

THE CENTRAL BANK OF THE REPUBLIC OF TURKEY

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Electronic Money Free Banking and Some Implications for Central Banking

RESEARCH DEPARTMENT DISCUSSION PAPERS

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The views expressed in this paper are those of the authors and do not necessarily correspond to the views of the Central Bank of the Republic of Turkey

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Abstract

This paper discusses electronic money, its relation to free banking and some implications for central banking. It begins by introducing its conceptual framework for modern central banking, in terms of which it then rehearses the free banking argument. It then reviews the development of e-money in terms of both electronic payment methods and electronic issue, with special attention paid to the latter. The discussion includes both mainstream developments, such as Mondex, and 'alternative' schemes such as LETS. From here the paper proceeds by way of a consideration of the synergy between electronic issue of money and free banking precepts, to a consideration of some implications for the future of central banking generally. It offers an 'contestable' model of central banking, which endeavours to show the effects that e-money may be expected to have (and, indeed, may already be having) as regards monetary policy, financial supervision and seignorage. It concludes that even in its current stage of development, the emergence of e-money not only reflects and supports key free banking concepts, but may be nudging modern central banking towards free banking practice.

Keywords: electronic money, free banking, central banking

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1 Introduction

Our aim in this paper is to discuss the possible impact of electronic money (e-money) on central banking. The frame of reference is the free banking debate, which revolves around the issue whether or not central banks are in fact necessary and useful. The free banking controversy has highlighted several conditions, which are critical for monetary systems to function well in the absence of a traditional central bank. The way in which these conditions come into play is being transformed by information technology, however, and we want to consider the ensuing possibilities and challenges for the monetary system.

We begin by introducing a conceptual framework summarising the role of central banking in a modern monetary economy. This framework is based on distinguishing the different functions and tasks of central banking as regards the management of the monetary system, in order to find out how the development of e-money might affect the “public-good” nature of these functions.

The second section of the paper overviews the case for free banking as an alternative to the current monetary policy framework and pinpoints the parts of the argument relevant to the emergence of e-money.

Section three reviews the development of e-money in terms of both electronic payment methods (representative e-money) and electronic issuance of currency (independent e-money). We focus on the latter because were it to be shown that e-money qua unit of account was not an alternative to conventional money circulation, then its ultimate effect is unlikely to go beyond the displacement of currency in circulation by advanced payment systems including credit and debit cards or advanced clearing systems – something that has been going on for some time now. After defining e-money, the paper investigates its implications with regard to finance, banking and the functions of money.

Section four considers the relationship between e-money and free banking precepts. The discussion details how e-money helps to address three main aspects of the free banking debate – the lender of last resort function, currency backing, and multiplicity of currencies. The focus of this section is on possible implications for the future of central banking generally, rather than predicting radical change to the current monetary policy framework. If the incumbent central banks could be led to behave in a way, which would make their currencies as attractive as those produced, by the private sector, the benefits of the free banking system may be attained even without displacing current institutions or currencies. In the fifth section, we offer an ‘contestable’ model of central banking, which endeavours to take into account effects that e-money may be expected to have on monetary policy and seignorage. We stress the importance of the market mechanism on central banking and note that this may enable (or force) central banks to offer some of the benefits associated with “free banking” even under the present institutional arrangements, while defending the integrity of money for the whole society.

The last section presents our conclusions.

2 Background

We begin by clarifying the view of central banking that provides the background to this paper, and the conceptual framework in terms of which our discussion is formulated. Our focus is on the central monetary authority in its most basic functions, shorn of its role as banker to or agent of government and no longer handling debt management or other services that can as easily be provided by private firms

In this context, the central monetary agency is assigned three main functions – facilitating price stability, promoting financial stability, and ensuring the integrity of money, with the third of these arguably subsisting in the other two (Figure A). Money is a public good which has certain systemic network externalities at its core. In a word, the integrity of money refers to money’s ability to remain a reliable and stable cover for purchasing power over time (short, medium and long-term). It refers to the soundness of money, implying the absence of ‘bad’ (over-issued) money, while the concept of a stable measure connects it to the unit of account function of money and related topics, such as network externalities and the enforcement of legal tender provisions. Integrity of money, in other words, entails anything that increases or sustains the reliability of the unit of account by convincing economic entities to trust to the future quality of money. It covers the avoidance of inflationary effects but goes beyond that to include anything that may have an influence on the reliability of the unit of account.

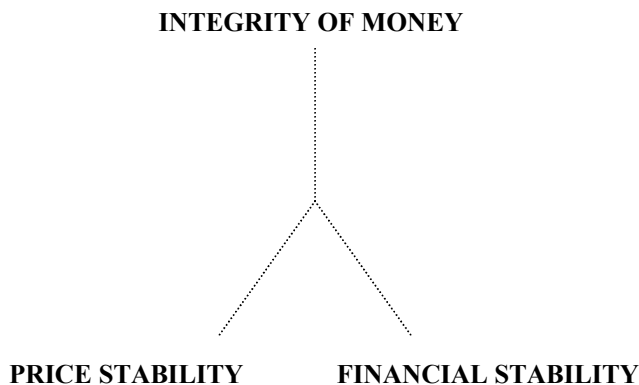


Figure A : Three Main Functions of Central Banking

It is in this sense that we say the integrity of money subsists in price stability and financial stability, since its ability to act as a stable measure will be maintained if price stability is maintained and if price stability in turn is not undermined by financial instability. Price stability can be understood as a short-hand reference to the wider concept of central bank independence (whether instrument or goal, partial or complete) with its concern to provide a constitutional context appropriate to price stability and its need to meet the challenge posed by competition in the quality of money -the possibility of enabling good money to reaching the end user. With its focus directly on the avoidance of inflation, price stability is clearly related to the means of exchange function of money, also

referring to currency competition with a mechanism of direct danger of substitution in case of an unreliable monetary policy. Financial stability, on the other hand, addresses such issues as free entry to financial service provision and the perfection of information by promoting financial awareness of individual economic entities. It also deals with problems of regulation and supervision of the financial sector and is thus related to the store of value function of money, although we recognise that there is continuing debate over whether financial supervision should or can be divorced from the conduct of monetary policy.

Although we only intend it for exploratory purposes, a further image (Figure B) can be derived from Figure A., an image that is not an arbitrary invention on our part. It has its genesis in Keynes's (1923) discussion on monetary reform and seems to be born out in current experience by the case of the Reserve Bank of New Zealand (RBNZ), for example, which describes its strategy as one that, wherever possible, leaves it to the markets to do the central bank's work. As regards monetary policy, this means the pursuit of price stability by way of single objective monetary policy. In terms of supervision, the RBNZ calls on banks (99% of which in New Zealand are foreign-owned) to account directly to the public in terms of meaningful reporting and transparency. The third function, the integrity of money, the Bank reserves to itself in its capacity as sole issuer of the NZ dollar - a fact, the Bank believes, that gives it a force over against otherwise autonomous global markets. While one may wonder at the certainty of this last claim, the interesting point in terms of our framework is that the RBNZ may not be just a one-off or special case. It may indicate a generic along the lines of the Goodhartian (1988; 1) definition of a central bank as an "outside agency to regulate and control the banking system ... in the otherwise free working of a free market."

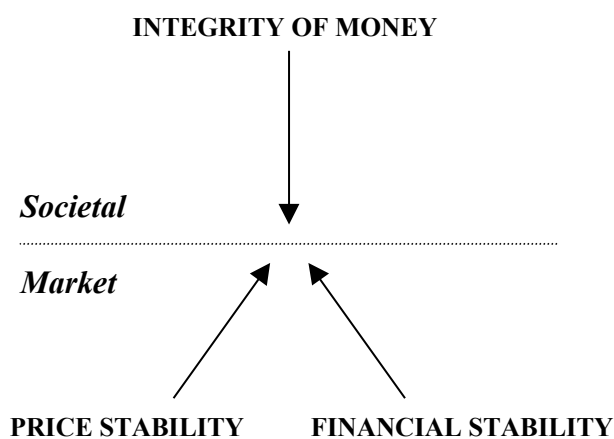


Figure B : A Possible Generic Form of Central Banking

This image also reflects Issing's (1999) criticism of Hayek's (1990) claim that it is free competitive issue of money that guarantees a stable and efficient monetary system. For Issing, money is accepted as a public good and because money acts as a basic convention in society, like language and standards of physical measure. Issing points to the network externalities involved in the use of money in transactions and criticises Hayek's assumption that complete, symmetric and free

information would obtain in a monetary system based on competitive currency. He also questions the transition period and argues that the change to competitive issue would be inflationary itself and generate uncertainty for future prices. For these reasons, Issing envisages money as a public convention standing above the fray.

