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Offshore E-Money Issuers and Monetary Policy

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Abstract

Technically, it is conceivable that banks (or even non-banks) that are based in offshore centres can issue e-money and distribute it via the Internet all over the world. Therefore, many economists see offshore e-money issuers as a severe threat to the ability of central banks to conduct monetary policy. In this paper, it is argued that offshore issuers will denominate their e-money products in terms of existing currencies. Therefore they will be affected by monetary policy measures in the same way as onshore banks.

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Technically, it is conceivable that banks (or even non-banks) that are based in offshore centres can issue e-money and distribute it via the Internet all over the world. For national governments, there seems to be no practical way to prevent its citizens to use such e-money balances for payments. Therefore, the question arises whether central banks will still be able to conduct monetary policy in the future. In addition, law enforcement authorities are worried about increased tax avoidance and money laundering (McCullagh, 2000). This paper will mainly deal with the first aspect, the implications of offshore e-money issuing for monetary policy.

Many economists see offshore e-money issuers as a severe threat to the central bank monopoly in issuing base money (Tanaka, 1996; Herreiner, 1998). For instance, Söllner and Wilfert (1996) and Berentesen (1997, 1998) claim that the issue of unsecured e-money might lead to an inflationary creation of credit, reducing

the effectiveness of central bank instruments. Borchert (1996) argues that e-money that is issued offshore makes monetary policy ineffcient. Benjamin Friedman (1999) makes a related point, arguing that clearing and settlement might move offshore reducing the capacity of central banks to influence short-term interest rates. Thus, it is argued that monetary control may become impossible in the future [1]. This article shows that the position of central banks may be more robust than it seems.

The Need to Integrate Payment Systems

When considering the effects of offshore e-money issuing it has to be taken into account that the issuer has to be paid somehow for the e-money he is issuing and that the recipient of e-money may wish to convert it into conventional money (cash or deposits). Figure 1 illustrates the case of an offshore issuer based in country 3 who issues e-money that is used in country 1 and 2. In such a case, a customer from country 2 who wants to use this e-money has to pay for it. Supposedly, this will be in 'normal' money. So, either the issuer has an account in country 2 or the customer has to make an international transfer from country 2 to country 3. Furthermore, if the payment receiver (say an Internet store in country 1) wants to convert the e-money balances he receives into national currency, the issuer has to transfer country 1 money to his account. Again, this presupposes an international transfer or an account with a local bank.

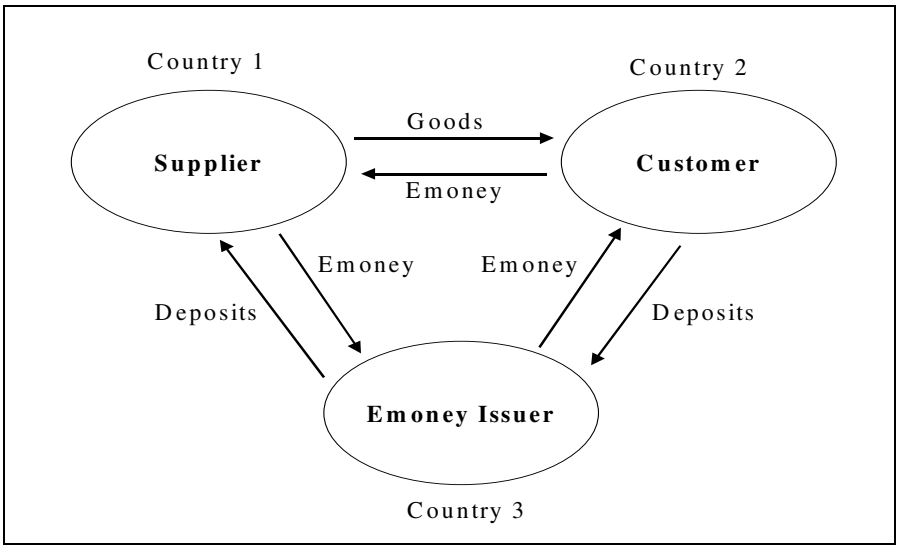

Figure 1: International E-Money Payments

Either the issuer is actually present in the other countries or he has to rely on the inefficient and expensive international retail payment system (involving foreign

checks or money orders). This is true, even if the supplier can accept credit card payments. In this case, the issuer of Internet money could also use a credit card organisation to transfer the money. Again, this would involve a payment to one of the traditional providers of payment services as an extra cost. Thus, the working of the whole scheme partly depends on interconnection with the traditional payment system [2].

