

Annexes to Payment Systems Oversight Report 2007

# Detailed assessments of payment systems

February 2008 | Issue No. 4



BANK OF ENGLAND





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The Committee on Payment and Settlement Systems' Core Principles for Systemically Important Payment Systems set out the types and level of risk mitigation that should be exhibited by a safe and efficient payment system. They provide a benchmark for central banks in their oversight function, aiding the identification of relative areas of strength and weakness in the design or operation of particular payment systems. These Annexes contain the Bank's (updated) Core Principles assessments of the main UK payment systems.

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# Annex A CHAPS

CHAPS is the United Kingdom's high-value payment system, providing members with Real-Time Gross Settlement (RTGS) of credit transfers. CHAPS consists of two systems: CHAPS Sterling and CHAPS Euro, which — as their names suggest — provide settlement facilities for sterling and euro payments respectively. The following assessment covers both systems. Where the Bank assesses observance of the Core Principles to vary between the two, this is identified.

## CP I. The system should have a well-founded legal basis under all relevant jurisdictions.

The *CHAPS Rules* are clear and comprehensive and appear to provide an adequate contractual basis for the system's operation. CHAPS is designated under the *Financial Markets and Insolvency (Settlement Finality) Regulations (1999)* (the 'UK settlement finality regulations'), which implements the EU Settlement Finality Directive in the United Kingdom. Taking into account these regulations and the general principles of English law, the Bank judges that the legal basis for the enforcement of rules governing irrevocability of instructions, finality of settlement, default arrangements and collateral security is robust. Protections afforded under the UK settlement finality regulations extend equally to CHAPS Sterling and CHAPS Euro payments. However, at present, contingency payments made outside the SWIFT network are not covered by these regulations; the Bank is therefore working with CHAPSCo to redraft the legal documentation surrounding CHAPS and RTGS to remedy this.

CHAPS members' relationship with the Bank of England, as provider of settlement accounts, is governed by contracts (the *RTGS Terms and Conditions* and the *Master Repurchase Agreement*).

As a condition of continued CHAPS membership, members are obliged to comply with the technical and operational requirements of the CHAPS systems. However, CHAPS members do not sign formal contracts or acknowledgements committing themselves to abide by the *CHAPS Rules* and decisions of the CHAPS Board. To date, the lack of a formal contract or acknowledgement by members has not given rise to any risk concerns — relying on the basic principle of English law that if a member enters payments into the system, that member can be regarded as having accepted the rules of the system by conduct. The decisions to introduce such contracts

for Bacs and the C&CC suggest that the situation for CHAPS should also be reviewed, although there has been no progress here in 2007.

CHAPSCo has now completed work to confirm and provide the Bank with legal opinions that where settlement membership is held by a branch of a bank incorporated overseas, these members have the authority to commit themselves to abide by the CHAPS scheme rules, and that the home-country legal system of the parent bank would not impede the member's ability to fulfil its obligations in CHAPS. This legal work complements the Bank's own requirement for legal opinions regarding the enforceability of contracts governing the operation of RTGS settlement accounts and the supply of intraday liquidity by the Bank to all overseas/non-UK incorporated holders of RTGS settlement accounts.<sup>(1)</sup> For example, with UBS joining CHAPS Sterling in October 2007, an opinion of the enforceability of CHAPS scheme rules in Swiss law was sought and declared satisfactory.

Reflecting work to confirm legal capacity, as well as a desire by the Bank for a consistent approach to the assessment of systems designated under the UK settlement finality regulations, **the Bank assesses CHAPS to observe Core Principle I.** The Bank continues to note the case for CHAPSCo and its members to review the merits of establishing formal contracts.

## CP II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.

The CHAPS system is in principle a simple one, and the risks associated with it should be readily identifiable by members. The *CHAPS Rules* set out high-level rights and duties of members. The respective responsibilities of the Bank as operator and settlement agent, CHAPSCo as the payment scheme organisation, and the members, are set out in a Memorandum of Understanding (MoU).