Finally, such a generic image may serve to indicate, in responding to modern developments, central banking is undergoing a transformation away from unitary forms towards an articulated expression. Our interest is, therefore, in developing a relevant, appropriate, and viable tool of analysis for understanding the possible effects of e-money's seeming affinity with free banking on central banking generally, giving evidence where available of such effects

3 Free Banking

The location of monetary policy in central banks is a recent development in the history of finance. Central banks became monetary policy makers only as the gold standard was replaced by fiat money, which was controlled by governments. There are alternatives to central banking as practised today, like currency boards, full convertibility (under a commodity standard) and free banking, which we discuss here in some detail.

3.1 Definitions and Characterisations

The assumption of this paper is that central banks are facing fundamental changes, which may in the end lead to their demise or, as argued here, a transformation of their behaviour in a way that approximates the free banking concept at least in some key respects. This possibility is not of our invention, of course; the existence of central banks is already under discussion. For example, King (1999) argued that "central banks may be at the peak of their power. There may well be fewer central banks in the future, and their extinction cannot be ruled out. Societies have managed without central banks in the past. They may well do so again in the future." This was also the focus of a recent World Bank Conference on the future of monetary policy. Although these discussions do not directly consider the idea of free banking as an alternative to the current monetary policy framework, it may be that, once the continued existence of central banking is brought into question, free banking may yet emerge as an alternative, or provide an important benchmark in whatever transformation comes about.

White (1995) defines free banking as "a monetary system without a central bank, under which the issuing of currency and deposit money is left to legally unrestricted private banks," a definition representative of a general consensus in the free banking literature - see, for example, Dowd (1993). White points out that, as a monetary regime, free banking consists of two main elements - unregulated issue of transferable bank liabilities and unmanipulated supply of base money or basic cash. There is no government role in regard to the quantity of money produced inside or outside the banking industry, and outside money free of central

bank control is desirable. Money issue is not seen as a device of governments to achieve their goals, but operates as the means for individuals to pursue their own purposes. That said, White (1995) does not reject the idea of a clearing house (considered later in this section) at the centre of the financial system when without a central bank; his view is that this should be a market mechanism designed to eliminate imperfections within the financial system.

As envisaged by Dowd and others, free banking is regarded as the multiple issue of currencies by competing banks, whose notes, however, are interchangeable and redeemable against a “community-recognised commodity”, while option clauses protect against “sudden excessive demands for liquidity”. This last is an arrangement that obviates the need for a lender of last resort, since free banking is a system in which monetary and financial stability are guaranteed by market determination of the preferred currencies and interest rates. Dowd (1996) has underlined the basic requirements for successful free banking based on private money. One of them was the emergence of a clearing system. Another was the use of option-clauses - auto-control mechanisms used in cases of ‘fire-sales’ to defend against bank-runs. The final one was the development of a private lender of last resort within the financial sector to help individual institutions that were solvent but facing a liquidity crisis. In an earlier study, Dowd defined the distinctive features of a free banking system as:

1. Multiple note issuers who would guarantee to redeem their notes in a commodity recognised as valuable.
2. A regular note exchange between note issuers, and
3. The insertion of option clauses into the convertibility contracts to protect the note issuers against sudden excessive demands for liquidity (Dowd, 1993).

An important contribution to the literature came from Hayek (1990). While not restricting free banking to a commodity standard only, when arguing for the denationalisation of money, Hayek said that “the past instability of the market is the consequence of the exclusion of the most important regulator of the market mechanism, money, from itself being regulated by the market process.” He thereby invoked the idea of the invisible hand as the basic requirement for a successful monetary policy regime. The invisible hand is thus seen to lead to the most reliable money, while competition is deemed to play its part in the issue of money also. Hayek also argued that central banks should be abolished, since the free issue of competitive currencies would solve the lender of last resort and elasticity of circulation problems in a financial system. He argued that the demand for a lender of last resort arises from liquidity crises created by nationalised currencies, whereas under competitive issue there is no risk of excess liquidity as the competing currencies are fully backed by purchasing power. It is in this sense that central banking can be seen to be not the only choice for a monetary policy framework, especially if it is not able to guarantee the integrity of money as a reliable medium of exchange and store of value.

Free banking as an alternative to central banking was discussed by Capie, Goodhart, Fischer, and Schnadt (1994). Although they described today's free banking proposals as a "somewhat fringe academic exercise without much support from financial practitioners," they emphasised that free banking ought not to be discounted as an alternative to central banks and currency boards for the operation of monetary systems. They pointed out that the preference of governments for central banking stems from national pride and seigniorage interests, while the financial community in general and commercial banks in particular support the central banking option for two reasons of their own. First, commercial banks economise systemic non-interest bearing reserves by offering a safety-net. As a result they are able to reduce individual bank capital requirements when providing leadership in joint exercises like establishing payments and settlement systems. Second, commercial banks enjoy an influence on central bank decisions through the dynamics of the relationships between controllers and controlled, supervisors and supervised. (This influence may not, however, extend to the full theory of capture, which argues that commercial banks capture central banks and thus approve their operations.)

Capie and his colleagues identified four problems associated with free banking theory:

1. It may lead to extra transaction costs.
2. Some additional bank reserves of real assets may be needed.
3. There may be possible minor inefficiencies connected with multiple note issue.
4. 4. It seems indeterminate how the system as a whole behaves since free banking theory relies on the law of flux¹.

They also noted that an insufficiently capitalised bank would adopt a riskier portfolio due to the incentive to allow any resulting loss to fall on the depositors or an insurance fund.

They then summarised four responses of free banking advocates to the argument that free banking may lead to bank runs and contagious panics. The first is the denial of the likelihood of such events in a free, competitive system. The second is the argument that an implicit central bank safety net or a deposit insurance scheme invites moral hazard (absent in free banking), while intrusive regulation to minimise moral hazard leads to further distortion and misallocation of resources. The third is that free banking decreases susceptibility to instability through its adoption of self-regulatory mechanisms like option clauses, clearing houses, and narrow banking. The fourth is the denial of any sizeable externalities and social losses in excess of internalised private losses in the case of banking failures. Such possible externalities were not found to be potentially greater in banking than in other industries.

¹ The theory of reflux is explained as a situation where a note issuing bank will lose/gain reserves at the clearing if it expands faster/slower than other competing note issuing banks.

3.2 Clearing House and ‘Central’

Central to the free banking concept is the clearing house. Under the clearing house system not only do currencies clear, but over issue is pre-empted. If a participant issues more than it can clear, the clearing house immediately will realise it and put sanctions on the member so that the problem will never get out of hand. It is important to note, that, although against central banking, free banking recognises, both theoretically and in practical instances, the need for a centralised clearing function – not on political grounds, to be sure, but out of the practicalities of enabling the interchangeability of currencies yet providing for the return of over-supplied or ‘bad’ money. It is also said that this clearing function is in the self-interest of the issuers of currency. Moreover, Horowitz (1992) regards clearing as neutral to the players so that it can be said to be without (or contextual to) rather than within the market.

In the light of the free banking debate, if one considers central banking in its economic, as distinct from its political meaning, the adjective ‘central’ can be read as referring not to governments’ use of central banks as instruments of centralised financial control, but to the fact that the financial system ineluctably has nodal points or centres, places at which the system as a whole comes to a focus. Since this also underlies the free banking concept of a clearinghouse, it is not, therefore, a question of whether or not such a central agency can be avoided, but of the form it takes, whether it is forced by a ‘central bank’, which is given a monopoly by fiat or whether it is shaped by market forces: national or international financial markets for example.

Insofar as free banking is based on competitive issue of money, end-user preference is a function of the soundness or backing of money, not just its name. It is important to note in this regard that, although sound money usually means ‘real’ backing, real can have various meanings, ranging from ‘solid gold’ to non-inflationary behaviour. In this sense, if a national currency (even if state-issued) fulfils the requirements of price stability in a way specified by the users of money, it should be able to compete with other currencies. In this sense, the recent advent of central bank independence and stability-oriented central banking arrangements may act as a transition arrangement or conversion device. Monetary arrangements working much like the free banking system may not, therefore, be as distant a prospect as one might think, hence the importance of avoiding too fixed usage of terms, giving rise to a false contrast between the free banking doctrine and the underlying nature of modern financial developments.

In sum, free banking envisages an environment without central banks and is put forward as an alternative to central banking, meaning central banks when subject to political manipulation and thus made into distorting agencies. Whatever the final outcome of the debate, these arguments and counter-arguments reflect the fact that central banking is not the only monetary policy framework available to us. It is Hayek’s contention that other approaches should be explored, and competitive money issue in particular. His point is that in a free environment with concurrent currencies, it will be people with better ideas who determine

development through their imitation of what works best, as opposed to a national currency system where only those with power can shape evolution.

