Innovation and Regulation
- The Case of E-Money Regulation in the EU -

Background Paper No. 5
Electronic Payment Systems Observatory (ePSO)

12 January 2002
Malte Krueger

EUR 20153 EN

IPTS, World Trade Center, Isla de la Cartuja, s/n, E-41092, Seville, Spain
Tel: +34 954488393, Fax: +34 954488208
URL : http://epso.jrc.es/
Abstract
In September 2000 the EMI Directive was accepted and member states now have to implement it within national legislation by April 2002. One of the European Commission’s main goals was to encourage competition and innovation in the field of electronic payments while maintaining prudent supervision requirements. The Directive sets out to achieve this in two ways: first, it introduces the concept of an ‘Electronic Money Institute’ (EMI), and, second, it provides a European passport for EMIs. Since it is easier to become an EMI than a fully-fledged credit institution, it is hoped that the entry barriers for non-banks will be lowered by the Directive. Similarly, it is expected that the passport will make it easier to offer pan-European solutions.

At the moment it is still questionable, however, whether the Directive will have a strong impact on innovation and competition. First, the Directive still has to be implemented in member states. Available information suggests that national legislators are implementing the Directive in a rather restrictive fashion. Second, e-money issuing seems to be interpreted very much as a stand-alone business. This Background Paper will show, however, that there are strong complementarities between payment services and other financial and non-financial services, which may make it unattractive for would-be issuers to enter this market if they cannot exploit such complementarities. Third, it is not always clear which activities are covered by the Directive and which are not. For instance, the status of bonus-points is still unclear. Are bonus-points covered? Should they be covered? If bonus-point or barter schemes are covered by the Directive, they would have to adhere to the redeemability requirement. Up until now, many of these schemes have issued non-redeemable value points. Thus, if bonus points are covered by the Directive, the question arises whether it is really necessary to force redeemability on such schemes.

This paper is organised as follows:
- First it looks at innovation in general, outlining the most important factors that have an impact on the spread of innovative new solutions.
- Second, it analyses the special features of payments, pointing out that payments are often bundled together with other financial, and increasingly non-financial, services to reduce costs and that non-bank players are becoming more important.
- Third, it raises the question “What is really new about e-money?” The main conclusion is that existing e-money schemes are not an electronic analogue to cash. Rather they are a means of shifting and reducing credit risk in offline transactions.
- Fourth, the paper looks at current e-money regulation. After summarising the final version of the EMI-Directive, the state of implementation in the member states is outlined. The evidence collected shows that many member states interpret the Directive in a rather restrictive fashion.

- Finally, the consequences for competition and innovation and possible modifications of the Directive are discussed.
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1 INTRODUCTION

1.1 THE ROLE OF THE PAPER
This paper attempts to analyse the possible effects of e-money regulation on innovations in electronic payments. Special attention is given to e-money regulation in the EU. An earlier draft was presented at the ePSO Steering Group Meeting in Brussels on 10 October 2001 and the Steering Group members’ suggestions were incorporated into this final version.

The analysis highlights the special features of payments, stressing network effects and complementarities with other services. The question of what makes e-money different from other payment services is raised. The answer given is that though there could be large differences in theory, in practice actual e-money schemes reveal little that strikes the observer as revolutionary.

Based on these investigations the paper moves on to consider the effects of regulation. Repeatedly, ePSO has looked at the regulation of e-money in the EU (see, for instance, ePSO Newsletter No. 7 or Background Paper No. 4). The main pillar of this regulation is the EMI Directive. At the moment, it is still questionable whether the Directive will have a strong impact on innovation and competition. First, the Directive still has to be implemented in member states. Available information suggests that many national legislators are implementing the Directive in a rather restrictive fashion. Second, e-money issuing seems to be interpreted very much as a stand-alone business. This Background Paper will show, however, that there are strong complementarities between payment services and other financial and non-financial services. Entry into this market may be unattractive to would-be issuers if they cannot exploit such complementarities. Third, it is not always clear which activities are covered by the Directive and which are not. For instance, the status of bonus-points is still unclear. Are bonus-points covered? Should they be covered? If bonus-point or barter schemes are covered by the Directive, they would have to adhere to the redeemability requirement. Up until now, many of these schemes have issued non-redeemable value points. Thus, if bonus points are covered by the Directive, the question arises whether it is really necessary to force redeemability on such schemes.

A number of measures could be contemplated as ways of fostering innovation and making the EMI-concept attractive for non-banks:

- Liberal exemption of pilots from licensing requirements.
- Inclusion of limited-purpose schemes under the waiver.
- Clarification of the definition of e-money.
- No redeemability requirements.

1.2 E-MONEY, INNOVATION AND REGULATION

Increasingly, value is stored and transmitted electronically. Banks have reduced the role of paper in bank-based payment systems. Electronic access to bank services has been introduced. At the real POS, customers can now choose between a wide variety of electronic payment systems: e.g. electronic debits, credit card or e-purses. On the Internet, prepaid accounts, virtual wallets and billing solutions have been introduced. The type of electronic payments that has received most attention is e-money. E-money makes it possible to transfer value from card to terminal or card to wallet, both in the real world or via the Internet, and this has been seen as a fundamental achievement. It was hoped - or feared - that e-money would make monetary policy ineffective, significantly reduce central banks’ seigniorage income, make money laundering and tax evasion simpler and provide cheap, secure and convenient means of payment in the real and virtual world. In addition, e-money promised to be an interesting product that might bring large rewards for the leading suppliers in the field.

The reality looks different. So far, e-money has not been a great success. Many schemes have been piloted or rolled out but the use of e-money is still tiny. This raises the question why e-money has not been more successful. One explanation may be that there is not sufficient demand. Another explanation is that we are merely observing the slow start that is typical for many inventions. Once critical mass has been reached, e-money will take off. Finally, the problems of e-money may stem from regulation. European central bankers (EMI 1994) were concerned about e-money from a very early stage. They were worried about the potential consequences of e-money issuance and advocated that only credit institutions should be allowed to issue e-money.

