

The Future of Electronic Money

- Why the Nok will not replace the Dollar¹

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“We are witnessing nothing less than the birth of a new industry – the development, issuance and management of private currencies.” Konrad Alt, US Treasury.

“At most, a faulty or crackable system of electronic money could lead to an economic Chernobyl.” Steven Levy, Wired.

The e-revolution, which is already upon us, and the m-revolution which we are assured is soon to begin, promise fundamental change across just about the whole gamut of economic life. But perhaps none is quite so radical as the change promised in the medium which is associated with nearly all economic activity – money.

At a prosaic level, advances in payments technology and the development of e-money, hold out the prospect of a payments system which is faster, cheaper and more convenient. But there is also in prospect something altogether more momentous, something which bears comparison with the discovery by the goldsmiths that they could lend out gold left with them for safe-keeping, or the development of paper currency, namely the privatisation of money and the eclipse of the state's role in monetary policy.

This may seem an extraordinary claim but the world's monetary history makes it clear that there is no necessary reason why a monetary system should be operated by the state, and no reason why the liabilities of the state should necessarily be used as money. Money did not start off that way, so why should it 'end up' that way? There have been instances,

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even in recent history, of several types of privately-issued bank notes circulating simultaneously.

Moreover, the Nobel prize-winning economist, Friedrich Hayek, once advocated competition between privately-issued currencies as a way of ridding society, once and for all, of the ruinously inflationary policies operated by central banks and governments. The state, he argued, should be taken out of the monetary system altogether.

Hayek first made his proposal in 1976, before anyone had seriously thought about electronic money. A quarter of a century later, how much stronger his idea must seem now. Many of the world's major corporations are now larger, arguably more powerful, and certainly more possessed of global reach than the governments of even medium-sized countries, never mind small ones. A company like Nokia, or Microsoft, for instance, will have dealings in virtually every country in the world. As international trade increases, and particularly as trade over the internet increases, shouldn't we expect such companies to have more basis for the issuing of money than a country such as Thailand, Argentina or even Switzerland? Shouldn't we therefore expect, over time, such organisations progressively to take over the monetary function from the state?

The links between money and the state

If private e-moneys became accepted to such a degree that they ceased to be redeemable into anything else, and if there were no demand for currency, then there would cease to be any demand for the monetary liabilities of the central bank, ie cash. At that point, the central bank would have lost complete control of interest rates via the conventional channels.

But in practice, this is an unlikely prospect, not least because the demand for currency is likely to be highly durable. People have a substantial demand for a medium in which they can make *anonymous* payments – ie currency. Anonymity is clearly important for people pursuing criminal activities, but it is also important when trying to evade paying tax, gambling, or spending your money on some immoral, or irresponsible purpose, or simply wanting to keep your activities, and how much you pay for them, private, away from prying eyes, not only at the bank or the authorities, but in your own family.

There are good reasons why currency tends to be state-, rather than privately-issued. The links between money and the state run deep. For a start, the state's tax-raising powers support state money. Taxes can always be paid in state-issued money. Equally, the fact that the state has the power to raise taxes underpins the solidity of the issuer's credit and hence confidence in the state's money. (Not that this could always be relied upon. In the Middle Ages, it was not uncommon for a Kingdom's or Principality's credit rating to be inferior to many a private borrower's, since its expenditure may already have outstripped its tax-raising powers, and/or the King or Prince might have a weak or disputed claim to power. A well-established merchant might reasonably seem of greater standing and longevity. This is not unlike the situation in some emerging markets today.)

The state's legislative powers can also be brought to bear to re-inforce the position of state money. The liabilities of the central bank, which consist of notes and deposits by commercial banks, are designated legal tender, which means that payment in these assets cannot legally be refused. Meanwhile, commercial banks are forbidden by law from issuing notes, thereby protecting the central bank's position as the monopoly supplier of them.

So, in other words, there is likely to be a continuing demand for state-issued currency, and this will preserve the central bank's role at the centre of the system, together with its power to set interest rates. (Moreover, Goodhart argues that, even if, in the end, there turned out to be no demand for central bank money, the central bank could always set interest rates, by bidding for e-deposits at slightly above the market rate, or offering at slightly below the market rate. Of course, the central bank would lose money on such transactions, but it would be able to suffer these costs since the central bank is not a profit-maximising institution and it has the power of the government, and its tax-raising abilities, behind it.)

Redemption and competition

But there is something deeper here too. When notes are redeemable into something else, what stops a private issuer from over-issuing is the fear of not being able to redeem. But if notes are never redeemable into something other than themselves, then what is to stop an issuer issuing them more or less without limit? The answer is fear that such issuance

will cause inflation so damaging that it will harm its own interest. The larger the issuing entity in relation to the society in which it operates, the more it will see its interest as coincident with the interest of the society as a whole.