4 Electronic Money

Electronic money has different shapes. Up till very recently, electronisation of the payment systems has been based on improvements in account-based systems, their reach (domain) and their speed. Account-based systems record all the transactions and authorise them centrally, whereas non-account-based systems circulate e-tokens through telecommunication networks or on smart cards and may allow transactions without central authorisation. Account-based e-money systems are really very little different from the debit card or credit card networks of EFT systems currently in use. Token-based e-money, “e-cash”, on the other hand, is radically different in the sense that it introduces an electronic form of currency.

Ultimately, the impact of the perfection of account-based systems of electronic transfer and the expansion of token-based e-money is the same because both compete with (or create an alternative to) the use of conventional currencies in payments. Paper currency has hitherto been able to compete against account-based payment systems because of its anonymity and the absence of verification costs, which have been prohibitively high for very small payments (“micropayments”). Now, the challenge to paper money comes from both sides – the reduction in verification costs on the one hand and the development of electronic tokens, which avoid verification altogether. The major difference between these two systems is actually just the cost of authorisation as e-cash targets micro-payments. The other is security. If the authorisation cost can be lowered to a certain level so that even micro-payments are executed by accountable systems, it may be expected that even the non-account-based systems may prefer to authorise all the transactions due to security concerns. In that case, the distinction between token-based systems and account-based systems would become rather blurred.

Regardless of the form of e-money, the main technological developments behind e-money are firstly the decreasing cost of communication, and secondly the increasing computing power in ever smaller units. The first one favours all kind of networking models including the conventional and mobile Internet and also local, national and international networks based on digital personal assistants, digital TV, ATMs and any other networking model that will be designed and developed in the future. Cheapening communication not only allows to lower the operating cost of existing networks but also provides an opportunity to create alternative or competing local, national or international networks as well.

The increasing power of computing allows the operation of networks with improved data and risk management techniques, including artificial intelligence and cryptography. It may be argued that e-money will be the most sensitive data on the networks and unless managed perfectly with almost risk-free technology (or at least less risky than currency), the e-money will never succeed. This development is thus very critical. Increasing computing power will also reduce the

cost of secure hardware including smart cards, as more advanced processors are being developed.

The formal definition of e-money offered by the European Central Bank is as follows: “an electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument.” (ECB 1998, p.7.) This definition highlights some important aspects of e-money:

- The fact that it stores monetary value on a technical device with a capacity to be used widely for making payments.
- Its role as a prepaid bearer instrument, excluding account-based electronic payment instruments such as credit and debit cards and EFT payments.
- Its use to cover payments to undertakings other than the issuer, essential to differentiating e-money products from single purpose prepaid cards like telephone cards.
- Its ability to by-pass bank accounts or any other financial service providers' authorisation.

Because it does not specify the type of technical device used, such a definition serves as a useful starting point and is well suited to a development that is in an emerging state, the full technical potential of which remains unclear. In particular, the above definition includes card-based schemes, which can be used in conventional retail commerce, as well as various types of “cyber money” which are designed to circulate in the Internet. The definition is unsatisfactory, however, in two respects: Firstly, it may overemphasise the technical distinction between account-based and token-based systems, which have ultimately similar effects. Secondly, it does not distinguish clearly enough two quite distinct kinds of e-money issuance strategies: the conventional strategy of a new electronic payments medium and the more radical one of electronic issue of alternative, competing currencies (not based on conventional, government-organised monies).

We might call the two different kinds of e-money "representative" and "independent" e-money, respectively. As long as it is representative of legal tender under a given monetary policy framework, 'e-cash' is a form and extension of cash generally, an addition to coinage, notes, cheques and debit and credit cards, etc. In this respect, e-money is clearly nominal in its effects - such as increasing velocity - and may be regarded as neutral in terms of systemic change. It has important implications for the current monetary framework, in that it makes for easier payments, revolutionises monetary base management, and enriches currency choice through making it easier to use several currencies and/or to switch between them. It would reduce the demand for conventional central bank money. But, e-money as a mere representation of a given currency may have no different effect on monetary policy frameworks than what has already been caused by advanced payment systems, which have decreased the proportion of currency in circulation to total money stock especially in the last couple of decades.

However, the impact of e-money would seem to be most significant when it comes to the electronic issue of non-bank money, that is, money issued without reference to banking reserves. If e-money is introduced as independent money, not a representation of any conventional currency, it may have the potential to revolutionise the competition among monetary policy frameworks. This impact may well be different for developed and developing countries: For developed countries, it may provoke 'currency competition' among core currencies like Dollar and Euro, or perhaps between these traditional currencies and new, privately issued monies (if the performance of the incumbent central banks is seen as unsatisfactory by money users). For developing countries, it may facilitate and speed up currency substitution to dollarisation and/or Euroisation.

4.1 Implications for Finance

E-money and related technologies would seem to have powerful consequences and serious impact on the future of finance for at least two main reasons. Firstly, with increased on-line connection between the service provider and the end user, information quality is not only increased but it individualises it as well. Mutual flow of information allows both the service provider and the customer to develop a better relationship base, which will allow lowering the potentials of panic during financial crises. This new model of relation may allow individual valuation of particular financial service providers so as to decrease systemicity (contagious) between financial institutions. Because once the end-user has all the information about the service provider including the potential risks that may arise from any change in the financial market conditions, any potential danger for a systemic run may be expected to decrease compared to conventional financial market conditions.

Secondly, all the financial assets may get digitised even further, a trend that is already clear. Recently, bonds, bills and securities are all electronically represented as electronic assets with a technology similar to EFT, allowing smaller and flexibly denominations for example. As a result, clearing, trading and custody services are getting to be cheaper, easier and more importantly, open to any customer all around the world, which eliminates local independence. E-money, in this respect, favours all these electronisation of finance by providing a medium for sustainable micro-transactions and speed up the reach of individualised services. To give an example from current financial markets, an alternative to SWIFT or credit and debit card networks may be both cheaper to design and easier to operate so as to open the market for competition, which will increase efficiency and effectiveness of the service quality

One interesting impact of e-money phenomenon is very apparent in the emergence of 'closed circuit currencies', ranging from the marginal and 'low tech' but numerous local exchange trading systems (LETS),² through corporate

² Good (1998) mentions 470 such systems in the world, mainly in the US, Canada, Australia, New Zealand and Britain, as well as around 30 low-technology local currencies. There are also many LETS schemes in France, Belgium and Italy. They typically have less than 300 members, often people from 'alternative lifestyle' movements.

barter arrangements in the conventional business world,³ to experiments in bank-created e-money such as Mondex,⁴ and Internet-based currencies such as Beenz⁵. As a consequence, payment systems become simplified and easier to handle, inviting new entrants into the industry, challenging credit and debit card infrastructures as well. We mention Mondex and Beenz in particular because, first of all, of more than fifty e-money proposals with very different approaches to micropayment solutions on the Internet, Mondex is one of the few to allow person-to-person transfers without the involvement of financial service providers. Thießen (1999) surveyed most of these proposals ranging from Digicash⁶ to Mondex. The second reason is that, although the company that operates Beenz began the scheme as a purely Internet-based approach, it recently co-operated with Mondex to benefit from smart card technology in order to issue and redeem Beenz on conventional transactions as well, so that Mondex cards will be used to earn and spend Beenz. In this connection, it is worth noting that almost all the major banks now operate Internet-based services, but there are also non-bank initiatives, such as Prudential Insurance's "Egg",⁷ which has received deposits of more than £6 billion in less than two years.

4.2 Implications for Banking

Whatever other functions banks provide, whether these be credit creation, intermediation or settlement, they all rely on the precision and objectivity of their record keeping. They also are all required to maintain a clear distinction between their own funds, which they seek to increase, and the funds they manage for others, which they, are required to match and hold at net zero. On the other hand, as the case of LETS makes very clear, the essential banking function is that of a shared or centralised accountant and has a societal nature. Insofar as this function cannot devolve to the members or clients either individually or collectively, it would always emerge as something we benefit from in common, contextual to rather than part of a smooth-running economic life. This would be the case even in private or marketised arrangements. Insofar as banks carry out other functions, however, none of them is as core as its bookkeeping service and none of them can as reliably be assumed to belong to banking on a permanent basis. Goodhart (2000) addressed this advantage of banks as well when as he mentioned the need for portfolio selections consultancy that may sustain bank's future in the financial markets. More importantly, the more money can be created outside the banking system – in the financial markets, for example, or in the folksier LETS schemes – the less does it rely on bank deposits⁸.

E-money creates an opportunity to decrease the cost of banking in one way and makes easy to handle portfolio management procedures by allowing to increase

³ The oldest established is the WIR system in Switzerland. Founded in 1934, it now has over 60,000 members and an annual turnover in excess of 2,500 million CHF.