The European Commission took a different view. It wanted regulation to support competition and innovation. In particular, it wanted (and wants) a pan-European solution, which led to the idea of a European passport for e-money issuers. The birth of the EMI Directive has been a long process, accompanied by controversial discussion. Finally, in September 2000 the Directive was passed. Now, it still needs to be implemented within national legislation.
Contrary to expectations, rather than evolving into a general purpose payment instrument comparable to cash and deposits, e-money has evolved into a limited purpose payment instrument that is often bundled together with other services, such as loyalty schemes. Though it is true that non-bank suppliers have the option to apply for an EMI licence, a banking licence or to team up with a bank, small innovative companies may find that these solutions have relatively high costs. Therefore, it seems questionable that the EMI Directive will have a strong positive effect on competition and innovation in the payment system. Consequently, lighter regulation for limited purpose e-money schemes should be considered.

2 UNDERSTANDING INNOVATION

2.1 FACTORS INFLUENCING INNOVATION

When discussing the effect of regulation on innovation, it must be remembered that innovation is influenced by a large number of factors. These drivers can be divided into four different categories:

- technology (affecting transactions costs),
- the market (demand, competition, prices, cost curves),
- the institutional framework (regulations) and,
- entrepreneurial activity (search for new factor combinations).

These categories are not mutually independent and may overlap. For instance, entrepreneurial activities may drive technology and/or they may change important market parameters. Changes in the institutional framework may influence market structure and simultaneously trigger or stifle entrepreneurial activity.

The role of technology as a more or less exogenous force is stressed by many authors (for instance, Niehans 1983 and von Weizsäcker 1986). The focus is usually on information technology which reduces the costs of ‘storage, retrieval, and transmission of information’ (Niehans 1983, 540). These cost reductions affect the cost of interpersonal cash payments and transfers of interest-bearing assets. In particular, the price of communication is often quoted as a factor that may influence the direction of innovation (i.e. towards online or offline payment systems).

Market structure, market size, the dynamics of competition and demand growth may strongly affect innovative activities of market participants. Financial innovations may entail high investments - especially innovations in the payments system - that can only be
profitable in a large market.\(^1\) Thus the size of demand (or expected demand) can be crucial.

The effect of competition is ambiguous. Schumpeter (1942, 106), for instance, has argued that a monopolist is in a better position to finance expensive innovations and to shoulder the risks which are connected with innovation. However, for a monopolist there are no market pressures urging him to innovate. Therefore, Scherer and Ross (1990, 630-60) argue that a trade-off exists. On the one hand, there must be quasi rents which potential innovators can hope to appropriate. Under perfect competition such quasi rents would not exist. On the other hand, there must be enough competition to force firms to engage in innovative activity. Otherwise, without competition, a monopolist may find that the most convenient monopoly rent is a ‘quiet life’ (Hicks 1983, 139). This debate is also relevant for the payment field because there are many complaints that banks are slow to innovate.

The institutional framework can influence innovative activity in various ways. Regulations can significantly influence market structure, often with ambiguous effects (see below). Payment service providers have traditionally been heavily regulated. Examples are: regulatory barriers to entry like the geographical and functional separation of banking in the US (now abolished), legislation on interchange fees and surcharging, licensing requirements, restriction of certain types of business to banks, capital requirements, consumer protection laws, anti-money laundering laws, etc. Regulations are not always effective and may have unintended consequences. For instance, there seems to be common agreement that the combination of interest ceilings and high interest rates triggered many financial innovations in the US that created new ways of avoiding regulation (“circumventive innovation”, see Hester 1981 and Kane 1981).

In Schumpeter’s (1942) theory of economic development entrepreneurs actively search for new and better factor combinations and products. They are not trying to restore an equilibrium that has been disturbed by outside forces, they are trying to move the economy out of equilibrium. This process of ‘creative destruction’ gives a certain element of unpredictability to the whole theory.

Two of these aspects, market structure and regulation, are particularly important in industries with network effects. The payment sector clearly is such an industry. The usefulness of payment networks increases with the number of users. Thus, large networks have an advantage over small networks and there is a natural tendency towards either a

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\(^1\) Dluhosch (1998) shows how the increase in market size can shift production towards more fixed cost intensive technologies.
monopoly network or a unified network consisting of interconnected sub-networks (Van Hove 1999, ITRE Study). In both cases, competition is far from perfect. Thus competition policy may be called upon. Furthermore, if there are different suppliers in the market, standardization is an important issue. The full benefits of a unified network can usually only be achieved if some common standards exist. Therefore, the question arises to what extent policy should encourage or even mandate standards. Consequently, both, competition policy and standardization policy may have profound effects on the pace of innovation.

2.2 THE SPREAD OF INNOVATION

In this paper, the discussion will mainly focus on regulation. However, it has to be taken into account that regulation has not always been the main driver and that different factors may interact. A further difficulty when analysing innovation is the non-linear spread of innovation. New products/processes often have a slow start. Once they reach critical mass, however, they may spread rapidly. Therefore, the spread of innovations is often described by an S-shaped curve (Freeman 1988, 43; Wehinger 1997). The spread of innovation along these lines implies that the observation of slow growth of a new product/process alone cannot be taken as an indicator of failure. It may indicate instead that the product is still in the early phase – trying to reach critical mass. This makes it more difficult to interpret current developments and the possible effects of regulation.

Graph 1: The Spread of Innovation

The basic explanation of such an S-shaped spread of innovation lies in information. At first the innovation and its usefulness are little known. As the number of users of a new product increases, information about this product is disseminated faster and so market share rises fast. Thus growth is a positive function of the number of users. As the number of users increases, however, the reservoir of non-users becomes smaller and smaller, reducing the growth rate. If the new product is a network good, the existence of network
effects will also produce a similar pattern. In this case, growth only takes off after a certain critical mass has been reached.

A nice example of the S-shaped spread of payment innovations is the spread of ATMs in Germany. Throughout the 1980s numbers increased only slowly. During most of the 1990s there was a real spurt, but then towards the end of the 1990s growth slowly levelled off.

