Can we create a global payments network?

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The rapid growth in payment traffic, both nationally and internationally, is creating the need for improved infrastructure in the global financial system, not least in order to reduce risks and increase stability. Important progress has been made in recent years, but more is needed. One way is to increase opportunities for national central bank systems to settle payments in currencies other than their own. In this context, discussions among EU central banks in recent years concerning the design of the Target system may provide important lessons.

Heavier international payment flows

During the past 10–15 years, interest in payment system issues has increased greatly – almost as much as the payment volumes transported in these systems, which has been the underlying motive behind the increased interest. This, in turn, is essentially a reflection of the deregulation and internationalisation of financial markets that has taken place since the early 1980s. A quick glance at volume trends in the central payment systems of certain major economies confirms this.

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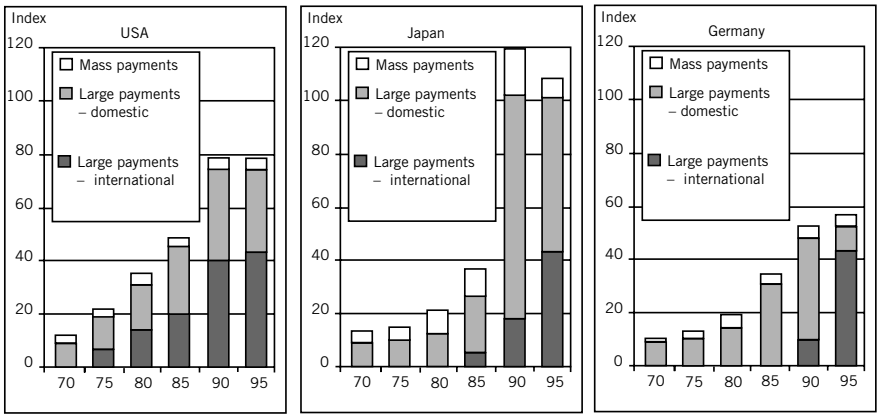
In other words, payment volume took off during the 1980s, roughly doubling in the United States relative to GDP, tripling in Germany and quintupling in Japan. It is also apparent that much of this expansion consists of payments to and from other countries. One factor is heavier trade in goods and services, but it is mostly a matter of increased cross-border foreign exchange and securities trading. Whereas trade in goods and services has been relatively free and well-established for many years, the internationalised financial market that we see today is of relatively recent

Flows of payments 1970–95 relative to GDP



date. Its creation is the result of a general deregulation of financial markets but also, importantly, of the emergence of information technology which has created the practical preconditions for such a market.

For natural reasons, interest in how payment systems function and in the stability and efficiency standards that should apply to these systems, in light of the growing volume they handle today, has been clearest in the central bank world. Moreover, this is the case not only for payment systems but for the entire financial infrastructure. After all, the payment function is closely interwoven with all sorts of financial activities – deposits, lending and foreign exchange and securities trading. For example an overwhelming proportion of payments today are in the form of transfers between deposit accounts.[1] This includes cheque, credit card and giro payments. Various loan facilities are often linked to these accounts. The connection between the core activities of the banking system – deposits, lending and payments – is thus very apparent.

The G10 central banks – focus on systemic risks

The main engine in the improvement effort has been the Group of Ten (G10) central banks, which seriously tackled these issues in the mid-1980s through the committee work of the Bank for International Settlements (BIS). A sizeable proportion of the analytic

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[1] In terms of value, the proportion of payments consisting of transfers between accounts can be estimated at approximately 90 per cent. The remaining 10 or so per cent thus involve bank notes and coins. There are, however, no exact statistical data about this.

and standard-setting work carried out by BIS committees has been related to international transactions in particular. This is natural, given the rapid expansion of international payment traffic and the fact that it raises many issues that are complicated to analyse and manage.