This example shows that even if e-money issuers could be located anywhere in the world they would have to find a way to connect the e-money circulation with the conventional payment system. After all, unless e-money is designed as a niche product (for instance for barter schemes), it cannot be expected to circulate in a close loop. E-money recipients need to convert at least some of their receipts into deposits or cash. So, even if a new kind of electronic money (like Mondex) could be re-spend without using the service of a bank, it can be expected that a large portion of electronic money receipts will be converted into deposits because a large portion of payments (wages, taxes, etc.) are made with deposits. For instance, if a consumer pays 1 DM for a good in Germany, wages account, on average, for 55 per cent of the price and indirect taxes for further 13 per cent. Direct taxes and social security contributions account for more than half of the 55 Pfennig for wages [3]. Most of these payments are made via transfers of deposits [4]. Thus, the producer of the good who earns the one DM paid by the buyer would have to convert most of it into deposits. This shows how important the possibility to switch between e-money and other types of money is.

A system with different types of money (bank notes, deposits, electronic money on cards and hard drives) only functions efficiently if economic agents are able to do so at low cost [5]. A common means to lower transaction costs is standardisation. Standardisation reduces costs for users because money is a network good. A unit of account or medium of exchange is only useful if many other people are using it (Dowd and Greenaway, 1993; Krueger, 1999a; Van Hove, 1999) [6]. Thus, an e-money issuer who is targeting the Euro-area would have a strong incentive to issue e-money denominated in Euros and to guarantee full 1-to-1 convertibility into other Euro-denominated monies [7]. Without 1-to-1 convertibility the newly issued product would not be fully compatible with the existing payment network. In such a case, the e-money issuer would have a substantial disadvantage because he could not profit from the positive network externalities of the existing network. As will be shown in this paper, the denomination in Euro and the guarantee of full convertibility puts the e-money issuer under the influence of the central bank.

The Economics of Offshore Money Creation

E-money issuers can create e-money in two different ways. First, they can sell e-money against traditional forms of money such as cash or deposits and use these receipts to buy interest-bearing assets. Second, they can make e-money loans ('create credit'). So in both cases, there would be e-money on the liability side of the balance sheet and interest bearing assets on the asset side (Figure 2). Note that the dotted line indicates that the e-money issuer is either borrower or lender in money markets. In the case of 'e-credit creation', the interest-bearing assets would mostly consist of loans. Otherwise, e-money issuers would hold securities or time deposits. Unexpected surpluses or deficits at the end of the day would have to be covered by money market lending or borrowing. In reality, e-money issuers would also hold reserves (deposits and possibly cash). However, to simplify the argument, it will be assumed that e-money issuers do not need to hold any reserves. They can borrow/invest whatever the net outflow/inflow over the day. This is not a very realistic assumption but it makes it possible to circumvent the problem of determining the optimal amount of reserves. Furthermore, if it can be shown that central banks retain control over interest rates even if e-money issuers do not hold reserves, the results can be confidently carried over to cases with positive reserves.