**Graph 2: The Spread of ATMs in Germany**

While it may at times be useful to use such an S-shaped function, it does not provide any explanation for financial innovation, nor does it tell you whether a certain innovation will ‘take off’ at all or what the ultimate market share will be. Thus, market penetration may converge towards 60 or 20 per cent. A good example is the spread of cashless payments that, so far, have reached only a share of about 20% in most European countries.

### 3 INNOVATION AND PAYMENTS

#### 3.1 MONEY AND CREDIT

When analysing the role of regulation for payment innovation it is important to understand that payment services are not usually a stand-alone product. In most cases they are bundled together with other services. Such bundling is often seen as inefficient though in many cases there are good reasons for it. In particular, the cost structure of payment services can make it efficient to offer payments jointly with other services such as credit.
First of all, all money in modern economies is already credit money. Thus, bank notes and central bank reserves can be interpreted as credit to the central bank. Similarly, deposits are credit to banks. Thus, a payment system that is completely credit-less would be either a system with commodity money or a barter system.

However, even if we ignore the fact that bank notes or reserves are credit, we would still find credit elements in the payment process. Consider a payment service provider that does not rely on granting credit to the customer or receiving credit from the customer. For example, we could look at an investment fund that buys and sells assets on behalf of its clients. Such a fund could offer payment services to customers. If a customer wanted to make a payment of 100 EUR, the fund could sell 100 EUR worth of assets and transfer the 100 EUR to the receiver. If the payee also holds his/her assets with a fund, the 100 EUR will be immediately used to purchase assets for the payee. Thus, the two funds are providing payment services without using credit.²

However, making payments in this way is very expensive. It is necessary to sell assets, buy assets and transfer money between the two funds with each payment. For the payee, this implies costs in terms of time, effort and fees. Since most of these costs are independent of the amount, they become particularly important for small value payments. A cost of 2 EUR per payment may be acceptable for a payment of 2 million EUR but it is prohibitively high for a payment of 0.50 EUR. Where there is a cost structure with high fixed costs per transaction, it is more efficient to aggregate payments. Thus, a customer can sell 500 EUR worth of assets and keep the 500 EUR in an account with an investment fund. Whenever he needs to make a payment, he will use money from this investment account. Only when the 500 EUR have all been spent will he sell another asset. Similarly, the payee will not immediately buy another asset but wait until the money in his account reaches a certain level before he does so. Even if payments are aggregated in this way, there still is a movement of money between the funds for each payment. However, there is no longer a corresponding purchase and sale of assets. In this way, transaction costs (including time and effort) can be brought down. The same could be achieved, if the fund of the payer granted a line of credit. In this case, the payer could make payments borrowing more and more from the fund. When a certain limit is reached or after a certain period has passed, he sells some assets and repays the debt. Again, the number of transactions is reduced and transaction costs decline.

² Strictly speaking, even in this example the funds are using money of the customer to make the transfer. Thus, at least for a few seconds, there is a credit element. To provide completely credit-free payments it would be necessary to exchange assets such as shares or bonds directly between payer and payee.
This principle can be seen in almost all payment instruments (see Table 1).

<p>| | |</p>
<table>
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<tbody>
<tr>
<td><strong>Table 1: The use of aggregation in various payment systems</strong></td>
<td></td>
</tr>
<tr>
<td><strong>cash</strong></td>
<td>When we keep an amount of cash, we grant an interest-free credit to the central bank. Instead of getting cash for each and every cash payment we will usually keep enough cash for many transactions. Thus we are also using aggregation. Similarly, cash recipients usually aggregate a number of incoming payments before depositing them.</td>
</tr>
<tr>
<td><strong>deposits</strong></td>
<td>Usually, bank customers keep a certain amount of money in their accounts – granting credit to their banks. Just like in the case of cash, they will replenish it when the amount in the account is too low to make future payments and they will make investments if it surpasses a certain threshold.</td>
</tr>
<tr>
<td><strong>e-purses or prepaid account</strong></td>
<td>The payer needs to load the purse or account only once and can make a number of payments. The payee, usually a merchant, aggregates many incoming payments and transfers them jointly to the issuer.</td>
</tr>
<tr>
<td><strong>credit cards or billing</strong></td>
<td>The payee can make many payments and pays the card issuer or the biller at the end of the month (or later). In most cases, the payee receives payment earlier. But since the payee usually receives many payments, there is also aggregation at the level of the payee.</td>
</tr>
</tbody>
</table>

In all of these examples, the payment providers are either receiving credit from their customers or they are granting credit to their customers. Thus, money and credit are closely linked. When a payment service provider grants credit, the customer receives an additional service (credit). The service provider in turn has additional tasks to perform: setting credit limits, monitoring them, choosing customers etc. Consequently, the success of a payment provider partly depends on the efficiency with which all these credit-related tasks are carried out.

In those cases where the payment service provider receives credit, the business success partly depends on how well these funds are managed. If the return on these funds is high, the service provider can pay customers interest on their funds and/or charge lower fees for payment services. In this case, we could say that payment services are linked with asset management services. The close connection between payments, asset management and credit also shows the importance of supervision.

### 3.2 INCREASING ROLE OF TECHNOLOGY AND NON-BANKS

Technology has become increasingly important in the payment sector. This is not just due to the Internet and the rise of e-commerce (and possibly m-commerce). This observation also applies to the real POS. At the same time, technology that can be used for payments is also suitable for other transactions such as managing bonus point systems, mass transit

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3 This is also the result of the famous ‘square root formula’ which goes back to Baumol (1952) and Tobin (1956).
ticketing or digital rights management. Thus, players from other sectors gain knowledge that can be used to provide payment services as well.