Arguably, the institution most likely to follow an issuance policy in the best interests of society as a whole is the central bank of a democratically elected government in a free society. Experience has confirmed, though, that unless such a bank has a considerable degree of operational independence, it will be forced to pursue policies which are directed, at least partly, by the short-term political interests of the political party in power – hence the overwhelming consensus view that ‘independent’ central banks produce the best results.

How would a private institution like Nokia compare? The distinction between redeemable and irredeemable money is absolutely critical. If Nokia takes e-deposits and makes e-loans in redeemable money, it has essentially become an e-bank with important implications for existing commercial banks but next to none for the monetary system as a whole. All the usual monetary rules, conventions and conditions would apply. There would be a fixed e-money supply (narrowly-defined) and it would be impossible for the private sector to destroy or create this narrowly-defined e-money. But this narrow e-money would form the basis of a pyramid of e-credit and associated e-money liabilities, which, from the user’s point of view, would be indistinguishable from central bank e-money. And this pyramid of credit could expand and contract, just as now. In such a world, the central bank would retain control of interest rates through the usual channels.

But if Nokia were to issue irredeemable e-money, then the implications would be huge. If such e-deposits were not redeemable into anything, then people would start to discriminate between receiving payment in **Noks** and receiving payment in **Microsofts**. An exchange rate would emerge between these two currencies, even within a single jurisdiction and political entity such as the United States. This also means that problems would arise with regard to prices. In terms of which money would prices be quoted and contracts be denominated?

Money is a network good, which means that there are advantages for all to be had from its widest possible acceptance. (There are also some disadvantages, and limits, which feeds into the debate about optimal

currency areas, but that subject is outside the scope of this paper.) The world is currently undergoing a consolidation of the number of currencies, precisely because it is recognised that the transaction costs, uncertainty and lack of price transparency caused by having different currencies brings serious economic losses. Accordingly, it would be odd if at the same time that the number of state monies was being reduced, private moneys proliferated.

Accountancy and accountability

How does this link up with Hayek's idea of the benefits of currency competition? For a start, the date of Hayek's proposal is significant – 1976 – in other words, right in the middle of the West's inflationary nightmare. We have become a lot better at controlling inflation since then, and there is no pressing reason to consider a radically different monetary regime such as the one advocated by Hayek.

Yet there is also something more important at issue. There was a serious flaw in Hayek's proposal. Money is widely recognised as fulfilling three roles:

- A unit of account
- A means of payment
- A store of value

Most discussions of monetary arrangements concentrate on the second and third of these roles but the first is no less important, and it is on this that Hayek's proposal fails. A system in which people did not know in which monetary unit to quote prices, and to keep accounts, would involve serious losses. In the extreme, it could be chaotic. So society has a strong interest in operating with only one unit of account – one money.

This has important implications. Only when a private issuer of e-money has become dominant in a society is its money likely to be irredeemable, with prices quoted in it and contracts specified in it. But at that stage, it will have acquired such a congruity with the interests of the society as a whole that it will have effectively become a quasi-public institution. Its position will only be tolerated if it is seen to act in the public interest and, more likely, it would be constrained to do so by legislation. In other words, it would take on the functions and status of a central bank.

Interestingly, there are two good examples of this happening in the past. Even though it was a private institution, not owned by the state, the Bank of England accepted its responsibility as a guardian and protector of the country's financial well-being long before it was nationalised in 1946. In Hong Kong, before the handover to China, some of the functions of a central bank were performed by the Hong Kong Bank, a private institution answerable to private shareholders. But its interests were so closely bound up with the interests of the colony that it was constrained to take account of the public interest as well as its private shareholders.

Yet is it likely in our societies that a private institution will become so dominant that its monetary liabilities will replace the central bank's? And what is to be gained, if it can only function effectively if it becomes a sort of **de facto** central bank? The likely candidates for this role are supposedly technology companies because of their links to the mechanisms which will make the new monetary system work. But the essence of the financial system is confidence – confidence in both the soundness of monetary institutions now and confidence in the maintenance of the monetary standard over time. Is it feasible to imagine individuals and businesses having such confidence in a private institution which was not even in existence 20 years ago and which might reasonably disappear in the next two or three years as technological changes, and the risks which they spawn, are so dramatic? This is all the more unlikely when state money has the tax-raising and legislative powers of the central government behind it.

There is surely only one thing which could reasonably prompt such a development, namely the breakdown of the state money system through rampant inflation. In those circumstances it is possible to imagine demand increasing for completely private money.