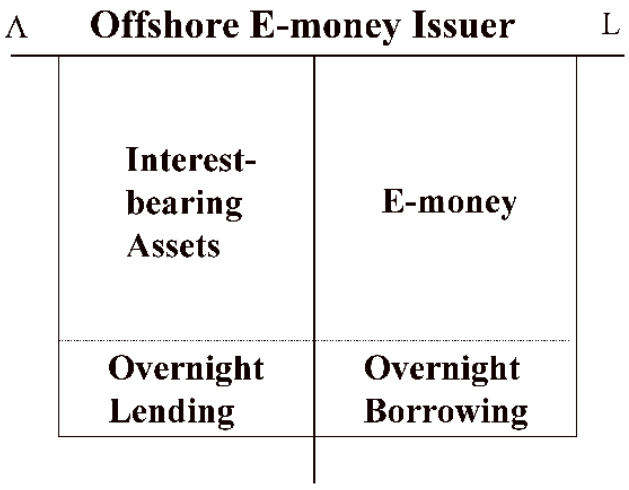

Figure 2: Balance Sheet of an Offshore E-Money Issuer

First, suppose e-money issuers increase their investments into the e-payment system so that agents are substituting some of their cash holdings for e-money holdings. In this case, cash will be returned to the banks and the question arises how such an influx of currency will influence monetary conditions. The answer depends

very much on the monetary policy strategy (Krueger, 1999b). In the short term, almost all central banks pursue a strategy of interest rate targeting. Even those central banks which announce a monetary target, for instance the ECB, do not set the money supply in the short run. Rather, they periodically review monetary indicators in order to determine the interest rates of central bank loans. This has an important implication: In the short term, any change in the demand for currency can be expected to lead to a corresponding change in the supply of currency (or reserves) with little or no effect on interest rates and the real economy. This is the very reason why central banks choose to target interest rates in the first place. The insulating properties of such a policy against monetary shocks (or "LM shocks") are well known [8].

The adjustment in case of e-money,cash substitution is as follows: Individuals can either buy e-money with cash or they can deposit cash with their banks and purchase e-money with deposits. In both cases, there will be an influx of cash into the banking system because the e-money issuers will deposit the cash they receive with the banks. How will banks react if there is such an influx of currency into the commercial banking system? Banks will exchange currency for deposits with the central bank. By doing so they increase their reserves above the desired quantities. In this situation they have two possibilities. They can either buy more assets (make more loans) from non-banks or they can buy assets from the central bank (borrow less from the central bank). Since an increased demand for assets in capital and money markets would lead to a reduction of interest rates, the latter would be the preferred alternative. As long as the central bank pegs the interest rate of certain short-term instruments banks will rather buy back assets from the central bank. Banks simply use incoming currency to reduce liabilities vis-à-vis the central bank and there is no credit creation whatsoever. Thus, there are no expansionary effects of the introduction of e-money. The only effect would be a shrinking of central bank balance sheets. For central banks, and in particular for governments, this would be bad news because seigniorage income would fall. However, the working of the monetary system would not be severely affected. The public would simply hold less of one type of money (cash) and more of another (e-money). Monetary policy would still be effective.

The second possibility, credit-driven e-money creation, seems to provide more problems for monetary policy. If e-money issuers increase the supply of e-money via new loans they create new money balances without compensating reductions of money elsewhere. Thus, there seems to be a danger of inflationary money creation

outside of the jurisdiction of central banks. Furthermore, the possibility of central banks to control the level of interest rates might be impaired if offshore issuers can make e-money loans free of any restrictions. However, as will be shown below, the promise to maintain convertibility provides a sufficient restriction on the behaviour of offshore issuers.

The profit function of an offshore issuer resembles in many ways the profit function of a bank (see Baltensperger, 1980). Depending on whether the e-money issuer is a net borrower or net lender in money markets we can write:

(1) $\prod_E = r_l L + r_b C - G$

(2) $\prod_E = r_l L - r_o B - G$

where $\prod_E$ is represents the profits of an e-money issuer, L are loans (or other long-term investments), r_l is the interest rate on loans, C is structural money market lending, r_b is the bid rate in the money market, B is structural money market borrowing, r_o is the money market offer rate and G is a composite cost-term (including asset management costs, solvency cost, cost of capital for investment into e-money issuing and other costs).

Whether an e-money issuer is a structural net lender or net borrower in money markets depends on his own lending policy relative to the lending policy of onshore banks. An expansion of electronic money due to credit creation leads (c.p.) to an outflow of funds. Those borrowers who borrowed e-money will spend more and the recipients of the funds will want to convert some of the e-money into cash or deposits. This forces e-money issuers to borrow additional funds in order to be able to pay cash or deposits to those who want to convert e-money into conventional money. This is basically the same adverse clearing process that also applies to a single bank that creates credit.