Once value consists of electronically stored information that can be transferred via electronic networks, it becomes obvious that payment has many similarities with other processes involving storage and transmission of information. Although the economics and the risk-management aspects may still be quite different (see Krueger 2001), it seems plausible that operators of non-payment schemes might try to extend their operations into payments. Similarly, companies with a large retail customer base that facilitate payments for their own products (telcos’ phone cards and billing services, mass transit ticketing, PayTV and ISPs are good examples) might be tempted to offer their payment services to third parties. Thus, companies that operate in the following areas are potential payment service providers:

- Bonus points/incentive schemes
- Digital rights management
- Electronic signatures/security
- Payments for own services (single purpose payment instruments)

There are many bonus and incentive schemes that allow customers to spend bonus points with a number of merchants (and other organisations - for instance, charities). Groups of retailers seem to be particularly keen on using new technology to implement more sophisticated loyalty programmes. Almost all of these schemes allow for bonus points to be used for payments with a number of merchants. Similarly, airlines have started to put ‘air miles’ on plastic cards, allowing customers to spend these not just on tickets but with various merchants. As Godschalk (2001b) points out, in the Netherlands the value of air miles surpasses the value of e-money stored on e-purses by far. Indeed, there is a wide variety of bonus point and barter schemes, many of which do involve inconvertible value units. Some of these schemes have existed for a long time (see Appendix 1).

Another field in which the payment function may be bundled together with other functions is digital rights management. For instance, in the US the Wave system (www.wave.com) offers a chip-based micropayment solution together with a decentralised system to manage digital rights such as rights to play music, etc. Similarly, it is conceivable that companies specializing in digital signatures might come up with their own solution for e-money.
Companies with large customer bases that have to implement their own payment solutions might also find it attractive to offer their payment solutions to third parties. Examples are telecom companies that offer billing to online merchants or have extended the payment ability of phone cards to payments to third parties. Cards used for mass transit ticketing such as the Octopus Card in Hong Kong are also used to a limited extent as a means of payment for goods offered by third parties (Weber 2001). In the virtual world, portals or ISPs offer payment services to online merchants.

What is important is that there are many firms with some expertise in (single purpose) electronic payments or related services. Such companies may find it worth extending their business to provide for third party payments. This does not necessarily mean that they will provide a general means of payment. They are more likely to provide some limited payment function tailored to the needs of online micro-trade, small-value payments at the unattended POS, etc.

One technology that illustrates technological convergence is the smart card. Smart cards can securely store information, administer cryptographic keys and communicate in a secure fashion with reading devices. These capabilities are useful in a number of different sectors, one of which is banking. As available statistics show, by far the largest demand for smart cards comes from the Telecom industry (see Table 2).

<table>
<thead>
<tr>
<th>Sector</th>
<th>Memory</th>
<th>Microprocessor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking</td>
<td>0</td>
<td>120</td>
</tr>
<tr>
<td>HealthCare</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Telecom</td>
<td>1020</td>
<td>370</td>
</tr>
<tr>
<td>Transport</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Pay TV</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>IT</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>1062</td>
<td>551</td>
</tr>
</tbody>
</table>


Another class of players that might be tempted to enter the payment field is that of technology providers. Technical expertise is becoming increasingly important for the running of payment systems. The principal technical fields are:

- data transmission networks,
- security,

4 Goldfinger (1999) provides an excellent overview.
- payment related software and
- large data storage facilities.

The increasing importance of technology implies that payment providers have to either produce the required technical knowledge in-house or rely on specialized suppliers. Outsourcing becomes more important\(^5\) and banks lose some control over innovation.\(^6\) Furthermore, whenever technology is the crucial part of a payment system, technology providers may contemplate becoming payment service providers themselves. Market entry of technology providers may therefore increase competition in the market for payment services and raise the rate of innovation (Goldfinger 2001). Examples of technology firms entering payments are easy to find. In a way, the whole debate about e-money and Internet payments started with DigiCash’s pilot circulating cyberbucks (Böhle 2001). Thus, it was a software firm that started the hype about Internet payments. Another example is InternetCash (www.internetcash.com), a financial technology company with a strong cryptography background that markets its own Internet payment solution. Finally, mobile operators can also be seen as technology firms that are entering the payment market (see Krueger 2001).

3.3 THE INNOVATION IN E-MONEY

Over the past 20 years there have been many innovations in retail payments. Online authorization of credit cards was introduced, debit cards (online and offline) became a common means of payment at the real POS, telcos introduced single-purpose payment cards, wallet solutions were implemented for Internet payments, etc. None of these innovations received much attention from the public. However, when the first small e-money pilots were launched there was a lot of excitement. The public was fascinated and regulators were worried. Why did e-money receive so much attention? What is really new about e-money?

In retrospect, it can be said that five factors were crucial for creating the excitement surrounding the theoretical concept “e-money”:

1. E-money is prepaid and not necessarily tied to an account. Thus it allows for payments (including P2P payments) without involvement of a third party during the payment transaction.

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\(^5\) For instance, Bank of Scotland has handed over its computer operations to IBM. See Mackintosh (2000).

\(^6\) Through concentrated efforts banks still may manage to keep control in some fields. Thus, in most countries, banks have been heavily involved in developing debit card and smart card payment systems (for instance Cartes-Bancaires in France or BankSys in Belgium).
2. E-money makes anonymous electronic payments possible.

3. The use of personal card-readers promises the use of card-based e-money in the real and in the virtual world.

4. E-money was often introduced by non-banks. Thus, new players entered the payments market.

5. Software-based e-money can be sent through the borderless Internet. This implies not only that e-money can be a convenient means of payment for cross-border transfers but also that the e-money issuers may be located offshore.

To sum up, e-money looked like a new type of money that could be sent anywhere in the world within a split second. The prospect of large scale involvement of non-banks and the possibility that e-money could be issued offshore particularly raised the concern of regulatory bodies. Today, however, the reality looks quite different (see Box 1).

**Box 1: Central features of existing e-money schemes**

- E-money is mostly a product issued by banks.
- Software-based e-money is basically non-existent.
- All schemes are account-based.
- Complete anonymity is only possible if prepaid value can be purchased with cash. Only a few schemes offer this option and it is not widely used.
- E-money can be spent offline. Except for Mondex, however, no scheme offers P2P functionality or the possibility of directly re-spending received e-money balances.
- Some e-purse schemes can be used on the Internet. However, they cannot be used for cross-border payments.

Thus, existing e-money schemes have little in common with the early theoretical concepts. Indeed, existing concepts seem to have a lot in common with debit card payments. Compared with online debit cards, the major advantage from the users’ point of view is higher speed and lower operational costs. It also allows payments at the

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7 This view is aptly summarised by Bibow and Wichmann (1998, 20) as ‘the vague idea that network money is somewhat like cash, only international and therefore harder to control.’