⁴ www.mondex.com, www.mondexinternational.com, www.mondex.ca, www.mondexusa.com

⁵ www.beenz.com

⁶ Digicash has been one of the most famous proposals for e-cash, but the company went into bankruptcy at the end of 1998 and sold all intellectual property to Ecash Technologies, a company that intends to exploit the idea of e-cash.

⁷ www.egg.com.

⁸ See the discussion by Ben Friedman, *The Future of Monetary Policy*, International Finance, November 1999.

the size of the number of customer and the service regions by allowing network based solutions, with the power to ignore location dependence. This, at the end, enriches end-users' right to choose among financial service providers and increase competitive pressures on service providers though very flexible opportunities to change the service providers to which providing the best service with the most reliable data. These developments can only be reinforced by the fact that the fixed investment necessary for an Internet bank has fallen to around \$1 million (Gosling, 1999). This may suggest a 'structural change' in the establishment of banks so as to reduce the barriers to entry to banking arising from the high amount of fixed and operating cost and limiting barriers to the expertise that banks has been accumulating for many years. Competition, as well, will be powered with ease of entry so that any new establishment with expertise based solutions for banking services with increased quality will get a better chance for success.

There is also the fact that, as a seemingly inevitable process in history, the monetary base as a proportion of total money stock has been diminishing for quite a long time. Indeed, it may be that one of the important effects of e-money is its potential to change totally the traditional management of the monetary base.

CHART 1: VELOCITY AND M0 WEIGHT IN MONEY SUPPLY

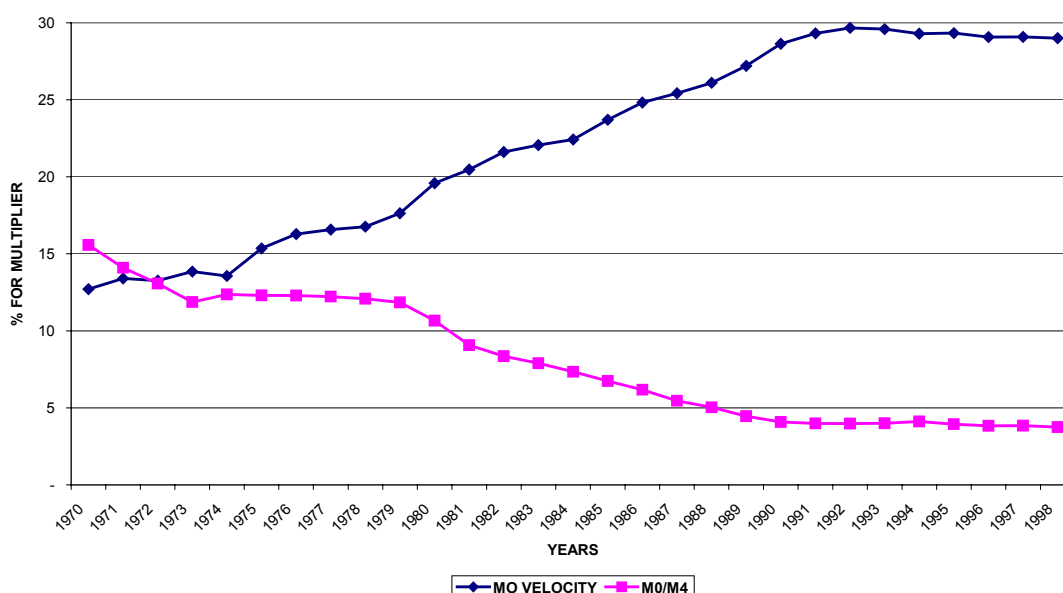


Chart 1 shows UK trends since 1970 for the velocity (defined as total GNP divided by total monetary base (GNP/M0)) and money multiplier (defined as monetary base divided by total money stock (M0/M4)). In the period prior to 1990, the proportion of monetary base in the total money stock decreased to as low as 4%, while velocity more than doubled to nearly 30.

Again, this decrease is not caused by e-money as such, but by improvements in electronic payment instruments such as debit and credit cards and the development of same-time financial applications such as direct credit and debit. Indeed, it is not difficult to imagine that, in a perfectly digitalised or electronic payment infrastructure, in which all manner of transactions including micro payments are effected through digital transfer of value from payer to payee, the record keeping nature of money will enable the identification of any potential lack of demand (within the registered economy at least) for banknotes and coin as a

medium of exchange. Combined with such developments, which serve only to further individualise our experience of the bookkeeping function of money, e-money can be expected to promote the growing trend towards what one can term ‘self-administered banking’ and ‘narrow banking’. Together with telephone banking, online banking, mobile-phone banking, computer-based accounting, and all other aspects of electronic finance, e-money enables and promotes the individual person or organisation, household or firm, as the locus of financial awareness and responsibility⁹. Banks and the banking system generally are thereby rendered more and more a resource or tool and less and less the determinant of their clients’ financial actions.

4.3 The Functions of Money

One of the implications of the improvements in the electronic communications and computing technology is that they alter the traditional complementarity between the functions of money. In monetary systems based on paper currency and slow and expensive access to information, the three functions of money (unit of account, means of payment, and store of value) were almost always connected: the same instruments – money – served as means of payment, were nominated in the unit of account (actually, defined the unit of account), and were also an important form of wealth. Exceptions to this occurred only in exceptional circumstances (under hyperinflation, rationing of goods, financial crisis and so on) when the integrity of money is no longer obvious. The reason for the almost universal connection of the three functions is in the associated savings in transaction costs under the traditional payment technology.

Electronisation of payments and transaction situations in general has the power to change this. This is the result of improved communications and information. When up-to-the minute price information (such as exchange rates and asset prices) are available in any transaction, and when wealth can instantly be transferred from one asset to another, the reasons why the functions of money should be connected become weaker and weaker. Transactions may be paid for with assets which are not denominated in the same units in which the prices are quoted; and the amount of wealth actually kept in the form of the means of payment may be minimal.

The three functions of money in a “unified” system can be thought of as exhibited in figure C:

⁹ In terms of good financial management, the same effect could be expected on the part of governments, and indeed NGOs, were these entities to be conceived and operated in the manner of commercial organisations.

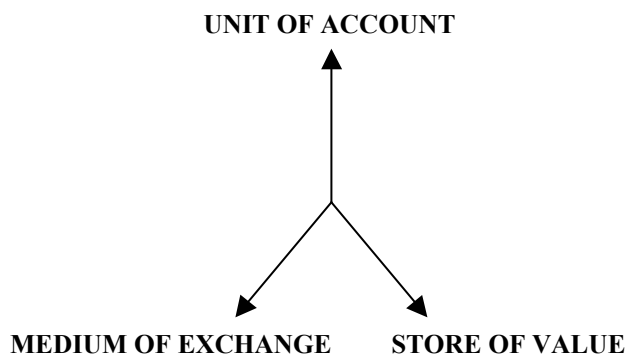


Figure C : Unified Money

If represented thus, the idea arises that the three functions of money may be the monetary version of our earlier depiction of the three main functions of a central monetary agency (see Figure A). If that were the case, it would be reasonable to expect that, just as central banking seems to be undergoing a transformation from a unitary to a devolved or articulated form, so money may also be subject to the same process. In other words, we may need to pass from the idea of money as consisting of three functions somehow linked and held together as if from a central point, to the notion of money as the combination or combined effect of three distinct processes (Figure D).

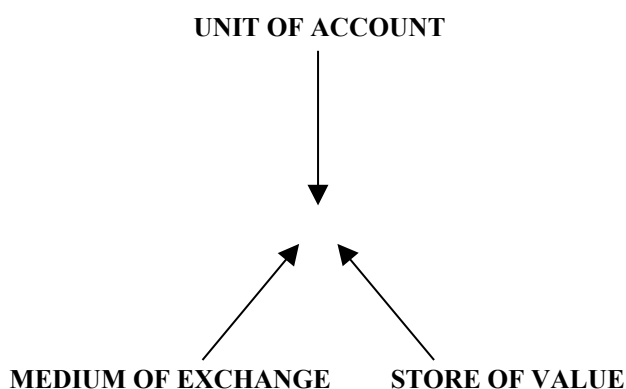


Figure D : Articulated Money

This development, if it occurs, makes it increasingly difficult for central banks to rely on their legal tender powers as suppliers of the mandatory means of payment to entail a unified unit of account in their respective economies, or a large demand for central bank money (reserves or currency). This is not necessarily a new idea. Issing (1999) mentions the prospect for separating the functions of money, as do Browne and Cronin (1995). E-money just extends this possibility and changes the dynamics of money as a result.