All of the risk management features in CHAPS are clearly and comprehensively explained in the *CHAPS Rules* and supporting procedural documentation. A hierarchy is in place comprising rules, high-level procedures and detailed operational manuals.

(1) All CHAPS settlement members must hold such an account.

Together, these documents cover all aspects of CHAPS operation and design, both in normal running and in contingency situations.

The settlement process does not give rise to credit risk between settlement members other than in bypass mode. Procedures for processing and settlement are covered by the *CHAPS Procedures* and the *RTGS Reference Manual*. The rules relating to the irrevocability and finality of payments are clear. The *Procedures and the Reference Manual* also explain the controls and measures designed to minimise liquidity risk. These include throughput guidelines, operation of 'circles' processing to minimise the risk of gridlock, and the transfer of sterling liquidity in contingency situations (Core Principle III).

Formal responsibility for determining the *Rules* rests with the CHAPSCo Board. The Board has delegated responsibility to the CHAPSCo Legal Committee for ensuring that the *Rules* remain robust and up-to-date, and for considering proposed changes.

**The Bank assesses CHAPS to observe Core Principle II.** This assessment is unchanged from last year.

**CP III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.**

In an RTGS system such as CHAPS, the settlement process does not give rise to the credit risk that can be involved in deferred settlement. Domestic payments are both irrevocable and final at the point at which the relevant member's settlement account is debited.

The main form of financial risk associated with RTGS is liquidity risk. CHAPS payments cannot be made unless the paying bank has sufficient funds (or liquidity) available on its settlement account with the Bank of England. If there were insufficient liquidity in the system as a whole (or if it was not distributed sufficiently well) to permit a regular flow of payments, the result could be gridlock. Liquidity pressures could also arise as a result of time-critical payments, such as those associated with CLS pay-ins, being delayed. However, there is no evidence of CHAPS members experiencing liquidity management difficulties in meeting CLS pay-in deadlines.

To reduce liquidity risk, the Bank provides intraday liquidity to all CHAPS Sterling members, limited only by the availability of eligible collateral. Additionally, members can use balances held with the Bank as part of the Reserves Scheme to fund payments. For CHAPS Euro, the Bank has been able to raise intraday euro liquidity of between €2.7 billion and €3.3 billion each day, and members are able to raise additional liquidity

within the euro area and transfer this through TARGET and CHAPS Euro. However, these arrangements will cease with the closure of CHAPS Euro in May 2008, although a liquidity bridge will remain. This will allow CHAPS Sterling members to transfer euro payments between their TARGET2 accounts and their CHAPS member balance group account to enable euro cash to act as collateral for the provision of sterling intraday liquidity.

To aid liquidity management, all banks have real-time information on balances and the status of payment messages, with additional real-time monitoring by Bank of England operators. Both central and local schedulers enable members to manage the order in which payments settle, though the majority of members use local scheduling tools.

In addition, throughput guidelines (the requirements for banks to settle certain proportions of their total payments by certain times), are in place, partly to stop settlement banks 'hoarding' liquidity. As noted in previous *Oversight Reports*, there has been a deterioration in member throughput performance in the past couple of years, with a few CHAPS members consistently breaching throughput requirements. But as noted in Section 2.1, this deterioration appears to reflect structural changes in the distribution of when CHAPS payments are made, rather than member liquidity constraints. CHAPSCo procedures now provide an opportunity for members breaching throughput requirements to demonstrate they had sufficient liquidity available to meet those requirements had they needed to release payments. CHAPSCo are still analysing the cause of the throughput breaches and will consider whether more comprehensive changes to throughput requirements (which remain an important mitigant for liquidity risk) are warranted.