8 Theoretically, digital bearer certificates could provide anonymity but are not getting off the ground (see McCullagh 2001).
unattended point of sale without online connection (such as, for instance, parking meters or vending machines). A disadvantage is the need to re-load the card from time to time (usually involving payment of a fee). Also, in most schemes there is no PIN protection. Compared with offline debit cards, the advantage of e-money is that it does not involve any counterparty risk for the payee. The payee substitutes credit risk vis-à-vis the customer against credit risk vis-à-vis the issuer. For the issuer, there is no credit risk because e-money is prepaid. However, technical and operational risk management becomes more complex because there is no online control of transactions.

Note that “online” means payments with online authorisation of the issuer and “offline” means payment without online authorisation of the issuer. Thus, there can be online payments at the real POS and offline payments at the virtual POS.

All in all, existing e-money schemes are still a long way from being an electronic equivalent of cash, i.e. a new form of money. They do, however, combine the speed and convenience of an offline payment with a level of security comparable to online payments. The drawback, from the point of view of the issuer, is an increase in technological/operational costs.

In general, the difference between e-purses and other card based payment schemes becomes more and more blurred (see Table 3). For online payments, scratch cards offer a “low-tech” alternative. Some credit and debit card schemes offer the possibility to pay offline and to link the payment to a prepaid account. It remains to be seen whether e-purses will remain pure offline instruments. Security concerns, problems with offline interoperability, cheaper upgrading-possibilities and falling costs of online connections might lead to increased use of online authorisation.
Table 3: Main features of various card schemes

<table>
<thead>
<tr>
<th></th>
<th>online author.</th>
<th>prepaid</th>
<th>chip</th>
<th>PIN</th>
<th>anonym.*</th>
<th>credit risk</th>
<th>fraud risk incl. lost/stolen</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-purse</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>possible</td>
<td>yes</td>
<td>no</td>
<td>i, ch</td>
</tr>
<tr>
<td>debit card</td>
<td>possible</td>
<td>possible</td>
<td>possible</td>
<td>possible</td>
<td>no</td>
<td>possible **</td>
<td>online: i, ch offline: m, i, a</td>
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<tr>
<td>credit card</td>
<td>possible</td>
<td>possible</td>
<td>possible</td>
<td>possible</td>
<td>no</td>
<td>yes</td>
<td>card present: i, a, ch Moto: m</td>
</tr>
<tr>
<td>scratch card</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>issuer, ch</td>
</tr>
</tbody>
</table>

i: issuer, m: merchant, a: acquirer, ch: card holder
*: vis-à-vis merchant (This covers only the payment information. If the consumer provides a name and shipment address, anonymity is not given.)
**: if there is an automatic overdraft

The discussion of the special features of payments, the role of technology and the innovative features of e-money has yielded three important results:

- Payments are necessarily combined with other financial services.
- Increasingly, payments are combined with services that have traditionally been provided by non-banks.
- Existing e-money can be seen as an instrument for anonymous (vis-à-vis the merchant), credit-risk free\(^9\) offline payments.

The implications are straightforward. First, the close connection of payments with credit and asset management make some form of regulation necessary. Second, e-money issuance may be particularly interesting for issuers who can combine e-payments with other functions. These results raise a number of questions with respect to regulation.

- Is the case for confining the issuance of e-money to credit institutions as well-founded as has been assumed in the past? After all, the existing e-money schemes have little in common with the concept of an electronic cash-equivalent.
- Given the investment limitations of the EMI Directive, will non-banks find it profitable to issue e-money?
- How great is the threat of limited-purpose payment schemes for the stability of the payment system?

\(^9\) Neither the issuer nor the merchant carry credit risk. However, there is credit risk for the card holder vis-à-vis the issuer.
4 E-MONEY REGULATION IN THE EU

4.1 THE EMI DIRECTIVE

Relatively early on, the Commission saw payments as a field with new and quickly evolving technology in which Europe might take a lead. Europe was already a world market leader in smart card technology and it was hoped that the use of e-purse schemes would not just increase the efficiency of the payment system but also further promote the competitiveness of European smart card manufacturers. Network based e-money was seen as a precondition for the growth of e-commerce. Moreover, the Commission hoped that new payment technology would make cross-border payments cheaper and foster monetary and real integration (European Commission 1998, Troberg 1998). Therefore, the European Commission was worried about the idea that only banks should be allowed to issue e-money. Such a rule was seen as reducing competition and slowing down innovation. To encourage innovation and make pan-European solutions easier, the Commission proposed a directive regarding the issuance of e-money (European Commission 1998).\(^{10}\) This directive introduced a new institution, the ‘Electronic Money Institution’ that would benefit from lighter regulation than credit institutions. It was hoped that this lighter regulatory framework would be attractive for innovative non-banks. The European dimension was taken into account via the passport that would be granted along with the status of an EMI. An EMI licensed in one country would be permitted to issue e-money in all other EU states. The proposed conditions for becoming an EMI were supposed to be ‘less cumbersome’ than those applying to credit institutions.

The Commission proposal defined ‘electronic money’ and introduced the ‘Electronic Money Institution’ as a special type of credit institution. According to this proposal, EMIs face lighter regulation. In particular, capital requirements are set lower. At the same time, business activities are restricted for this type of institution and they are permitted to invest only in ‘highly liquid low risk assets’ (European Commission 1998). In addition, the proposal includes a clause that permits national governments to set lower standards for firms acting only within national borders (‘waiver’).

In the proposal, e-money is defined as:

- stored on an electronic device,

\(^{10}\) Other objectives were to provide consumer protection and to ensure bearer confidence (via redeemability and investment restrictions) as well as the elimination any distortion of competition (creation of a level playing field for banks and non-banks). See Vereecken (2001).
- accepted as a means of payment by third parties,
- generated to serve as electronic surrogate for bank notes and coins,
- generated to perform transfers of limited value.

(See European Commission, 1998, for the exact wording.)

In its comment on the proposal, the ECB advocated a number of changes (ECB 1999). E-money should be redeemable at par. The lines of business permissible for EMIs should be more restricted. Regulations such as redeemability, statistical reporting and possible reserve requirements should apply irrespective of the size of the EMI.