A payment between two countries is not just a matter of moving a certain quantity of purchasing power from one country to another. First, it concerns transactions between two different legal systems. Second, it ordinarily includes at least two different currencies and thus involves two monetary and exchange policy regimes. Third, transactions are processed in dissimilar institutional and technical systems. All these types of differences entail risks for market players, if for no other reason because it is difficult to be aware of all these complicating factors as well as evaluate and manage them. In short, international transactions often involve large-scale transparency problems.

Turning to payment systems, it is also true that risks are rarely the problem of individual market players alone. If one player – in any case an important player – has problems, this usually also means problems for other players. This is due to the strong financial and functional dependencies that exist between different market players, systems and sub-markets. This phenomenon is generally referred to as *systemic risk*. Combating systemic risks is also the primary motive for the involvement of central banks in these issues.

Heavier international payment traffic, and increased cross-border financial activity in general, thus involves problems. But it involves far more than only problems – on the contrary, greater internationalisation is basically a favourable trend. Just as the – reasonably – free trade in goods and services has contributed to higher economic growth and improved prosperity – not least in Sweden – financial free trade also results in major efficiency gains. Capital resources can be allocated where they provide the greatest benefit. Meanwhile a more efficient financial system also supports international exchanges of goods and services. Yet it is also clear that the rapid liberalisation of the international financial market has involved various transitional problems. Legal frameworks, infrastructures, market cultures, risk management and so on have not always kept up with market expansion. The events of this past year in a number of Asian economies can partly be viewed as an expression of this.

As we have indicated, a more specific problem in this context is the lack of a transparent, secure and efficient infrastructure for handling the growing volume of transactions. The infrastructure that we have today is essentially the legacy of an age when both needs and technical possibilities looked entirely different.

Much has been done, and much remains to be done

The 1993 "Noël Report"[2] – one of the joint reports published by the G10 central banks – discussed a number of conceivable, more or less far-reaching ideas for improved cross-border payment arrangements, in which central banks individually or collectively could play an active role. It also tried to describe and evaluate the advantages and disadvantages that different arrangements might have, viewed from a central bank standpoint.

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According to the Noël Report, one step that central banks could take was to provide "intraday finality" in their payment systems, that is, enable payments to be completed/settled at the same time they were initiated, or at least in the course of the same day. The report also suggested expanding business hours in order to create overlaps between time zones. It also pointed to the potential for creating links between different national payment systems, as well as systems and techniques for simultaneous multicurrency settlement.

In the latter case, the Noël Report discussed variations on a "common agent", that is, the creation of an institution owned by central banks and entrusted with handling simultaneous settlements of payments in different currencies. This would primarily enable the banks to eliminate the "Herstatt risk", the risk that arises in a foreign exchange transaction when, for various reasons, there is a time gap between payment of one currency and delivery of the other currency. These credit exposures are relatively brief – usually 1–3 days – but involve very large amounts[3] and thus comprise a significant global systemic risk.[4] The Noël Report did not, however, recommend any particular model.

Although 1993 was not such a long time ago, a lot has happened since the Noël Report was published.

First, a number of ideas and proposals discussed in the report have largely been implemented. To take one important example, this applies to the creation of mechanisms for initiating and settling payments on the same day. The report described this as a precondition and platform for a good deal of the other risk reduction measures it discussed. The response has been the introduction of real-

[2] *Central Bank Payment and Settlement Services with Respect to Cross-border and Multi-currency Transactions*, Basle, 1993.

[3] At the global level, these exposures have been estimated at roughly USD 3–4 trillion per day.

[4] These issues were later subjected to extensive analysis by BIS/G10. See *Settlement Risk in Foreign Exchange Transactions* ("The Allsopp Report"), Basle, 1996, and *Reducing Foreign Exchange Settlement Risk: A Progress Report* ("The Sweet Report"), Basle, 1998.

time gross basis (RTGS) payment systems.[5] In RTGS systems, payments are continuously processed one by one throughout the period that the system is open. Each central bank – in exchange for collateral – provides system participants with the necessary liquidity to avoid temporary halts in payment flows. This concept has now been introduced by all the G10 central banks (with one exception) and in all EU countries. In the latter case, the national RTGS systems form a common network – the Target system – which will go live when the eleven-nation European Economic and Monetary Union (EMU) becomes a reality in January 1999.