An additional liquidity-saving feature of CHAPS enables members to submit CHAPS Sterling payment messages to the RTGS processor without necessarily posting sufficient liquidity for the payments to settle. Instead, a member can queue outgoing payment messages within the RTGS processor until liquidity becomes available from, for example, incoming payments. 'Circles' processing — whereby offsetting payments are settled on a 'simultaneous gross' basis — can be used to clear any build-up of queues.

In extreme scenarios, if there is a risk that liquidity might get drained from the system because a member is unable to send but can still receive payments, the Sterling Liquidity Contingency Regime can be invoked.

Evidence suggests that the procedures currently in place are effective for controlling liquidity risk. Bank analysis continues to show that system participants have ample liquidity to cope with temporary operational difficulties affecting even the largest members. CHAPS remains a liquidity rich system.

**The Bank assesses CHAPS to observe Core Principle III.**

This assessment is unchanged from last year.

**CP IV. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.**

A settlement bank receiving a payment instruction receives value from the paying bank simultaneously and with finality. The designation of CHAPS under the UK settlement finality regulations should prevent successful legal challenge to the finality of settlement in the event of member insolvency.

**The Bank assesses CHAPS to observe Core Principle IV.**

This assessment is unchanged from last year.

**CP V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.**

This Core Principle is not relevant to CHAPS in normal operational mode, as settlement of payments is conducted on a gross rather than net basis. Netting would apply only if CHAPS Sterling's first and second levels of contingency proved inadequate and bypass mode were to be invoked. This has never been necessary.

In bypass mode there are no arrangements to ensure that settlement of net obligations could be completed in the event of a settlement member being unable to provide the necessary funds. Since 2003, all commercial bank settlement members have had in place 'net sender caps', limiting multilateral net obligations to the amount of unused intraday liquidity that the member had posted with the Bank (if this information is available via the RTGS contingency database) or £1 billion (if this information is not available).

Given the very low likelihood of a member being unable to meet its settlement obligations coincident with operation of bypass mode, it is important to ensure mitigants for such settlement risk are proportionate. The Bank has considered the range of mitigants available to further reduce settlement risk in bypass mode. That work has identified increasing the number of settlement cycles from a single end-of-day cycle to multiple cycles as potentially delivering the greatest risk-reducing benefit in a cost-effective manner. CHAPSCo has initiated work to better understand the operational implications of multiple settlement cycles in bypass mode. The Bank and CHAPSCo are now discussing the effects on settlement risk of introducing an extra settlement cycle.

**CP VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.**

Settlement between CHAPS Sterling and CHAPS Euro members takes place by transfers of claims on the Bank of England. **The Bank assesses CHAPS to observe Core Principle VI.** This assessment is unchanged from last year.

However, previous *Oversight Reports* have noted that only members of CHAPS enjoy the risk-reduction benefits of settlement in central bank money, which CHAPS' highly tiered membership structure restricts to a limited number of banks. UBS' joining in 2007 is thus a welcome development.

**CP VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.**

CHAPS' security controls and measures appear to be effective. The system's record of operational availability is good, notwithstanding the incident that occurred on 12 February 2007, as detailed in Section 2.1. Contingency procedures are tested regularly and external audits of both CHAPSCo's control framework and of the Bank's operations take place every year.

CHAPS' controls are set out in documents such as the *Security Policy* and the *Security Code of Conduct*. The former is a high-level policy description covering end-to-end clearing, which is reviewed annually (or additionally when major changes occur) and approved by the CHAPSCo Board. CHAPS Internal Audit periodically reviews how the policy is being maintained. The *Security Code of Conduct* implements the CHAPS *Security Policy* at a lower level and specifies a range of security controls that CHAPS members and suppliers are expected to have in place. Members are required to self-certify compliance with the Code annually.

Operation of the core RTGS processing infrastructure is outsourced by CHAPSCo to the Bank. The MoU (Core Principle II) lists a wide range of performance measures for the Bank, including ensuring that settlement facilities are available on average for 99.95% of the operating day over the course of each month. RTGS met this requirement for eleven of the twelve months in 2007, the same as in 2006.

