A Gold Standard for the Internet?
An Introductory Assessment

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INTRODUCTION

Recent data on the development of e-commerce shows that this market will experience significant expansion. In Europe, total e-commerce sales are expected to grow from €36 bn in 1999 to €1,550 bn in 2004 (cf. Forrester Research 1999, cited in: Deutsche Bank 2000).

The rise of these new places of exchange raises the question about the appropriate medium of exchange. Payment process innovations could be used as substitutes for traditional physical media of exchange. However, these innovations still have to overcome a number of problems. At present, only a small fraction (approximately 5%) of online transactions is paid with electronic cash (Deutsche Bank 2000). In 1998, a major provider of electronic money, Digicash BV, filed for bankruptcy. All these developments have contributed to the fact that electronic money was sometimes considered to be a solution in search of a problem (The Economist 1998: 73). Although, presently, electronic cash is a rather small phenomenon, official bodies like the German Bundesbank are following the process closely to monitor potential impacts on monetary policy (Deutsche Bundesbank 1999).

The topic of this paper, electronic gold, represents a financial innovation that is based upon the mechanics of the gold standard. The gold standard as an international exchange rate system has been analysed in depth but literature on its electronic equivalent is still scant. In the following, major gold-backed Internet currencies are presented and analysed regarding their characteristics and peculiarities, as well as their conceptual framework, the gold standard. After presenting a categorization of electronic money and success factors for its provision, the case of electronic gold is examined with respect to the implications of the gold standard for electronic money and the market environment for gold and gold-backed electronic money.

ELECTRONIC MONEY

Forms of Electronic Money

Electronic money comprises all non-cash and non-paper payments systems. Humphrey et al. (1996) examined the use of cash and five non-cash payment instruments in 14 developed countries between 1987 and 1993. They estimated that shifting non-cash payments from paper to the electronics has cost savings of one-third to one-half that of a paper-based transaction. This shows the huge cost saving potential of electronic money.

The broad definition of electronic money given above includes instruments such as smart cards, Automated
Teller Machines (ATMs), Electronic Funds Transfer at Point of Sale (EFT-POS) and all instruments suitable for electronic money transfer, the telephone, fax and the Internet. Here, only Internet-based money transfer systems should be considered.

Internet-based forms of electronic money can be categorized into credit card-based systems (e.g. Visa Card and Master Card), electronic cheques (e.g. VisaCash system), electronic cash payment systems (e.g. Mondex), and micropayment systems (e.g. MilliCent) (cf. O’Mahony et al. 1997). A relatively new subgroup of Internet-based electronic cash payment systems is gold-based Internet money, i.e. electronic cash backed by physical gold. Recently, combinations of Internet currencies and loyalty programmes like Beenz.com or the AOL AAdvantage programme initiated by American Airlines and AOL emerged. The AAdvantage programme lets customers accrue air miles that can be redeemed for a variety of products and services purchased via AOL. The last group are not ‘pure-play’ electronic currencies but seek exchange-ability with ‘traditional’ electronic cash schemes. Looking at all the different types of electronic money raises the question which of these payment schemes will succeed and why.

Critical Success Factors for Electronic Money

Research on success factors for electronic money can be considered to be at a very early stage. The insufficient empirical validation of success factors is related to the fact that the subject is rather young. Apart from credit card products, which have achieved acceptance on a global scale, there is no predominant form for electronic money world-wide.

Anonymity and off-line validity seem to be important success factors for Internet-based electronic money (The Economist 2000). Also avoiding intermediary charges (especially credit card service charges) is a potential success factor. The main reason for accepting a particular form of electronic money might be more basic. One important success factor is the national preference for cash payments. Some countries show a particular strong preference for cash transactions (78% of the volume of transactions in the Netherlands, 86% in Germany, 90% in the UK) while others use less cash. Estimations for the cash use in the United States vary between 50% and 75% (cf. Evans and Schmalensee 1993 and US Department of the Treasury 1995 respectively).