Suppose, initially, the quantity of e-money is equal to the steady state quantity E*. Thus, expected net outflows are zero. No additional lending or borrowing in money markets is required. In this situation, the central bank raises interest rates. The rise in central bank interest rates eventually has the desired effect, money market rates are rising. The reaction of onshore banks is an increase of their lending rates which ultimately reduces overall lending by onshore banks. This is the restrictive effect desired by monetary policy makers.

The question is how this will affect offshore issuers. After all, if they held interest rates constant, they could attract more business and increase e-money loans. This would reduce the effects of monetary policy on the economy. This question can be answered with the help of equation s (1) and (2). Since an e-money issuer that increases loans will eventually become a net borrower in money markets, equation (2) is of particular interest. This equation shows that an increase in central bank interest rates would make e-money creation more expensive. First, r_o rises, making it more expensive to finance a given volume of short-term borrowing. Second, if e-money issuers increase lending whereas onshore banks reduce lending, e-money issuers will be in a negative clearing position with onshore banks and will have to borrow more in money markets. Thus, B rises as well. Third, in times of monetary restriction other costs G are also likely to rise. Overall, the costs of funding loans are increased. This forces e-money issuers to increase their lending rates as well. Higher rates, in turn, will reduce lending and e-money creation. Thus, in the end, e-money issuers - even offshore issuers - will reduce lending and e-money creation. They are affected by central bank interest rate changes in much the same way as onshore banks.

Conclusions

Even if there are offshore companies issuing e-money this will not make it impossible for central banks to conduct monetary policy. As long as issuers denominate their products in local currency issuers throughout the world would feel a tightening of monetary policy. If, for instance, a central bank increases interest rates and local banks follow suite agents will try to reduce their debts. They will borrow less and pay back more loans. Any bank that would not increase interest rates would experience adverse clearing and would have to borrow in the interbank market at the new, higher rates. Sooner or later the bank would be forced to increase its interest rates in order to reduce its borrowing at the unfavourable rate. The same forces would also influence the behaviour of the offshore issuers. If they do not change their behaviour there will be a rising demand to exchange their e-money products back into cash and deposits. If they do not want to become illiquid they have to reduce the rate at which they are issuing e-money. Since they do not have access to central bank credit they may be even more sensitive to changes in interest rates than local banks. Thus, monetary policy works , even with offshore issuers.

About the Author

Malte Krueger works as a consultant for the PaySys GmbH (Frankfurt). He holds a Ph.D. in economics from the Universität Köln (Germany). He has worked as a research fellow for the Bank of Spain, the University of Western Ontario, the University of Durham and the European Commission. Dr. Krueger has published widely in academic and industry journals on foreign exchange markets, monetary policy and innovations in the payment system.

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Notes

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

2. Cross-border retail payments still are very inefficient. As Hartmann (1998, p. 2) puts it: "European cross-border retail payments could almost be said to be still in the 'Middle Ages'. But there is strong pressure from the European Parliament, the Commission and the ECB to improve the efficiency of these payments."

3. Source: Sachverständigenrat (1997) and own calculations.

4. This is not likely to change because for regular payments direct debits or standing orders provide the most efficient means of payment.

5. For instance, in futures markets there are not hundreds of different contracts for wheat, one for each brand, but only one or two (see Black 1986). In fx markets the dollar is used as a vehicle currency.

6. So called 'barter schemes' exist that use a medium of exchange that is not convertible. However, such schemes will always be only niche products, to be used within smaller communities.

7. This is also what currently happens. E-money issuers issue money that is denominated in national currencies. The only exceptions are 'Cyber bucks' which

have been issued in limited amounts by DigiCash and 'beenz', a so-called gift-currency and some barter firms.