5 Electronic Money and Free Banking

The direct or indirect relationship between e-money and free banking has been addressed quite often recently. For example, Browne and Cronin (1996) pointed out that laissez-faire banking could emerge endogenously over time in response to

technological improvements in information and financial products. As a result, regulation of the banking industry after e-money could prove unjustified because of the system's likely inherent stability and efficiency. White (1995) argues that the technology gives an opportunity to issue private bank notes as smart card balances, which are transferable without bank involvement. He adds that digital payment technology has begun to foreshadow a world in which central bank currency is obsolete - replaced, perhaps, by privately issued currency in the form of balances written to smart cards or downloaded to personal computers and transferred by means of electronic wallets or over the internet. He also investigates the potential of e-money to make small denomination currencies interest-bearing for the first time in the history, and concludes that, when combined with anonymity e-money would facilitate the public's turning away from government-based notes and coins. Selgin (1996) questioned the general belief that financial innovation makes monetary controls more complicated. He proposed that the more financial innovation succeeded the less reliance the public would place on central banks as direct sources of exchange media. Therefore, he argued, the public could afford to deny the central bank its discretionary powers.

The effects of electronisation are not limited to the retail use of currency but extend also to the role of the central bank as the supplier of reserves to banks. According to Friedman (1999), three factors bring into question the future of the central bank's role as a monopolist over the supply of bank reserves: the erosion of the demand for bank money, the proliferation of non-bank credit, and the development of private bank clearing mechanisms. The conclusion, he warned, would be that central banks' ability to conduct monetary policy might deteriorate as they could not affect the price level of goods and services in the non-financial economy unless they had direct control on interest rate setting.

Goodhart (2000) did not agree with Friedman, arguing that only incompetence (in monetary policy) rather than the IT revolution or e-money may bring about the demise of central banks and give a comparative advantage to free banking. He did not see the possible anonymity with disposable e-purses as important. Goodhart argued that e-money cannot replace central bank base money because only the latter can, in his view, enjoy full anonymity, full security and legal tender status. However, even if currency demand decreases to zero, the central bank is expected to be able set the interest rates through direct quotation to the financial markets.

Obviously, central banks can provide full coverage for the money that they support as long as they have the power to make unlimited losses with the full support of the nation. But, the risk of currency substitution may force central banks to leave rates to be determined by market forces. As long as the support behind the central bank is both safe and sound, the market price may be affected by central bank interventions, but once the market questions the cover of money, the risk of financial crises may follow, as it happened in Turkey in 1994. In practice, it may be that central bank intervention is rendered unnecessary by the realisation of the efficiencies to be brought by IT in general and e-money in particular.

Freedman (2000) reached a similar conclusion while making a case for the continuation of central banking. He named two instruments necessary to its

survival: the potential to refuse the settlement on payment systems other than its own, and -when necessary- making or taking deposits on financial markets to force the market rates under its control. But, again, the issue was not that free banking would require such things, but that they offered a way for central banks to continue their role in monetary policy management. Woodford (2000) defended a similar line of argument. Obviously, the power to impose tax gives the power to defend the central bank as well, but our concern is whether central banking is the most efficient way to maintain the integrity of money and or whether e-money can increase alternatives to the right to choose with regards money.

All these discussions support the relevance of e-money to free banking. In free banking terms, the basic requirement for an e-money proposal would be the promise of convertibility with any other currency demanded by the holder. Provided the regulatory environment were set to allow private competing currencies, this requirement would now be met more easily than, say, 50 years ago. While it may not be appropriate to expect a revolutionary transformation of current financial systems, further deregulation of domestic and international financial institutions may lead of itself to an evolutionary transformation towards free banking.

If we now turn our attention to the relation between e-money and free banking, it seems to us that e-money has very significant, even synergetic, effects. Not only does e-money foster a clearer understanding of the nature and workings of money, and thus of its 'proper' management with its influence on banking and finance that has been analysed in the earlier section, but its electronic issue may provide a technical means to bring free banking into play. Provided the electronic issue of money does not become subject to excessive regulation or outlawing¹⁰, it may enrich currency choice through a process of substitution that has been supported by the e-money based financial service provision. Chief influences of electronisation which suggest such a scenario are the following:

1. Because bits and bytes are more easily re-defined than banknotes and coins, it may be easier to revise or change currency representation, leading, in the case of countries, to easier entry and exit to monetary unions, and facilitating inter-currency switching by end-users and, therefore, private money issue. This view may be supported by the long planned currency conversion in the Euro area with conventional banknotes and coins. In a future with e-money, any serious financial problem that threatens the Euro may allow individual members to express their reaction with the possibility of designing a new monetary framework. On the contrary, e-money also ease to join in a short time as well for those potential members who has been attracted by well-managed Euro. This mechanism, at the end, puts purely economic pressure to the ECB to respect the integrity of Euro so as to exclude any kind of political pressure. As a non-national (denationalised) currency, it allows non-Euro economies to think of leaving the defence of the integrity of money to ECB as well.

2. Thanks to the opportunities for transparency afforded by Internet applications, money can be backed as easily by commodities as by indices, or both. It does not

¹⁰ We recognise that the proviso is substantial, but we are confining our remarks to the economically feasible, rather than the politically probable.

mean to turn back to commodity backed currencies but the monetary institutions may not take the risk of inflating their currencies because of these opportunities that has been available with the advent of e-money technologies. Integrity of money may be defended with the cover of money, which is explained in the following sections but if the society prefers to see a commodity backing, e-money can only help to realise this demand.

3. The increasing use of distribution channels such as the Internet, digital TV and mobile phones, may enable ‘good money’ to reach end-users more easily. Conversely, end-users that have need of a reliable medium of exchange may find it easier to reach better alternatives. For the same reasons, mismanaged money, what Rudi Dornbusch calls ‘funny money’¹¹, may become limited. E-money in these mechanisms extends the reach of currency substitution to micro transactions other than medium or large transactions. In a sense, currency substitution includes not only store of value but medium of exchange function of money as well. This puts extra pressure to the sustainable inflationary currencies around the world.

4. Ease of access to e-money may speed up the formation of a critical mass, the moment when people generally become willing to accept the new proposed unit of account because they become convinced that it now enjoys widespread recognition and appropriate worldwide liquidity and systemic support. This potential of e-money allows institutions to challenge mismanaged currencies with stronger proposals. The face of alternative proposals may be limited only to imagination. Instead of a non-governmental institution like ECB, a gold mine company in Australia, for example, may get into the money business to offer an alternative to inflationary currencies with the help fast speed enrichment of distribution channels to ease access to the offer. This option may be open to any company who can create and sustain a customer base for their offer.

To complete the picture, these many attributes of electronic banking clearly reflect key features of Hayek’s (1990) conception of denationalised money – such as basketisation, autonomous agreement regarding the unit of account, and indexation.

The defence of central banking per se does not explain currency unions, the dollarisation trends spreading in Latin America, or the currency substitutions in developing countries unstable monies. To discuss the relation between e-money and free banking are not, therefore, to address directly the threats to central banking, but to consider the opportunities it presents to create a better monetary regime. This is a crucial point. There may well be continued use of interventionist settlement of interest rates through forced clearing procedures and depository instruments, but it is worth mentioning that foreign exchange interventions have failed many times since 1980 and in different parts of the world.

Insofar as free banking considers that sound money not only delivers price stability but also financial stability, it may now be only a matter of time before free banking *challenges* central banking in practical fact with the advent of e-

¹¹ “When funny money is no joke”, Financial Times, 3.1.2000. Monetary reformists also use this term, but they mean time dollars and the like. See, for example, D Boyle, *Funny Money, in search of alternative currencies*.

money. Such a development would be influenced by the manner in which free banking addresses three key questions which e-money serves to emphasise:

- the role of lender of last resort
- the backing of currencies
- the multiplicity of currencies

5.1 Lender of Last Resort

Under present monetary policy framework, the misbehaviour of one financial institution can have disastrous consequences for the financial system as a whole with regards the risk for a total collapse of the money stock. In order to prevent contagious risk, central banks are given the sole right to issue money without limit and for as long as it takes, provided the situation is in extremis and the danger is systemic. The lender of last resort is a costly arrangement and there is always a risk for socialisation of private losses.

On the other hand, free banking leaves it to the market to ‘discipline’ bad money and it does not entertain the need for a lender of last resort. It is believed that the system will never fall into a systemic risk because the invisible hand of market mechanism forces every individual financial institution to be ready against bank-runs. It is also believed that weakened and unfeasible institutions will be replaced by the competitors before they create any systemic risk. If the danger still persist, Dowd and others envisage ‘option clauses’, whereby in extreme circumstances banks can exercise compensatory delays to withdrawals. This is a concept of prudence – appealing to the depositor to avoid rash investment and precipitate action.