Studies show that functionality has only little influence on the success of an electronic payment system while the type of intermediary employed in an electronic payment transaction is a statistically significant determinant of success (see Thiessen 1999, although this result has to be interpreted with some caution due to the sample size which has only been 24 out of 100 known electronic payment systems). Another success factor might be sound regulation. One has to bear in mind that only a fraction of intermediaries, i.e. electronic money issuers, belong to the regulated banking sector. Some cyberbanks have been granted official status with its responsibilities (e.g. the CompuBank, NA, headquartered in Houston) while other non-bank third parties are not regulated (Solomon 1999).

Since payment systems have a network character, becoming a standard is potentially an important success factor in the competition among electronic payment system providers. The utility of a payment technology depends crucially on the number of its users. The more users switch to one technology, the higher the utility for each single member (Shapiro and Varian 1999: 227–33). Therefore, marketing its electronic payment solution to commerce merchants must be a top priority for any promoter of digital money in order to gain a critical mass.

In mid 1998, there was a substantial move towards standardization and interoperability of electronic purses: Visa International, the German banking industry represented by ‘Zentraler Kreditausschuss’, and other groups agreed on the Common Electronic Purse Specifications (CEPS) for electronic money. Despite all standardization efforts there is no prevalent standard for electronic money. Electronic gold might fill this gap if it meets certain requirements.

THE CASE OF ELECTRONIC GOLD

Concept and History of the Gold Standard

The gold standard is a nineteenth-century fixed exchange rate regime (Cooper 1982; Willms 1995: 158–60). The regime was never created through an international agreement but has been the result of various national decisions to back the national currency with gold. Great Britain introduced the gold standard in 1821, Germany and the majority of European states followed in 1871, the United States in 1879 (for further details refer to Bordo and Eichengreen 1998).

The gold standard was based on the following principles:

1. Fixing a parity of the national currency and a certain quantity of gold.
2. Mandatory binding of all members to buy and sell gold according to the parity.
3. Mandatory binding of all members to fix the relation of cash in circulation to the gold reserves.

Assuming that all members of the gold standard obeyed these principles, the various balances of payments would be adjusted automatically. This is equivalent to the monetary approach to the balance of payments adjustment as developed by Mundell (1968), Johnson (1972), and Dornbusch (1973). The German parity of 86.58 D-Marks for one ounce of gold together with the US-parity of $20.67 per ounce led to an implied exchange rate of 4.19 D-Mark for one US-Dollar (cf. Willms 1995: 158).

Arbitrage dealers guaranteed that the exchange rate did not deviate from the parity price. Theoretically, gold provides a numéraire for the world’s monetary
system. This means that it can be used as the pivotal element for an exchange rate system. Assume ten commodities (wheat, tin, silver, ...): without money, the price of one element can be expressed in terms of nine other commodities. This shows that for ten exchanged goods, nine prices exist through picking a numéraire or n-1 currency (cf. Kindleberger 1981: 76). Using gold as a numéraire closely matches the ‘monetarist rule’, i.e. the money stock should grow in accordance with gross domestic product (GDP) to avoid inflation. The major macroeconomic consequence of choosing gold as the anchor is to limit the world money stock to world gold stock increases and hence the world inflation rate to real economic growth.

Gold is inherently a ‘hard’ currency, but new gold production cannot keep up with economic growth. As a consequence, an economy working under a strict gold standard will face gradual deflation. The price level will decline, depending on gold production and economic growth. In reality, there has been inflationary as well as deflationary tendencies since the regime depended crucially on the not always stable price levels and exchange parities (Willms 1995: 160).

Wealth can be stored in gold over a long time because of its growth with the long-term average growth rates of world supply and demand. World demand can be approximated by population growth, and world GDP growth can be used as a proxy for world supply growth. These two growth rates are roughly equal to the increase of the world gold stock, which makes gold’s purchasing power stable in the long run. This shows that gold is a good storage facility for wealth in the long run. The short- and medium-term prospects for gold as a storage facility for wealth depend upon the market environment for gold.