Second, the G10 central banks have intensified their analysis of "Herstatt risk" and formulated explicit recommendations to banks aimed at reducing these risk exposures. In addition, the central banks – among other things to support reduction of these risks – have substantially extended the business hours of their payment systems. This is true of the United States (Fedwire), Japan (BOJ-NET) and, starting on January 1, 1999, the EU (Target). In addition, banks and other financial service companies have taken important initiatives in recent years to reduce risks in this field.

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A number of systems for multilateral or bilateral netting of currency positions between participating banks, at least in major currencies, have been designed and introduced. One example is the ECHO system. The stability characteristics and risk management features of these systems have been thoroughly examined and evaluated by the affected central banks, based on the "Lamfalussy" criteria.[6] Many banks are now working together to design a system with the capacity to eliminate "Herstatt risk" for those currencies and participants in the system[7] of which ECHO will

[5] RTGS = real-time gross settlement. It is worth mentioning that the Riksbank was one of the first to introduce the RTGS concept. The Riksbank's RIX system has worked on a gross basis since 1990. The alternative to "transaction by transaction" (that is, gross) is to aggregate a number of payments in order to settle these "in one bunch", ordinarily once a day. Such solutions usually involve some form of netting between the affected parties. In other words, only the net amount is transferred between two parties (bilateral netting) or vis-à-vis all the parties in the system (multilateral netting). The advantage of such arrangements – which are very common in the securities field, for example – is that liquidity requirements and transaction costs diminish. The disadvantages are that payments cannot be effected as quickly and that if one party has financial or technical problems when settlement is scheduled to occur, all parties in the system may be adversely affected. In a system that handles large sums, this may lead to large-scale liquidity problems and systemic risks. In 1990 the G10 central banks published a number of guidelines on how such systems should be designed to ensure reasonable stability characteristics, the "Lamfalussy standards". The fact that most central banks have chosen the RTGS concept for their interbank systems thus does not mean that RTGS is the only acceptable model for all clearing and settlement. The choice of arrangement must ultimately be determined by what kind of transactions are intended, how large amounts are involved, the financial status of the participants and the costs of various solutions.

[6] See the preceding footnote.

[7] For a detailed description and analysis of these various facilities, see the Allsopp and Sweet reports.

comprise an integral part. Briefly, this concept involves the creation of a special jointly owned bank – the Continuous Linked Settlement Bank (CLS Bank) – where participating banks can carry out simultaneous settlements between accounts in various currencies. This is a kind of private version of the central bank-owned "common agent" outlined and discussed in the Noël Report.

Concurrent with and partly as a result of the development of new systems, legal rules have also undergone improvements and clarifications. In Sweden, this has included the legal basis for netting arrangements. In the EU, a directive[8] that goes into effect shortly deals with various legal problems and unclear points that have existed in this field.

Third, the EU central banks are about to launch a common network of national payment systems called Target. For many years, there have been discussions about the creation of linking arrangements between national payment systems and other financial service systems. The practical outcome has usually been rather meagre. In recent years, however, there has been greater activity of this kind in the stock market and other fields. Due to the need to create a secure, efficient transaction system for the new euro currency – not least to enable the EMU countries to pursue a common monetary policy – the EU central banks have undertaken this task with vigour and determination.

Target is by far the largest, most important linking project ever implemented in the field of payments. It has caused many questions to be placed on the agenda, some of them new. Sometimes there were provisional answers, but still answers to these questions, enabling the system to begin operating on January 4, 1999. Despite the prevailing differences of opinion among the various EU central banks in terms of system design, it is meanwhile well worth noting that, generally speaking, the task of building a common system has proceeded very smoothly. Although it has required finding both technical and policy-related solutions that fit fifteen central banks with very different input levels in the process, the project was successfully completed. Still, although complicated, the creation of a common payment system for the new currency has been fundamentally uncontroversial as well as clearly necessary.