E-money serves to reinforce free banking by providing it with a powerful instrument for its realisation and it may decrease the need for a lender of last resort for at least two reasons. The first one is because option clauses becomes very easy to arrange, manage and realise, thanks not only to the electronification of money but also electronic finance, electronic distribution channels and electronic relationship management. E-money serves to decrease the costs of making and performing on option clauses and all manners of contracts between issuers and users.

Secondly, it creates new frameworks to analyse individual defenders of the integrity of money so as to take individual decisions, which in the end, eliminates systemic structuring within the financial service provision. It allows individual institutions to develop personalised relations with the end users so as to be ready to convince them on the quality of their service in case of a fall of a financial institution. Lender of last resort function is not to save individual institutions and unless one failure does not effect other members of the financial system, there will be no need for it in the first place. With increased end-user awareness supported by e-money, no economic entity will question the overall stability of the system when they can easily reach to the data that can convince them about the integrity of money that they rely on.

It may be worth to mention at this stage the possibility and consequences of a seamless emergence of free banking since even present events seem to be taking their cue from free banking precepts. In the case of Long Term Capital Management in the autumn of 1998, for example, the New York Federal Reserve Bank orchestrated, but did not participate in, a bail out by other Wall Street banks, who, presumably, mustered enough reserves to meet the situation. Losses were not socialised. Similar can be said of Barings in 1996. In the case of the Reserve Bank of New Zealand, even though it has regulatory responsibilities, its requirement on banks to account direct to the public appeals to, or at least induces, their common interest as financial service providers to co-operate against systemic risk. E-money confirms this direction and even enhances realisation of it. The pre-emptive techniques of free banking can readily be introduced as pre-stated conditions requiring e-money users to click on “acceptance” before proceeding. These developments already give signs of free banking practices even under current monetary policy framework and e-money can only extend the reach of these practices.

5.2 Currency Backing

If one is clear that a lender of last resort is not envisaged by free banking because it is not necessary, one can turn one’s attention to two related topics – the cover of money (backing of currency) and a multiplicity of currencies (currency competition). The unit of account function of money generally has two aspects. On the one hand, for money to enjoy general acceptance, the unit of account needs to be widely recognised, otherwise circulation will be impeded and people will not wish to use it. Thus, for example, the US dollar enjoys far greater global acceptance than the Russian rouble. In crisis moments, however, the unit of account in itself is not enough. Money’s ability to act as a medium of exchange becomes a matter of its backing or its cover. Until 1973, gold provided the anchor for all currencies, even though technically it was held at a remove. Since then, foreign currency reserves (that is to say, other units of account) have played an increasing role. To give an example, the backing for US dollar is the power of US economy to keep the value of dollar against other currencies strong enough to eliminate any loss of the value for end-users. Liquid money and capital markets and strong fiscal structure with budget surpluses further sustain the cover of the US dollar.

It is important to consider the question of cover in the context of our overall approach (Figure E). It may be no accident that much of 20th century monetary history centres on a debate about cover and the quest for a replacement to the gold standard of equivalent effect but without the disadvantages of gold. It was during the beginning of the 20th century that central banks (in the negative sense) came to the fore, printing bad money seemingly without constraint. The ultimate cover of such money is, of course, future tax revenue, which is an indirect reference to future profitability. Tax cover and fiat finance may disguise but cannot change the basic economic fact that the cover of money entails a spectrum between potential values and created values, future profitability and existing assets, or a mixture of the two. Where we are on the spectrum depends largely on economic conditions.

CONSUMABLES

(TAXATION)

FUTURE PROFITS

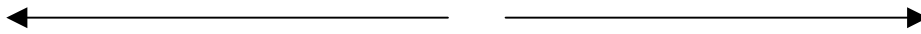


Figure E : Spectrum of Cover

This image is neither new nor radical. In terms of our analytical framework, the spectrum of cover suggests that ‘cash’, or money as a medium of exchange, is related to the finite things that one can buy. Insofar as money is not backed by consumable goods, it cannot but be a potential (and in crisis moments, actual) call on future profits. This is the true match for money as store of value.

This image is important because it is ordering, on the one hand, yet admits to a wide variety of backings, on the other. One cannot say, for example, that gold is good and assignats are bad. Indeed, free banking experience embraces both. The point is that the backing has to be appropriate and adequate.

In the world of so-called alternative currencies, often the same software package is used, but the currencies are denominated by reference to local artefacts or symbols. For example, tales in Canterbury (after the famous book by Chaucer), but yawls in nearby Whitstable (a type of fishing boat used there). Similarly, these currencies have a variety of economic underpinnings. Some are related at 1:1 or other parities to the national currency and to each other. Others define themselves in terms of a set wage. The yawl, for example, being equal to £5 per hour, regardless of what one does – jobbing gardening or legal services. Likewise, in New York State an Ithaca Hour is equivalent to one hour of work valued at \$10. The same trend holds for virtual (i.e. Internet-based) experiments as well. Digicash, for example, was intended to create a pure Internet-based representation of national currencies, whereas e-gold¹² represents a digitalised allocation of gold, enabling it to be used as a medium of exchange for virtual life with the potential to reach conventional life in the same way as achieved through the co-operation between Mondex and Beenz, namely, smart cards.

Provided e-monies remain uncontrolled and unregulated other than the free workings of markets, therefore, their emergence implies a furtherance of free banking precepts. This possibility is especially real because e-monies support independent clearing systems with decreased demand for central bank money and allow non-bank credit expansion through an easing of distribution channels. A further feature - anonymity – reinforces this trend and may prove possible with the development of ‘blind signature’ technology or, more simply, by the use of disposable tokens issued on the networks of PCs, digital TVs, personal digital assistants like palms and mobile telephony. E-money, as a result, puts extra pressure to keep the cover of money strong enough to keep the integrity of money to sustain the trust. As a result independent issuers of e-money may decide to back (or cover) the issued amount with alternative choices. For example, the issued amount of money may be fully backed with money market funds. Another backing may be stock exchange indexes or any kind of real estate funds. Actually there is no limit on the alternatives for backing because anything that can sustain end-user’s trust on the integrity of money may be used as backing. There seems nothing wrong with the current backings of major world currencies as well. As

¹² www.e-gold.com

long as US dollar and Euro are competitive and end-users in the US and Europe are allowed to choose between these two currencies, they may compete with their backings as well. In this case, the backing of the currencies is just the future potentials on either side of the Atlantic to sustain the strengths of these economies. As far as financial stability is sustained on both areas with competent central banks, the end-users will have no reason to ask for an alternative backing but once there is a demand for another backing, then e-money can only help to design a new arrangement and help to sustain the compatibility against weakened currencies.

5.3 Multiplicity of Currencies

The prospect of unregulated currencies implies multiple currencies or currency competition, giving rise to the question of how these would work. The case of LTCM, for example, illustrates the ability of financial institutions to create credit “outside the box”¹³, a characteristic made more problematical where the money involved is e-money and one that may warrant a review of the relation between the monetary base and credit creation. It follows that the nature of the respective covers may be defined differently, and yet 100% cover is maintained in both cases (Figure E.).

The fungibility of cover is supported by the clearinghouse system, which does not arbitrate over what the ‘right’ cover should be, but leaves this to the market. After free banking theory, multiple currencies do not proliferate, but are subject to rationalisation. In their ultimate expression of self-administered banking (home banking, etc.), one can envisage one currency per person¹⁴. This is wholly impracticable, however, since trade and division of labour even between two people requires a common element, a universal language enabling communication. It is said that multiple currencies imply a worldwide bank, but surely this, too, requires a common language. However many names we give to our separate currencies, they need to be linked. To be sure, these linkages do not need to be determined, as under the gold standard, from gold (or some other backing) via a primary currency or numeraire, thence to all others. Rather, the independently determined currencies will coalesce in an implied reciprocator (‘best basket’), a shared unit of account one level up, so to speak. Parities may not all be 1:1, but parities will be needed and they will need to be based on floating, so that market forces can be allowed to work to discover the best denominator. Put another way, the actual parties to any transaction are free to determine the parity that suits them.

Insofar as this scenario takes us beyond national economic considerations and the world economy at large becomes our primary frame of reference, here we touch again upon free banking’s recognition of the need, at least as advocated by Hayek, to denationalise money. This, as is readily conceded, leads to a shrinking number of currencies – the logic of which may be the universalisation of finance. Global

¹³ Quoting from an unpublished interview with Frederik Musch, a long-standing member of the Basle Committee and Associate Director of the Financial Stability Institute in Basle.

¹⁴ This idea was recently described by Mark Salmon as one of two theoretical but impractical extremes on a spectrum, the other being a single world economy. (See “How Many Currencies does the World need?”, *City Business*, Spring 1999, a publication of City University Business School, London.)

financial markets and electronic finance in particular do not respect national monetary jurisdictions, so that their impact must be to promote homogeneity in the fields of monetary policy and supervision, and the denationalisation of money. Indeed, for this purpose, there could hardly be a more effective means than e-money.