The Market Environment for Gold

The gold price has slumped over 20% within the past five years (see Figure 1). Consolidation in the European central banking sector through the founding of the System of European Central Banks (ESCB) led to suspicion that the various national central banks will sell parts of their gold reserves. In September 1999, 15 of Europe’s central banks (Austria, France, Italy, Portugal, Switzerland, Belgium, Germany, Luxembourg, Spain, UK, Finland, Ireland, Netherlands, Norway and the European Central Bank) announced a five-year moratorium on new sales of gold which fixes gold sales to approximately 400 tonnes a year (around 2,000 tonnes over the next five years). This could be a relief for the gold price to some extent but is probably insufficient to offset the negative price trend. Detailed econometric analyses are necessary to assess the mid- and long-term development of the gold price, i.e. the exchange rate for e-gold into US-Dollar or Euro. One important factor in this context might also be the landscape for gold-backed electronic money that is summarized in the following section.

Gold-backed Electronic Money

Gold-backed electronic money is a rather young phenomenon. The main providers of this currency or payment system are E-Gold (already operating) and Goldmoney (expected to be operational at end of 2000). A third company called DigiGold by now issues only fiduciary instruments, i.e. their electronic gold is only partially backed by physical gold.

‘E-Gold’ and ‘GoldGrams’ (the latter is the Goldmoney product) are electronic currencies that are backed 100% by gold. Other precious metals (silver, platinum or palladium) can also be used for backing purposes. Precise weights of the various kind of metals...
can be transferred from one account holder to the other. The companies behind the two systems are Gold & Silver Reserve, Inc. (G&SR), a Delaware Corporation that was taken over by E-Gold Ltd., a Nevis Corporation (for E-Gold), and GM Network Ltd in the Isle of Man, UK (for Goldmoney).

G&SR considers itself to be neither a bank nor a precious metal dealer. It is only entrusted with the storage of the physical gold reserves (stored at the Bank of Nova Scotia, Toronto) and their administration. Furthermore, G&SR is not allowed to place any encumbrance or lien on the gold stored for customers. For fungibility and exchange convenience the traded entity is not the physical gold but a digital equivalent (the E-Gold). The E-Gold offering company G&SR primarily administers the metal. It is engaged in trading only in situations where customers transfer metal to their accounts.

To maintain the traditional strengths of gold regarding credibility and trustworthiness, the 100 per cent-gold-backing and the financial integrity of these issuers have to be guaranteed.

The vast majority of electronic money forms saved in computer memories are matched and backed by liabilities of the e-money issuer and therefore sometimes lack trustworthiness. Gold-backed forms could replace existing Internet currencies because they have the strategic advantage that people intuitively trust gold. The ‘offshore’ image of the current electronic gold forms, might represent an obstacle on the way to create the credibility needed to be successful.

Hybrid forms of electronic gold, i.e. backing electronic gold partially with physical gold and partially with US-Dollars, bear substantial risks. To the extent that the issuer invests in less than reserve-quality gold assets, the integrity of the system will be at risk because a sharp rise in the price of gold in dollar terms quickly leads to insolvency when assets in gold terms are less than liabilities.

CONCLUSION

The idea of gold-backed Internet currencies has some distinct advantages. First, it stems from the philosophy of a stable and inflation-free financial system whose currency is fully backed by a physical commodity like gold. In the context of electronic markets, this is also its main advantage compared to Dollar-backed instruments. Also, gold-backed Internet payment systems represent a product innovation with an existing conceptual framework. The lack of standardization still limits the spread of a common international payment solution for e-commerce. The success of the attempt to fill this gap via using gold-backed electronic currencies will crucially depend upon communicating the distinct advantages of electronic gold to its potential users.

In the long run, electronic gold could represent a new way to enable citizens of a country with a weak currency to shift their savings into a stronger currency. This process might end in the online dollarization of a country. Information and communication technology makes a pure exchange economy technically feasible. This would finally question the existence of central banks. Both, the International Monetary Fund and the Bank for International Settlements have established working groups in this area and follow the developments very closely. In a nutshell, the totality of legal, monetary and economic implications of digital gold are hardly understood but represent an interesting future field of research and business at the same time.

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