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By way of summary, there has been extensive, rapid progress towards a better international payment infrastructure during the past five years. Both central banks and private market players have gained important experience. But a great

[8] *Directive on Settlement Finality in Payment and Securities Settlement Systems.*

deal still remains to be done. There is consequently every reason for the central banks to try to maintain the same pace of progress during the coming five years as well.

Connecting payment systems – the European experience

As stated above, in recent years a great deal of attention has focused on "Herstatt risk", a type of risk that of course may occur under other labels in markets other than the foreign exchange market. This is especially true of the securities market, where it is customary to speak of the importance of systems that support "DvP" ("delivery versus payment"). In both cases, the heart of the problem is that at a certain stage of the process, one party is exposed to principal risk. In other words, it can lose the entire principal value of a transaction, since it has made a delivery without simultaneously receiving payment or vice versa.[9]

The risk problems largely occur due to organisational and logistic shortcomings in arrangements between and inside individual banks.

As we have indicated, there have been very good reasons for focusing on this risk. Meanwhile the G10 central banks have explicitly chosen a strategy primarily aimed at promoting private solutions. One major reason is that the risk problems largely occur due to organisational and logistic shortcomings in arrangements between and inside individual banks. Meanwhile, however, there are aspects of international payments that do not primarily involve the "DvP" or "Herstatt" problem or involve the central banks' own facilities and thus can only be solved by central banks themselves. They concern how central banks can generally improve the speed, transparency and security of international payment flows.

Lessons of the Target system

First and foremost, there are no simple or universally valid answers when it comes to building up ways of improving international payments. This is still rather virgin soil, both analytically and empirically, and many factors must be taken into account. However, the task of establishing the Target system has pro-

[9] We can also add that this type of risk exposure is so common as to be trivial in the real economy. After all, it is very common for both households and companies to pay for a delivery 10 days or one month after invoicing, for example. The difference is that the amounts are almost never of the dimensions that occur in securities and foreign exchange markets, either in absolute terms or (even less often) in relation to the balance sheets of the companies involved. Aside from the substantially smaller number of counterparties than is usually the case in trade and industry (and the generally high level of mutual financial dependence), this means that in the financial services sector, a missing payment or delivery may have dramatic consequences.

vided important lessons and raised important questions that are basically not EU-specific, but could also be usefully applied at the global level.

As we have mentioned, an RTGS system must be "lubricated" with liquidity so that it can respond to fluctuations and delays in payment flows, or in the worst case to avoid gridlocks in payment flows. This also applies to Target. In customary fashion, the central banking system will provide liquidity to market participants by extending continuous "intraday credit"[10] during the system's business hours.

To avoid allowing this lending to signify an unlimited transfer of risk to the central banks, they provide loans against full collateral consisting of securities with low or zero credit risks. Since Target is a system for cross-border payments – albeit in a single currency – "support functions" related to supplying liquidity in the form of loan arrangements and related collateral management must also follow the same policy. In concrete terms, for example, this means that securities located in one country should be available for use as collateral for loans in another and that a bank in the system should be able to transfer liquidity from a branch in one EU country to its head office in another.

From a technical and legal standpoint, this is far from unproblematic, but as indicated above, in principle the establishment of the Target system and its support functions is hardly controversial. What is controversial, and of special interest in this context, is the fact that Target encompasses all fifteen EU countries, whereas four EU countries – among them Sweden – will not be participating in the currency union from the start.

As indicated, central bank deposits from and lending to banking systems play a key role in the functioning of the *payment system*. The same is true of the other main task of the central banks: the pursuit of a *monetary policy*. Various deposit and lending facilities in a central bank are among its set of instruments for regulating liquidity and thus interest rate formation in its economy. This liquidity-generating and liquidity-regulating role can thus be regarded as the common denominator of a central bank's two main tasks.