Most of the ECBs proposals found their way into the final version of the EMI Directive.11 The definition of e-money includes the provision that it must be issued on ‘receipt of funds of an amount not less in value than the monetary value issued’. The business of EMIs is more restricted and the conditions for granting a waiver have been tightened.

Critics have argued that in its final and fairly restrictive version, the EMI Directive does not make it very attractive for non-banks to become an EMI (Godschalk 2001a, Lelieveldt 2001). Thus, it is not clear whether the attempt to create a legal framework attractive to non-banks will be successful. Similarly, it is not evident that a clear legal framework has been provided. The definition of e-money is open to interpretation (Vereecken 2001, Lelieveldt 2001). Given these ambiguities, national legislators may come up with very different interpretations when implementing the Directive.

4.2 IMPLEMENTATION OF THE EMI DIRECTIVE12

The Directive must be implemented in EU member states by 27 April 2002. So far, no country has implemented the Directive yet. Still, from what is known about current developments in member states, it can be said that the Directive will be implemented in a restrictive fashion.

- Most regulators do not see any real benefits in downgrading regulation by implementing the EMI-Directive for the development and market of e-money. Therefore, in many countries, regulators seek to preserve existing regulatory structures as far as possible.

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12 This section draws on a study carried out by Hugo Godschalk (PaySys) for ePSO.
- Regulators are still confused about the EMI-Directive’s definition of e-money and its applicability to new products in the market (e.g. server-based schemes, e-loyalty). National regulators may, as a result, come up with their own definitions of e-money.

- In some member states potential players with software-based products (telcos, payment service providers) have expressed moderate interest in acquiring EMI-status. It is not clear if these software-based products would be genuine e-money as defined by the EMI-Directive.

- Member states with a traditionally restrictive regulatory policy regarding e-money will continue this policy by using the elbow room given them by the Directive (e.g. waiver conditions, broad definition of e-money). In these states a 1:1 implementation of the Directive is not expected. For instance, both Germany and Austria do not plan to introduce a waiver. This contrasts sharply with the point of view of the UK government that plans to interpret the waiver as broadly as possible (see HM Treasury 2001).

- To most regulators (except in Germany), the e-loyalty topic is new. All the regulators agree that multi-merchant e-loyalty schemes with payment function of bonus points would probably be subject to e-money regulation, although most of the local schemes could fall under the waiver (due to the low volume of e-money). In principal, it cannot be ruled out that the implementation of the Directive leads to stricter regulation of multi-merchant e-loyalty schemes.

The main goal behind the EMI-Directive is the invitation to non-banks to enter the e-money market as issuers under a ‘regulation light’ regime. Even in local markets, where e-money is regarded as more promising, regulators still see little or no interest by non-banks in entering this market as an EMI. There may be more than one reason for this apathy as regards e-money issuance:

- Regulation resulting from the final EMI-Directive may still be an obstacle for non-banks because there is no big difference between an EMI and a traditional bank.

- E-money issued by traditional banks is still unsuccessful in the market (still no breakthrough for card-based schemes; failures of software-based schemes).

- There simply is no business case for card-based e-money.

- The traditional e-money concept (monetary value stored on an electronic device) is no longer an appropriate concept as a future means of payment in e-commerce.
This last point refers to the wide gap - discussed earlier - between the theoretical concept of e-money and the existing e-money schemes. Current regulation seems to be aimed much more at a new electronic form of cash than at the existing schemes. In the US, unlike Europe, e-money is seen as just another payment service. As a result, the US has taken a noticeably different regulatory approach to e-money. This is discussed in the next section.

4.3 THE US APPROACH

When e-money appeared on the scene, central banks in North America and Europe adopted a noticeably different regulatory stance. Whereas the Fed advocated a ‘wait and see’ attitude, most European central banks demanded far-reaching steps to regulate the issue of e-money. As early as 1994, the European Monetary Institute recommended that only banks should be allowed to issue e-money (EMI 1994). This recommendation has been repeated by the European Central Bank (ECB 1998). This contrasts with the attitude of the chairman of the Federal Reserve, Alan Greenspan, who stresses the importance of innovation and sees government regulation more as an ‘add-on’ (Greenspan 1997, 47). According to Greenspan, regulation at an early stage could easily impede innovation. Furthermore, he points out, in many cases ‘self-policing’ might be an alternative to government regulation. A report prepared by the U.S. Treasury staff (Hayes et al. 1996) makes the same point.

Still, even in the US there are many regulations that apply to e-money (see Böhle and Krueger 2001). However, US regulators, unlike their European counterparts, have not tried to reserve the issuance of e-money to credit institutions. Instead, as the new “Uniform Monetary Services Act” (UMSA) shows, e-money is seen simply as an alternative mechanisms for people to make payments (see Ramasastry 2001 and National Conference of Commissioners on Uniform State Laws 2000). The UMSA defines a class of non-banks called “Money-Services Businesses” (MSBs). These businesses engage in:

- money transmission
- sale of payment instruments (money order, traveler’s checks, stored value)
- check cashing
- foreign currency exchange

13 Some EMS countries have already changed their laws accordingly. For instance, in Germany, the new version of the law regulating the financial sector (Kreditwesengesetz) rules that only banks are allowed to issue e-money (Deutsche Bundesbank 1998).
The UMSA attempts to harmonize regulation across states, as does the EMI Directive. The UMSA, however, treats e-money as just another alternative payment mechanism, and not as something special. Apparently, US regulators had existing e-money schemes in mind when they designed regulation, whereas European regulators were more concerned with the theoretical concept of a cash-like electronic money. The more pragmatic US-approach has two advantages. First, it puts less stringent restrictions on e-money issuers (for instance, no redeemability provision, more liberal investment restrictions). Second, it is much broader as it harmonises not only e-money regulation, but also most of the other payment activities in which non-banks may engage.