The denationalisation of currencies gives rise to a further consideration, however. To denominate money in a national motif is to mask the fact that what really matters is (a) its interchangeability with other currencies and (b) their mutual convertibility into real rather than fiat or, perhaps better put, sound rather than unsound, cover. In this respect, e-money easily extends the reach of good money with the best cover to the end holder, functioning successfully both as a medium of exchange and as a store of value. Every holder of money also gets to choose from among currencies that are independent of local availability constraints. The multiplicity of currencies in this regard makes more than one unit of account available as the common denominator in trade at both local and international levels with the right to choose the currency that is most preferred. This practice is limited at the moment on the level of currency substitution but e-money extends the reach of good money and increases the level of competition among national and international, which helps to save individually strong money with sustainable integrity.

As a result, privately issued independent e-money may not find a place to challenge the influence of the US dollar and Eurozone but this may not lower the impact of e-money to ease free banking practices. A competition between Euro and the US dollar itself may extend the reach of free banking to possibly a better financial order and legally supporting this potential by allowing legal tender status on both sides for both currencies may further enrich free banking practices.

6 Contestable Central Banking

As we have said at various times in this paper, the fact, as it seems to us, that e-money not only supports free banking, but provides a medium for its implementation, gives rise to a question concerning the interface of this development with modern central banking. It seems to us that there is a need to envisage a transitional arrangement that enables central banking to move towards free banking. This is what we have in mind with our concept of contestable central banking

6.1 Definition

Because of the controversies associated with central banking, this term requires some introduction. It does not refer to the central bank as the agent to or banker of government in the traditional sense. Even though central banks have acquired many functions that they fulfil on behalf of governments, our focus is on their role in what one might call systemic management of the economy. While for many people this may be a proper and appropriate role for government, we do not regard monetary matters as needing to be carried out by governments. Indeed, history shows that when governments control central banks they often cause

considerable financial and monetary mischief. Contestable central banking looks beyond central banks as instruments of short-termist and/or inflationary policies, let alone as a means whereby governments can give effect to profligacy, to envisage their emancipation from governmental control. The concept thus takes account of such actual developments as the transfer of debt management out of central banks and the private delivery of public account operations. It also envisages a change of emphasis in the role of central banks towards financial data collection, as in the example of the recent Bank of England Act, which gave the Bank the right to collect from any source all kinds of data pertaining to a full analysis of the functioning of the economy. Finally, contestable central banking entails taking the international or global context as a primary frame of reference, and is thus compatible with free banking concepts of denationalised money.

We do not claim that contestable central banking equates with free banking, but that it may describe a transition route towards it – a natural evolution away from interventionism to contextual influence. This approach is also shared by White (1995), who argued that “the rationale of free banking is simply that of a spontaneously evolved or ‘natural’ monetary order.” As we have seen, under free banking, at the centre of the economy is a clearinghouse for financial institutions based both on competitive issue and competitive backing. In this system, financial data are generally available and the onus is on the user to assure himself that he is not accepting ‘bad’ money. E-money can only enhance the transparency and general availability of data that free banking contemplates. Similarly, as its name implies, contestable central banking distinguishes between central banking and central auditing, referring to arrangements in which central bank functions have been reduced and focussed on to the collection and analysis of financial data, rather than direct management of money flows. Money-become-information becomes the medium for making sound judgements for otherwise market-based activities, enabling the markets to do the work of the central bank, especially in regards to monetary policy and financial supervision. In this sense, a contestable central bank acts as a societal agent in its own right, focusing on contextual decisions, but otherwise leaving the direct provision and management of both ‘cash’ and ‘credit’ to the markets, a concept that very much reflects free banking’s clearinghouse.

To give a concrete indication of what we have in mind, consider the latest developments in the case of the Bank of England. As well as having made price stability the focus of its monetary policy, pursued in the framework of central bank independence, the Bank has devolved supervision. It has also set up a Monetary Policy Committee as a body of financial and economic experts with a clearly economic remit – to deliver price stability. Whether or not the Bank can be seen as a model, the fact seems certain that it illustrates a clear trend in central banking to allow central bankers to take decisions in accordance with market initiatives, rather than government interests. As a result, central banks have started to publish informative reports explaining current and expected monetary conditions. This trend towards market orientation may be a step towards full dependence on the ‘invisible hand’ working of market forces. From the denationalisation of money point of view, ECB may provide a similar example in this argument as Euro is an international currency in character. More than that, actual dollarisation is already effective in some Latin American countries. These

examples may show that traditional monetary framework is already under a transitory process.

It is in this sense that contestable central banking can be seen to mark a possible transition from a central banking based monetary policy framework towards free banking. One could characterise contestable central banking in the following way, therefore:

- Societal but market-oriented institutions
- Expertise based, rather than government appointed monetary policy committees focussed on market solutions instead of interventionist policy instruments.
- Exclusion of debt management.
- Exclusion of liquidity management relating to public accounts.
- Exclusion of financial supervision.
- Exclusion of Issue Department through privatisation of bank note issuance and the Mint.
- Maximum transparency on decision making process.
- Maximum efficiency in data analysis and risk management.

This operational definition of contestable central banking presupposes the image of the bank as a societal agent in its own right, mandated by and reporting directly to parliament (or its equivalent). The main purpose of the mandate is to spell out in constitutional and legislative terms what the central bank is responsible for and to ensure its autonomy both from the government of the day and financial interests. The legislative context also sets out how the bank's mandate is to be reviewed and revised and how conflicts are to be resolved. The bank operates in a context of democratic accountability. Not, however, by way of electoral procedures, but by acting in a clear and transparent manner, and by reporting in a clear, regular, and meaningful way to parliament or its equivalent, not necessarily to a national but possibly international as well. It operates in a contestable capacity as regards the workings of economic life generally with the same data being thereby also available internationally. Its ability to work in this way is strengthened by complete freedom in terms of when, how, and what it communicates, provided its transparency and reporting requirements are enhanced thereby. With its democraticness thus safeguarded, and in keeping with a clear demarcation between political and economic considerations, the central bank is essentially charged with supporting the well being and even operation of the economy as a whole, for which we use the term 'systemicity'. The essential concept here is the promotion of a stable level of economic activity through the maintenance of price stability. Enhanced consumer awareness for financial services by e-money can only help such a framework to be efficient and effective.

Described thus, contestable central banking is clearly not synonymous with free banking, but it may be setting the stage for a more fundamental change of regime. It could, for example, result in central banks behaving as central agencies to help financial institutions find opportunities to reduce operating costs (e.g. payment system standardisation). They could distribute financial data for all economic entities, thus facilitating its analysis by anyone, while also publishing its own financial reports parallel to independent sources. This would serve to inhibit the

over-issue of any type of e-money (whether backed, indexed, or simple fiat), thus helping guarantee monetary and financial stability by preventing the systemic risk caused by regulatory illusion. With all the above in place, it would then be a relatively simple step for central banks to allow private money issue, eliminating legal tender in favour of competitive issue – not perhaps within single economic areas like the Eurozone, but between the Euro and the US dollar, for example.

Thus contestable central banking can be seen as a means for promoting the integrity of money under free markets as far as possible and of limiting interventionism in regard to interest rates, foreign exchange rates and similar financial indicators. It is directly accountable to society in the first place but has well defined responsibilities to report to and be audited by parliament. It reports to the public through periodical reports, even daily when this is needed to maintain confidence in the integrity of money and stability of financial markets. Contestable central banking rejects any kind of political interference in policy instruments and disdains the creation of moral hazard. Market settlement and market transmission mechanisms are given top priority and stability is defended through expertise with increased risk management and data analysis techniques. The main function of contestable central banking is to fulfil the ‘centralised’ characteristics of the financial system, which is a common feature of both central and free banking, with centralised here meant in an operational, rather than power sense. It also offers a transition path out of ‘incompetent’ central banking. Central banks competes with each other to sustain the integrity of their monies within free market rules and they do not prefer to create barriers to entry to their currency zones with any means including legal tender arrangements. End users are allowed to have the right to choose the money that they want to have and they have the right to contract on the money they prefer. Whether this leads to ‘competent’ central banking or free banking will remain to be seen. In either scenario, e-money is a parallel phenomenon that enriches the solutions to the problems of current monetary policy regimes.

6.2 Transforming Seigniorage

Enough has been said to show that free banking may yet be seen to have a different significance than either its opponents or protagonists have in mind, and that the principles that it advocates may well be at work in a de facto, unintended way. To bring this paper to a close, however, we would like to make one final comment concerning contestable central banking and seigniorage.