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Every central bank is entrusted with pursuing a monetary policy for its country and currency. In the case of EMU, its member countries will pursue a com-

[10] We can add that such liquidity does not necessarily need to be supplied in the form of a loan from the central bank. In principle, the emergence of an intraday market to cover this type of liquidity needs is conceivable. Although the issue has been discussed in various contexts, so far there have been no clear signs that such a market

mon monetary policy within the framework of the European Central Bank system (ECBS). Here, too, deposit and loan facilities are part of the monetary policy arsenal. A central bank or a central bank system whose ambition is to pursue an independent monetary policy in its currency area cannot do so in a reasonable way if other central banks are allowed – or grant themselves – the de facto right to carry out liquidity-affecting operations in its currency. In light of this, the fact that a central bank provides loans only in its own currency has been regarded as a natural restriction.

To achieve a smoothly functioning, internationally integrated payment system based on real-time gross settlement (RTGS), it is necessary to find solutions that enable a central bank in one country to provide loans and to settle payments in another country's currency as well. However, this must occur *without* disrupting the monetary policy of the latter country. Or, more concretely, and looking at the situation Sweden and the Riksbank will shortly face: can the Riksbank settle euro payments and provide euro-denominated intraday loans as part of the Target system, without creating monetary policy complications for the ECB and the national central banks inside the EMU?

Intraday credit and monetary policy

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Given the practical and institutional framework of monetary policy, deposits and lending *overnight*, not during the day, are relevant to monetary policy. If it is only a matter of intraday lending outside one's own currency zone and monetary policy domain, this should thus not be a problem for monetary policy, in this case within the EMU, provided that it is possible to establish "firewalls" between intraday and overnight credit. However, several European central banks have argued that this is not possible and that there is a risk that intraday lending will "spill over" in various ways into overnight lending. They also maintain that this spillover may assume such dimensions that it will have an actual – and unacceptable – impact on monetary policy. As a practical consequence, the Riksbank and other EU central banks outside EMU will only have a limited opportunity to extend intraday euro-denominated loans as part of the Target system.

During the discussions at the ECB and previously at the European Monetary Institute (EMI), the Riksbank and others have argued that, in practice, this prob-

lem is very limited and fully manageable. In practice, a spillover would only occur in those rare instances where a bank is technically or financially in default and cannot repay its loans. Even in such cases, the effect on overall liquidity would probably be marginal. Restrictions on euro-denominated lending are therefore, according to this view, unnecessary and may harm the ability of the Target system to function smoothly.

This is not, it should be emphasised, an expression of disregard for the problem of principle. Instead it reflects the belief that the risks, in any event those affecting the EU countries and the Target system, are both limited and manageable. But to the extent that this analysis of Target can be applied to other systems and currency zones, it opens up interesting possibilities for real-time gross settlement not only of euro payments outside the euro zone but also, in principle, payments in all kinds of currencies outside their own currency zones.

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In Sweden, this might mean that in addition to a "krona-RIX" and "euro-RIX" payment system, we could also open a "dollar-RIX", a "yen-RIX", etcetera. Assuming that the above-mentioned policy problems can be resolved, the number of systems to be established would obviously be determined by existing market demand and willingness to pay for this type of payment service. In technical terms, a "dollar-RIX" system – which in this perspective should be the most realistic – would thus mean connecting RIX to Fedwire, and vice versa. It would imply that RIX had Federal Reserve approval to intermediate dollar-denominated intraday loans, provided that these were settled by the end of the day, analogous with our position as an "out-country": a non-member of EMU but a member of the Target system.