4.4 IMPACT ON INNOVATION

In its 1998 Report on Electronic Money, the ECB (1998, 20) weighs the odds of a ‘wait and see’ approach. As the ECB concedes, e-money is, so far, of limited significance in that neither amounts owed to customers, nor systemic risk, are substantial. Since regulation can impede financial innovation, and result in efficiency losses, the costs of regulation might easily be larger then the benefits. However, according to the ECB, postponing regulation is risky because it increases the likelihood of failure of an e-money scheme. Furthermore, if regulation occurred at a later stage, it might force investors to alter their products significantly, at high cost. Finally, once certain schemes are widely used, it might be hard for legislators to change them. Therefore, the ECB report favours early regulation.14

What is particularly interesting is that the ECB sees early regulation as a way to promote innovation. According to the ECB, early regulation can provide more certainty about the legal framework under which e-money issuers will have to operate in the future. Another factor is that regulation may discourage some players and thus prevent too much market fragmentation. Fragmentation is seen as bad because it inhibits the evolution of interoperability and standards – a pre-condition for the success of new payment schemes (De Geest 2001).

Empirically, it can be observed that, so far, e-money has not lived up to the early expectations. Software-based e-money has almost completely vanished from the scene and e-purses are still struggling (Godschalk and Krueger 2001). Of course, this may simply reflect problems in reaching critical mass. Many innovations have a slow start. As

14 Godschalk (1999) argues however that in the case of the new German banking law early regulation has not decreased uncertainty but increased it. Without a clear view of how the system would eventually look like many provisions are unclear and some of the definitions used are already outdated. This argument is validated by the fact that the law will have to be changed to conform with the EMI Directive.
has been pointed out repeatedly, the providers of new payment systems face a chicken-and-egg problem (Van Hove 1999). Without a large customer base merchants are not interested and without a large merchant base, customers are not interested. However, some schemes have reached high market penetration without managing to increase usage numbers significantly.

Thus, a different explanation is more plausible. At the moment there does not seem to be a business case for e-purses or software-based monies that can serve as general means of payment. There is, however, substantial commercial interest in e-loyalty, electronic incentive points, electronic payments at the unattended POS or micro-payments coupled with digital right management. Further applications may be limited-purpose purses that can be used to purchase only a restricted set of goods. For instance, parents might give such purses to their children. All of these payment systems can be described as ‘limited purpose’ schemes. They are not meant to be general means of payments. In some countries this segment of the payment has been little regulated – if at all. The EMI Directive may lead to more regulation in these countries. Whether this is really desirable should be re-considered, given the limited payment function of these schemes. Statements from within the Commission indicate that it was never intended that bonus point systems should fall under e-money regulation.

Interestingly, member-states with a restrictive regulation of e-money by supervisory authorities (e.g. Germany, Netherlands, France) have larger volumes of e-money than states with a more laissez-faire position (UK and Denmark). This seems to support the ECB’s notion that regulation is good for innovation. However, the sample of countries is too small to prove the point. It may equally be the case that the main drivers behind the heterogeneous development of e-money in these countries are different local payment customs and infrastructures.

Furthermore, there are some sound theoretical reasons why it seems much more likely that the current regulatory structure will have a negative effect on innovation:

- First, the discussion in Chapter 2 has shown that companies outside the financial sector may be crucial for innovation in payments. Potential entrants are software firms, retailers, telcos, etc.

- Second, while some of the potential new entrants are large and should find it easy to comply with existing regulation, smaller companies may find regulation a hurdle. Indeed, the simple fact that a licence is required may already be a hurdle.
• Third, the regulation of EMIs is not as light as it may seem. In particular, the severe restrictions on investments must be seen as a strong disadvantage vis-à-vis competitors from the banking sector.

• Fourth, the EMI Directive has not created legal certainty. As many observers have noted, the definition of e-money is difficult to interpret (Godschalk 2001a, Lelieveldt 2001, Vereecken 2001). It is not clear what the status of balances kept in server-based wallets is, or how multi-merchant bonus point schemes should be treated. Finally, the definition of e-money as ‘receipt of funds of an amount not less in value than the monetary value issued’ raises the question of how to treat electronic balances that are issued against receipt of funds of an amount less in value.

• Fifth, the argument that non-banks can always team up with a bank to issue e-money is tricky. In order to comply with regulations, the bank would not just be the nominal issuer but also the risk-taker. Otherwise the whole regulation would be without force. Banks, however, will only be willing to take risks in such a partnership if they have sufficient knowledge about the scheme. This implies that the non-bank partner must provide a potential competitor with crucial information.

• Sixth, it may be argued that successful schemes will be implemented by large players who either buy solutions or produce them in-house. Therefore, the potentially harmful effects of regulation for small firms may not matter that much in the payment sector. There is some truth in this. However, it must be taken into account that large players are more likely to buy (or imitate) new solutions if these have been tested in the market. Thus, small players must be able to test new systems.

Innovation can be interpreted as a trial and error process. Market participants must be able to test new solutions in the market. This trial and error process is restricted by current regulation. Whether or not this can be justified by other social goals such as consumer protection or stability is an open question. As far as stability and systemic risk are concerned, the thresholds for a waiver seem to be way below those values that could be reasonably seen as posing a threat. With respect to consumer protection the question remains whether this is a task for central banks. The European Commission seems to have been content with lower levels of regulation.

From a pan European perspective, the Directive has achieved one thing: it provides a European passport. If players apply for an EMI license they will be entitled to do business in the entire EU. This opens a large potential market for would-be issuers and should be
beneficial for innovation and competition. The passport is definitely an achievement. Opening the door for limited purpose payment schemes would be even more helpful.

5 CHALLENGES AHEAD

When e-money first appeared on the scene, the idea was that it might be used as a general means of payment in the real and virtual world. It was widely thought that e-purses might replace cash and that software-based money might flow freely through the Internet, making payments or financial transfers. For some observers this vision promised to bring about a much more efficient and user-friendly payment system. Others, however, saw big potential problems such as money laundering, financial instability and loss of monetary control.

This early vision seems to have shaped the current regulatory approach. E-money is seen as a new form of money that can be used as a general means of payment just like bank deposits or cash. This particularly explains why central banks want to be firmly in control and would like to keep e-money within the realm of financial institutions.