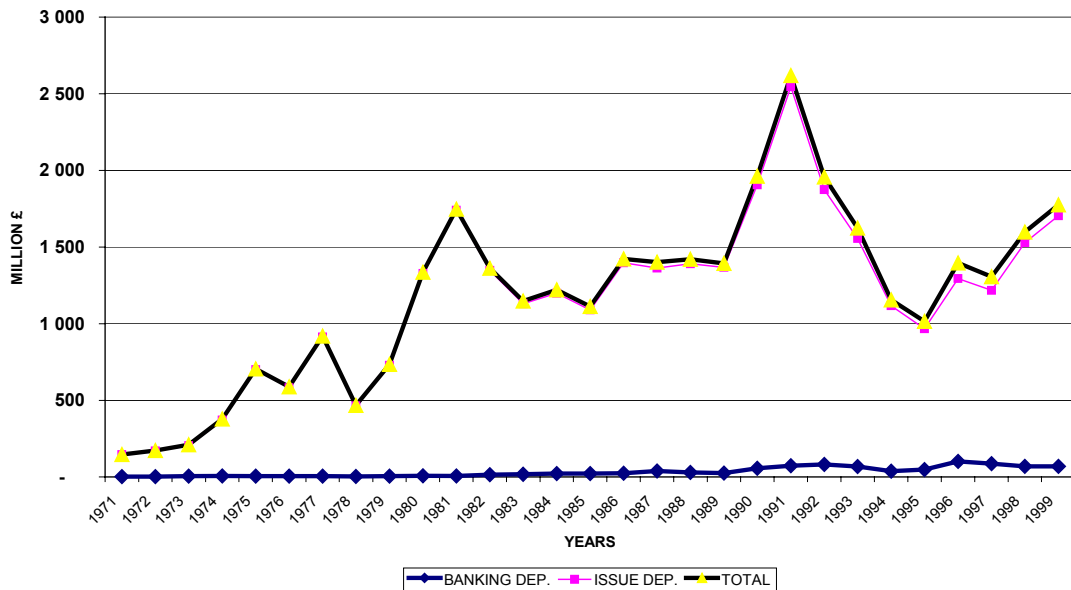
As rehearsed already, the concept of contestable central banking distinguishes between three main aspects or tasks - the conduct of monetary policy, supervision of the financial markets, and maintaining the integrity of the unit of account – and then envisages their articulation or devolution. Such an image of the development of central banking has a profound implication in that the seigniorage relation disappears and, with it, the possibility that seigniorage can be abused or high-jacked by the government of the day for non-economic purposes. We do not mention this for political reasons, but because it seems to be implied by the historical developments we are seeking to illustrate. Indeed, we considered making no mention of seigniorage at all, but it seems that some transformation of seigniorage is built into the logic of things. Omitting any mention of it might have

suggested that this aspect of the financial system would be unaffected, an unlikely event that it would have been disingenuous to ignore.

Current developments may result in a redefinition of seigniorage, away from the “irrational” and inflationary habit of “printing money” to pay debt, a concept of seigniorage that should be confined to immature approaches to central banking. We would like to think that money is sufficiently understood nowadays, at least in the developed economies, so as to be beyond the mis-management entailed by such practices. The recent financial turmoil in Russia, for example, had much to do with their not having appreciated that the inflationary effects of manipulating the domestic monetary base would invite currency substitution and thus undermine the financial system. In the Russian case, it is likely that any seigniorage gains expected were more than cancelled out by the punishing short-run interest rates that the mis-management incurred, as has been the case in other such situations . This hardly makes a case for seigniorage. On the contrary, seeking income from the printing of money is likely only to cause distortions in the money stock, leading to monetary and financial crises. Consequently, it may be better to limit the definition of seigniorage to the amount of profit from money business made by public authorities through their production, distribution and management of money.

In recent years, for example, especially in developed economies, a significant portion of profit has come from the interest earnings from the bond and bill holdings of monetary authorities used to back the amount of currency in circulation. For example, the US Treasury earns around 5% seigniorage on the issuance of dollars. The Bank of England also profits from bank note issue through its Issuing Department (see Chart 2), so that even in current circumstances central banks can make a profit without dealing with banknotes and coins, since the Issue Department of the Bank of England is accounted separately.

CHART 2: THE BOE PROFIT TRANSFERS TO HM TREASURY



As the chart shows, the Banking Department is independently profitable, with some of its profit even being transferred to HM Treasury. At the same time, the cost of central banking has been diminishing along with that of conventional banking, thanks in part to the effects of cheaper computing and communicating costs.

7 Conclusions

To sum up, the impacts and effects of e-money are broad-ranging and far-reaching. We focus on three areas in particular:

1. For two main reasons, e-money may lead to a new era for free banking type practices. Firstly, innovation in payment technology is reducing the fixed costs of banking business. Being cheaper than printing, distributing and retrieving banknotes through banking systems, the creation of digital strings of money is likely to reduce the cost of maintaining a payment system infrastructure for the economy as a whole. This may attract more economic entities to provide financial services as the natural barriers to entry to the banking sector become less effective. Secondly, as the computing power of new generations of computers increases, risk management and data processing with huge amounts of entries might become risk-free and less costly to process. It may then be possible that the information monopoly of banks relating to financial services may deteriorate, giving further opportunities for non-banks to supply financial services to customers. Such a development may decrease the special treatment of banks over against other firms, so that the argument about the private positions of banks in an economy may become even harder to defend.

2. The development of e-money further implies radical changes in regard to money, banking, and finance due to the manner in which it ‘befriends’ markets solutions to monetary problems. Its impact in terms of the lender of last resort

function, currency backing, and multiple currencies is likely to be especially powerful.

3. Technically, e-money may have different impacts for different functions of money. With regard to the unit of account function, it may be expected that e-money would decrease network externalities by both decreasing the fixed cost of networking (for example private clearing systems are already available) and by lowering the cost of switching from one local network to the other (choosing alternative units of account without difficulty provided legal tender laws are adjusted to allow freedom to contract in preferred currencies).

With regard to the medium of exchange function, e-money would facilitate currency competition by allowing economic entities to provide technically efficient and effective alternative monies to reach end-users. Competitive issue is not necessarily national in character; it may be international as well, witness the competition between the euro and the US Dollar. Even at its current stage of development, e-money in banking the provision of 'multiple currency based individual accounts' that are transferable to any currency at any moment of time, while one bankcard may allow one to spend in different denominations anywhere in the world. E-money thus offers local and international solutions to settlement problems, thereby enriching the cover of money. Through local exchange trading systems, anything from bread to time may be defined as money as long as there is a community willing to accept it and such 'local' solutions may be extended to wider regions provided the supply of the instrument manages to create enough demand. E-money enables anything - from gold to seashells - to be distributed electronically within local or international networks. Such a development increases people's understanding of money and financial markets and puts pressure on financial institutions to be more transparent to the society they serve. It brings good money in reach of anybody on earth as far as they have a network connection, and increases the awareness of the growing importance of stable currencies at the international as well as the national level.

With regard to the store of value function, e-money would increase the quality and quantity of information available. This would greatly help to reduce imperfect information possibilities, to increase data processing and risk management techniques, and to make easier portfolio selection procedures. Secondly, it would decrease barriers to entry to financial service provision, a fact already observable in the financial industry. With regard to systemic problems for the financial industry, it is likely that e-money will support individual assessment of the safety and soundness of particular financial institutions. This would allow individual treatment of troubled financial institutions, decreasing contagious trends. By reducing the interdependence of financial service providers in this way, the risk of systemic problems may also be reduced as a consequence of e-money. Lastly, in the sense that e-money also implies or refers to the wider phenomenon of electronic finance generally, it is having a profound impact in the banking system. Taken as a whole, online banking, tele-banking, mobile-phone banking, computer-based accounting systems, and so on, are making entry into banking ever easier by making explicit and replicable processes that previously were not generally understood and were the province of experts.

Although explanations of them may not say so in so many words, current developments in the financial world seem to be unfolding along the lines indicated in this paper. They approximate certain features of free banking, although not as a result of free banking advocacy, and they are reinforced, even accelerated by the emergence of electronic finance and e-money. Their appearance suggests that, unless 'repackaged' in a contestable way, the future of central banking may become uncertain. Central banks may yet, therefore, become transformed in conformity with free banking philosophy and principles.

From this point of view, the advent of so-called e-money is both a technological and monetary phenomenon, and care should be taken not to underestimate its significance. If the 'incompetence' argument is accepted, as would seem reasonable, the fact that e-money is of relevance in both central banking and free banking contexts indicates that it will increase the efficiency and productivity of the future of current monetary and financial systems, whether conducted within existing or revised arrangements.

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