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Broad international application of such a model would be an important step forward towards a more secure and efficient payment system in a global perspective. This is not the place to evaluate to what extent such a step is possible, at what pace it can occur and what the solutions should look like. Obviously there are complications. Getting back to the "dollar-RIX" model, two complicating circumstances can be mentioned as examples, compared to the "euro-RIX" system and the link with Target. One is the time zone problem: as we know, "end of day" does not occur at the same time on both sides of the Atlantic. Another is that Fedwire applies a different regime concerning intraday loans. It works with pricing and limits, instead of accepting collateral for intraday lending.

Nevertheless, it is important to raise and analyse these issues. The European experience in this field is a unique and important contribution to such a discussion.

The question of collateral

One of the preconditions for a sound intraday lending system is that central banks limit and manage the credit risks that this entails. In Europe, in any case, lending to the banking system takes place against collateral. This consists of various kinds of securities, usually government bonds or other securities with low or non-existent credit risk.

What, then, should be the structure of collateral and collateral management in a "cross-border" context? What collateral should be accepted, and on what grounds? Should only euro-denominated securities be usable as collateral for euro loans, only USD securities for USD loans, and SEK securities for SEK loans? Should these securities also be issued and deposited in the currency zone in question?

As we have indicated, there has been rather intensive discussion of these questions between EU central banks, among other things in connection with Target. In an EMU perspective, it is obviously necessary to be able to use securities that are deposited in one part of the currency union, for example Germany, as collateral for a loan taken out, for example, by the Banque de France. Basically the problem is a practical one. The reason is that today there is no well-developed technical system for quickly and securely transferring (dematerialised) securities between different countries and systems. In other words, what we need in the long term is a kind of Target system for securities as well.[11] Otherwise this issue is actually just as relevant in a global perspective.

Beyond the technical (as well as legal) problems we have indicated, it is difficult to see any problems of principle connected with using foreign securities as collateral, whether inside or outside a currency union or currency zone. There are hardly any objective arguments as to why, for example, American T-bills or German *Bunds* could not be accepted as collateral for loans by any central bank at all, obviously with the appropriate "haircut", due to the exchange rate risk.

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[11] This kind of work is taking place under the auspices of the European Central Securities Depository Association (ECSDA), which includes the Swedish Securities Register Centre (VPC).

side Sweden as approved collateral for intraday borrowing. So far this has applied to the other Nordic countries, but the system will quite certainly be expanded if there is a market for it.

In some quarters, however, these questions have been considered controversial. As for arrangements inside EMU, for example, the minimum requirement is that securities must have been issued within the European Economic Area (EEA) to be used as collateral. A number of central banks in the EMU countries have also made it clear that they will not accept Swedish government securities as collateral if, for example, a Swedish bank branch office in their country would like to use them for this purpose. In objective terms, this is difficult to understand. The logical purpose for using collateral is as a form of protection against credit risk. Whether a given form of collateral fulfils that purpose depends, above all, on the issuer's creditworthiness, which is not primarily a function of the issuer's location or where and in what currency it has chosen to issue the securities. The use of foreign collateral should therefore not have to be controversial, notwithstanding that the practical management of this collateral may involve numerous complications of a technical and legal nature. The Riksbank has confronted a number of these complications when it has worked concretely with these issues.

A summation

Our experience in Sweden and Europe has shown that linking national RTGS systems, developing ways of settling multicurrency payments in the same country and central bank, posting collateral in one country for a loan in another, etcetera, involve numerous and complex problems, but that these problems are not insurmountable. There is consequently every reason to discuss these issues in a global perspective as well, in order to increase the security and effectiveness of worldwide payment traffic.

With all due respect for the many complicated issues raised by this kind of arrangement, there are also obstacles of a more elusive and partly psychological nature. Until now, the design and operation of payment systems have been very much a national task. This has undoubtedly affected attitudes towards these issues. The debate on payment systems has occasionally also revealed flashes of protectionism. It involves a basically political discussion on the roles and obligations of central banks vis-à-vis each other and the market. Ultimately, then, it is a matter of adopting a more open-minded approach and continuing the reorientation from national to international thinking on these issues.