CHAPSCo and the Bank's operational area have processes in place to monitor, review and follow-up on operational incidents that affect RTGS. These processes have proved effective in ensuring that technical errors and problems are dealt with and rectified quickly. However, it is also important that the wider aspects of incidents are considered and their potential implications fully understood.

Members also play a key role in the smooth operation of the system and CHAPS places high importance on the resilience and robustness of members' feeder systems and interfaces with CHAPS. The *Procedures* set out various guidelines for the service levels expected of members, and there are arrangements to enable CHAPSCo to monitor and assess members' performance. Under the guidelines, among other requirements, members are expected to minimise requests for 'cut-off extensions' of the daily CHAPS timetable. Too many requests for extensions (or other breaches in Service Level Code criteria) can result in a member being asked to appear before a so-called 'Star Chamber'. At the hearing, a member will be asked to set out the steps it is taking to restore its level of service to the expected level. Thereafter, CHAPSCo will liaise with the member and monitor implementation of remedial changes against an agreed plan.

CHAPS' business continuity resiliency and recovery procedures are extensive and, through initiatives such as the Tripartite Resilience Benchmarking Project, which was repeated at the end of 2007, have been shown to be of a high standard. However, internationally, the benchmark for the resilience of the most important parts of financial infrastructure has been rising. It is therefore appropriate to continue to review the adequacy of CHAPS' contingency arrangements and, if necessary, look for ways to strengthen them further. Given that bypass mode can provide CHAPS Sterling with a further layer of contingency, it is important that the associated outstanding issues concerning settlement risk are addressed.

There has been some progress in two major areas of business continuity testing in 2007. First, a generally successful test was carried out of the fax-based contingency arrangements for settlement, established to accommodate problems affecting the ability of CHAPS members to connect to SWIFT. Whilst the likelihood of such connectivity problems, particularly affecting multiple members, is very low, the disruptive impact on the operation of CHAPS and settlement of critical payments could be large. Consequently, it remains important to test contingency arrangements designed to mitigate such an impact. Second, the ability of all CHAPS members to submit payments from their remote sites simultaneously was tested. This contingency may be required if a terrorist incident or natural disaster affects a wide area of the City or Canary Wharf. All members managed to connect and send payments from their remote sites, although several lessons emerged. The Bank welcomes the developments in both of these areas of contingency testing and would like to see increasingly challenging exercises of this kind in future.

**The Bank assesses CHAPS to observe Core Principle VII** and continues to encourage CHAPS to reinforce further its contingency arrangements.

### **CP VIII. The system should provide a means of making payments which is practical for its users and efficient for the economy.**

Although charges for customers wanting to use CHAPS for retail payments are typically high relative to the underlying tariffs (which, together with fees, cover the operating costs of CHAPS, including the services provided by the Bank), banks are free to compete in this market. Settlement member banks can also compete freely to attract third-party participants.

RTGS systems impose high liquidity demands on their direct participants, but the Bank provides collateralised intraday liquidity free of charge, and there is no evidence that members lack adequate collateral (in part because many current members must hold such assets to meet end-of-day regulatory liquidity requirements and are free to use them intraday in the payment system). Remunerated reserves, introduced by Money Market Reform (MMR) in 2006, have increased the range of liquidity sources available to CHAPS Sterling members and earlier changes to allow queuing of payments have introduced further liquidity efficiencies (Core Principle III).

Going forward, the introduction of the new Faster Payments service is expected to result in reduced CHAPS Sterling volumes, potentially increasing the average cost of making RTGS payments. However, the *value* of payments using the system should be largely unaffected, insofar as there are a subset of large-value payments which should continue to settle on a real-time basis because of their systemic characteristics. To ensure CHAPS remains a practical, economically attractive way for making these payments, CHAPSCo and the Bank will need to carefully consider their response to the cost implications of volumes migrating to Faster Payments. One response could be to seek convergence of the RTGS and Faster Payments infrastructures. CHAPSCo is well-placed to shape that debate through consideration of its future requirements of a RTGS infrastructure, which is being articulated through the company's RTGS Regeneration and Renewal workstream.