8. The "classic" source is Poole (1970).

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Special Issue Update

This paper is included in the First Monday *Special Issue #3: Internet banking, e-money, and Internet gift economies, published in December 2005. Special Issue editor Mark A. Fox asked authors to submit additional comments regarding their articles.*

E-money four years later

In the late 1990s, there was a lively debate about the implications of the newly emerging e-money on the ability of central banks to control monetary aggregates.[1] What caught the imagination of many observers was not so much the fact that new types of money were electronic. Rather, it was the potential that new forms of money were capable to be transferred via the internet without the intervention of a traditional credit institution.

More than anything else, the trial of DigiCash in 1994 with its 'Cyberbucks' rang the alarm bells of monetary authorities. It had everything they feared: it was issued by a non-bank, it could be used via the internet, it was P2P capable and it was anonymous.

Against this background, a debate ensued about the merits of the new type of money and its potential to limit the power of central banks. Central banks and international bodies such as the Bank for International Settlements published a large number of reports [2] and academics scrutinised the issues involved. Finally, law makers took to the issue and e-money became subject of regulation in a number of countries. Thus, after long debates, the E-Money Directive of the European Union was passed in 2001 (it is currently reviewed).

By 2001, however, many of the early pioneers such as DigiCash, Cybercash or First Virtual had gone out of business. The whole discussion began losing steam. Moreover, the very concept of 'e-money' was slowly changing. Initially, e-money was

meant to be a close electronic substitute for cash: a bearer instrument, capable to circulate, anonymous, etc. To some degree, this was achieved by e-purses. However, only to a degree because e-purses do not allow balances to circulate. The recipient has to return balances to financial institutions and the corresponding value will be credited to a bank account. Thus, from the point of view of the payor, e-purses have a lot in common with cash, but not from the point of view of the payee.

On the internet, nothing like the envisioned digital bearer certificates has emerged. Rather, today, what is called ‘e-money’ consists of limited purpose accounts with non-banks. In the EU these non-banks have to obtain an e-money licence. In the U.S. they may be required to hold state money transmitter licences. These accounts have much more in common with bank accounts than with cash. What drives the demand for these products is convenience of use.

Thus, in the end, the internet e-money that exists is not a new type of money at all. And the card based e-money is struggling in many parts of the world. Only recently, one of the first e-purse schemes, the Danish Danmont has been discontinued.

What are the lessons?

1. I think the approach by Alan Greenspan to take a ‘wait and see’ attitude was vindicated. Strict ex ante regulation of new concepts and products make life difficult for small start-ups and thus slows down innovation. Moreover, early regulation may be misguided because it is not known well what to regulate. Thus, the type of e-money regulators had in mind in the late 1990s (digital bearer instruments) never took off.

2. Payments exhibit strong network effects. Therefore, any new instrument that is meant to be more than just a niche product has be firmly connected with the payment backbone: the bank-based retail and wholesale payment system. Therefore, the emergence of a parallel circulation of alternative monies should not worry central bankers. Such schemes are unlikely to grow beyond the already existing scale (in form of barter schemes etc.). Technological innovations are unlikely to change this. This is the point made in my paper and I think it is still valid.

3. The early discussion was very much about technical issues. Innovators that entered the market were technology companies. However, the payment industry also is, to a considerable extent, a service industry. The early newcomers ignored this

and paid the price. They all vanished from the market. Today's successful internet payment providers are much more focussed on service than their predecessors.

4. It seems wise to let non-banks have a share of the payment market. Internet payments, for example, require a mix of technological skills and quality of service that banks may often be unable to provide.

Notes to Special Issue Update

1. Strictly speaking, the term e-money was a misnomer. It implied that traditional monies were non-electronic. But as a matter of fact, bank deposits had been electronic for many years already.

2. Between 1996 and 2001 the BIS published 5 reports on e-money. The ECB (and its predecessor the EMI) published 2 reports (1994 and 1998) and a security framework for e-money issuers (2002). The European Commission passed an E-Money Directive that came into force in 2002. In some countries law makers were much faster. Thus, the German government amended the German banking law in 1997 requiring e-money issuers to become banks.