But even then, it is most unlikely that the emergence of a fully private money would be the result, for there is nearly always a better alternative, namely to use the state money issued by another state. In countries given to hyper-inflation, what invariably happens is that prices are quoted, contracts expressed in, and transactions completed by the exchange of, foreign currencies, now usually the US dollar. Where, for one reason or another, this has not been possible, the system has typically fallen back on a commodity money (often cigarettes) or barter.

Essential public interest

In the new, electronic world, not only will governments still have the ability to set interest rates, they will also have a number of sources of legitimate concern about e-money, ranging from worry about default and fraud, through the danger of a collapse of the payments system, to control of inflation.

Banking systems are interdependent and failures of one institution can easily lead to contagion effects which have ramifications on other parts of the system. Competition is in no way a guarantee against bankruptcy, and the importance of money as a value store and payment mechanism means that governments have a role to prevent issuers defaulting on liabilities. Essentially, any new e-money issuer, or credit-taking institution will need to be regulated in much the same way as existing banks today, as they pose similar risks to consumers. Given these concerns, therefore, the government will regulate to prevent calamity occurring in the new world of e-money. Such regulation will continue to support central bank money as the centre of the system.

In fact, a number of governments have already implemented laws which restrict the issue of electronic money (both multi-purpose prepaid cards and software-based products) to credit institutions. Eight EU countries have enacted the law for prepaid cards, and five (Austria, Germany, France, Italy and the Netherlands) have also enacted it for network cash, on the recommendation of the ECB.

Regulations controlling e-money can only be fully effective, of course, if they are enforceable, and in the supposedly borderless world of the internet, enforceability is allegedly under threat. On the other hand, though, new methods of value transfer depend on consumer acceptance, which is a function of the degree to which the system is trusted. Even if governments could not enforce their legislation in a thoroughly watertight way, their seal of approval could provide a signal to consumers that the institution was reputable and would not fleece them. Thus, it would be in the interests of payment providers to submit themselves for government regulation and to guard closely their reputations with the regulators.

Table: The Four Stages of E-Money

1. Not beyond the fringe

1. There are smart cards which embody monetary units in them and which can be discharged to make final payments without the need for any further settlement.
2. There are some electronic pseudo-moneys, such as beenz, which are essentially club units which circulate within a restricted community and which can be used to pay for selected items but which have no general currency.
3. But the overwhelming majority of payments are made using paper and plastic and state money in non-electronic form occupies the central role in the monetary system.

2. In the mainstream

1. It is common for deposits to be held in e-form, whether with institutions which we currently call banks, or with institutions which we currently call mobile phone companies, telcos, or utilities, but which have now become quasi-banks.
2. A high proportion of payments is made using e-money, mainly replacing cheques, direct debits and credits and plastic cards.
3. But state-issued money is still at the centre of the system and it still takes the form of physical cash.

3. Electronic dollars and pounds

1. All deposits are held in e-form and physical cash has disappeared.
2. All payments are made electronically.
3. But the state still issues 'currency', although now in electronic form, and this still forms the basis of the monetary system. Acceptance of state-issued e-money is protected by the legal tender laws and all bank deposits must be redeemable into state e-deposits, which continue to be specified in terms of pounds, dollars etc, and prices continue to be quoted throughout the economy in dollars, pounds etc.

4. In the Land of Nok

1. Money consists of Noks, and similar privately-issued currencies, which are 0s and 1s, issued by Nokia and similar companies, irredeemable into anything other than themselves.
2. Throughout the economy, prices are quoted in Noks, or in Microsofts, etc, with fluctuating exchange rates between these different moneys.
3. Currency, in any form, has disappeared and along with it, the monetary role of the state. All payments are made by the electronic transfer of such private electronic money.

The prospects for e-money

The view of the future of e-money expressed here can easily be described in terms of the four stages of development laid out in the table. Just about every developed country is currently at Stage 1, where e-money is at the fringes of the monetary system. Just about all of them will move to Stage 2, where e-money has entered the mainstream, and some may even get there in the next decade. Stage 3, where all money is electronic and physical cash has disappeared, is a distinct possibility, but bearing in mind the likely continued appeal of physical currency, movement to this stage is likely to remain a very long way off, and may indeed never happen.

Stage 4, though, which involves a fully-functioning private e-money which completely replaces the order of state money is a non-starter. It is a recipe for monetary chaos which just about everybody in the monetary system would have an interest in avoiding. Moreover, continued intervention by the government, in the shape of requirements to hold reserves, regulation, and support for central bank money, coupled with a natural conservatism on the part of those holding monetary assets, will ensure that it is avoided.