At the moment it is not clear whether the legal construct ‘Electronic Money Institution’ will ever be used in practice. Large players may find becoming a bank more attractive and small players may find the regulatory hurdles too high. Central banks may not be unhappy about this. After all, they initially favoured an approach that would restrict the issuance of e-money to credit institutions. However, the consequence may be less competition and less innovation in the area of ‘limited purpose’ payment schemes. The Directive sets a date for the review of the EMI Directive (27 April 2005). This review provides an opportunity to amend current e-money regulation in view of the implementation results and the applications and services developed until then.

In the November 2000 edition of the ECB’s Monthly Bulletin, the ECB has used the distinction between ‘limited purpose’ and ‘multi purpose’ schemes. One possible step would be to extend the low level of regulation for single purpose schemes to limited purpose schemes. It is true that the distinction between limited purpose and multi purpose is not as clear as the distinction between single purpose and multi purpose. However, it seems likely that market players will be happy to accept this lack of clarity if the burden on limited purpose schemes is made lighter.

A lighter regulatory approach of this kind may also be advisable in the light of the fact that regulation often triggers circumvention. In fact, periods of financial innovation have already been described as almost entirely triggered by moves of market players who
wanted to circumvent regulation (Kane 1981). In the field of payment, at least as far as software-based solutions are concerned, a relatively easy strategy to avoid regulation within the EU would be to offer e-money payment services from outside the EU.

Other measures that would foster innovation and reduce barriers to entry should be discussed as well. First, e-money pilots could be exempted from licensing requirements (Böhle and Riehm 1998, 188). Second, the question of whether server based value and bonus points fall under the EMI Directive or not should be answered by clarifying definitions. Third, in view of the analysis in Chapter 3, the issue of redeemability should be reconsidered. The subject has been somewhat exaggerated by some central banks. The US example and the over 60 year old example of the WIR Bank in Switzerland (see Appendix 1) show that the use of a secondary unit of account does not in any way reduce the value of money as a general unit of account. Finally, a point that might require rethinking is the costs and benefits of the limitation on investments. For instance, it is hard to understand why e-money institutions should not invest in strictly supervised institutions like banks. Similarly, portfolio theory suggests that a certain diversification across assets may limit risks.

2005 is still a long way off – especially when the fact that potential changes would have to be formally agreed and implemented into national law is taken into account. A faster way would be a liberal implementation of the Directive into national law. At the moment, however, it seems that national regulators are favouring a rather strict interpretation of the EMI Directive.
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WIR Wirtschaftsring-Genossenschaft
APPENDIX 1

THE SWISS WIR BANK

The WIR Bank was founded in 1934 as a co-operative association under the name “WIR Wirtschaftsring”. It has had a banking license since 1936. Initially, the aim of the WIR Bank was to avoid exchanges that involved legal tender (Swiss Francs). It was hoped that a “moneyless” exchange would increase demand and make it possible to abolish interest. These ideas, influenced by Silvio Gesell’s writings, were discarded in 1952. Since then, the WIR Bank has been seen as a kind of self-help organisation for SMEs (Small and Medium Enterprises). Today, the WIR bank is the largest commercial barter organisation.

The accounts of the WIR Bank are based on funds denominated in “WIR Franken”. Wir Franken are not convertible into Swiss Francs. Deposits in WIR accounts (WIR Money) serve as unit of account, medium of exchange and store of value. Thus, they have to be seen as money. WIR Money can be created in different ways:

- deposit of Swiss Francs with the WIR Bank,
- sale of goods to the WIR Bank,
- borrowing from WIR Bank.

The last method is by far the most important. The increase in the quantity of WIR Franken is mainly based on the classical concept of credit creation. The WIR Bank mainly grants construction and investment credits at below market interest rates. If demand is larger than supply, credit is rationed. WIR Money can only be spent with WIR members. Members are obliged to accept WIR Franken, however they may require that part of the purchase price be paid in Swiss Francs. The Swiss Franc price of a good has to be converted into a WIR Franken price at an exchange rate of 1:1. Thus, sellers may not ask for a higher price if a purchaser wants to pay with WIR Franken.

Table A1: The development of the WIR Bank

<table>
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<tbody>
<tr>
<td>Turnover (mio WIR-Franken)</td>
<td>3.8</td>
<td>432</td>
<td>2,262</td>
<td>1,770</td>
</tr>
<tr>
<td>Deposits (mio WIR-Franken)</td>
<td>1</td>
<td>160</td>
<td>870</td>
<td>787</td>
</tr>
<tr>
<td>Accounts (number)</td>
<td>1,574</td>
<td>28,418</td>
<td>82,558</td>
<td>81,719</td>
</tr>
</tbody>
</table>


Membership rules prohibit the direct exchange of WIR Franken against Swiss Francs. Until 1973 WIR Franken were traded against Swiss Francs – usually at a substantial discount (20-30%, sometimes even 50%). In 1973 WIR Bank started to fight this trade and succeeded in containing this parallel market. Customers that try to trade WIR Franken against Swiss Francs are excluded from membership.

Due to their reduced usability as a medium of exchange, WIR Franken only account for a small fraction of members’ business receipts. Most payments are settled in Swiss Francs. Reasons for participating in the WIR Bank are: increased sales, cheap credit, solidarity with SMEs, social factors. The WIR bank particularly stresses the ability to generate additional sales – a familiar argument with other barter schemes.

The value of transactions per account rose from 10,050 WIR-Franken in 1970 to 27,400 WIR-Franken in 1996. Recently, it has been falling (in 2000 the value of transactions per account was 21,600 WIR Franken). Even the long-term increase masks a decline in real terms.

Nevertheless the performance of the WIR Bank is remarkable. It is not only the largest commercial barter scheme but also the oldest. Its continuing existence shows that barter schemes are not just a short-lived modern fashion. A second point that needs to be stressed is the attitude of the Swiss authorities. The Swiss National Bank has accepted that a private bank is creating its own money denominated in its own unit of account. Basically, it accepts free banking. The Swiss example shows that a liberal approach that allows for competition neither disrupts the trust of the investors into the payment system nor does it reduce the standing of the Swiss Franc in international markets.