payment becomes income and is therefore taxable as income. If local currency is used to settle property transfers, and if a person receives local currency repeatedly or continuously, consumption tax rules may apply.

The impact of IT on local currency, when it functions as digital cash, laws such as those concerning electromagnetic records for payment may also apply. The laws do not apply to reward cards that are not used for payment.

In the United States in 1996, the Federal Reserve Bank (FRB) held the opinion that the issue of Ithaca HOURS does not legally have the problem. The state of Missouri conferred tax-free status for Time Dollars. Prime Minister Blair himself has promoted LETS in Britain<sup>3</sup>. Application of global standards will help to clarify the legal status of local currencies.

## 5. Conclusion

As the use of new money spreads, economic activity and social structure will change. The merits of digital cash balance against the potential and realized problems. The most important thing is that defense against the high potential for fraud will call upon much needed self-responsibility on the part of the user and the supplier of the digital cash.

Financial institutions should consider the trend toward greater use of digital cash as a business opportunity. Those who lag behind in this area may disappear from the market. Authorities should examine this trend, including local currency, carefully. They should look to mature the “sound” market and not to confuse it with too much intervention. Their primary goal must be to develop and preserve sound financial systems and social welfare.

Local currency is a means by which to activate the economy of a region, to ease the



effects of recession, and encourage community activism and volunteerism. Because modern society has suffered from the lack of such volunteerism, expectations for the spread of local currency are great. Local currency stands to benefit the environment, welfare, the arts, education, and so on, particularly in regions that do not have dealings in the market. Local currencies are also expected to protect and to help develop local culture (Asahi Newspaper, 2000).

Various problems are involved with the expansion of the use of local currencies. However, I want to think comfortably. There is no large issue even if becoming abolition. Given a good relationship among users, the advantages are considerable. Local currency will not create a major obstacle to traditional economic activity as long as the current size of the transactions does not increase greatly. Government and financial authorities have not arrived at reasons for stopping the use of local currencies, though that is likely to change if a country's central currency issue authority is seriously threatened by local currency.

It is important that the private sector play a leading role in developing local currencies, but for maximum benefit and a real spread of local currency, the public sector must also be involved. The good shape of both tie-up is expected.

### Notes

1. Some economists insist that it is necessary to use stamps to overcome a negative interest rate at a constant date. This problem was broadly analyzed by Goodfriend (2000), Buiter and Panigirtzoglou (2003), and others.
  2. Some local currencies, such as Toronto Dollars, which facilitates exchange.
  3. In France (SEL), the government may bear part of the cost for establishing a local currency group.
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