**The Bank assesses CHAPS to observe Core Principle VIII.** This assessment is unchanged from last year.

### **CP IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.**

The Bank considers CHAPS access criteria to be objective and fair and welcomes the fact that UBS has joined CHAPS Sterling in 2007. Access criteria are defined in the *Rules* and are available on the CHAPS website. Membership is restricted to financial institutions that hold sterling and/or euro settlement accounts at the Bank and have the ability to comply on a

continuous basis with the technical and operational requirements of the CHAPS systems, as set out in the reference documents. Membership of CHAPS Euro is subject to additional requirements, as set out in Article 3 of the *TARGET Guidelines*.

The Bank will normally be prepared to provide a settlement account to any member of a payment system for which it is prepared to settle. Differences in facilities offered by the Bank (in particular the availability of intraday credit) are determined using objective, risk-based standards. The Bank's settlement account criteria are available on its website.<sup>(1)</sup> All banks holding settlement accounts are part of the reserve scheme introduced by MMR, and have access to standing facilities.

In 2005, the CHAPS entry fee for new members was reduced from £100,000 to £70,000 (prior to 2001, the fee was £1 million). The fee is justified by CHAPSCo as a contribution to the technical costs for the scheme company and existing members of adding new members to the system. The Bank continues to question, on the basis of the factors cited in previous *Oversight Reports*, the appropriateness of this fee and therefore continues to encourage CHAPSCo to review the basis on which it is set.

**The Bank assesses CHAPS broadly to observe Core Principle IX.** This assessment is unchanged from last year.

**CP X. The system's governance arrangements should be effective, accountable and transparent.**

CHAPSCo has a clear governance structure, with the Board having ultimate responsibility for the management of the system. The Bank considers the Board to exercise effective control over the Company's executive.

The CHAPS Board is composed entirely of settlement member banks, which have both the incentives and tools to pursue the interests of the system and settlement members. Incentives for management to pursue the interests of the wider population of stakeholders are less clear, though the Bank of England provides one of the Board directors.

New governance arrangements for UK payment systems were introduced in 2007 with the creation of the Payments Council. CHAPSCo now has a contractual relationship with the Payments Council under which the scheme complies with directions given by the Council board in relation to, *inter alia*, strategic issues, innovation and integrity.

Although the Payments Council was created in 2007, consultations and decisions in relation to the strategic direction of UK payments are at an early stage. Therefore, **the Bank still assesses CHAPS broadly to observe Core Principle X.** The Bank will review this assessment again in the light of developments in 2008.

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(1) Bank of England (2002), *Bank of England Settlement Accounts*, available at [www.bankofengland.co.uk/publications/psor/](http://www.bankofengland.co.uk/publications/psor/).

# Annex B CREST

CREST is the United Kingdom's securities settlement system, providing a Delivery-versus-Payment (DvP) settlement service for UK securities.

CREST has three payment systems:

- Real-Time Gross Settlement (RTGS) in central bank money in sterling;
- RTGS in central bank money in euro; and
- a bilateral net settlement arrangement for transactions settled in US dollars.

This assessment covers all three, differentiating between them as necessary.<sup>(1)</sup> Payment systems are by their nature collaborative ventures. In conducting this assessment, a distinction is drawn between the systems and procedures operated by CREST, for which Euroclear UK & Ireland Ltd (EUI)<sup>(2)</sup> is responsible; and the overall payment arrangements supporting securities settlement, which are a collaboration between EUI, the Bank of England (for sterling and euro settlement) and the CREST settlement bank community.

## CP I. The system should have a well-founded legal basis under all relevant jurisdictions.

CREST is designated under the *Financial Markets and Insolvency (Settlement Finality) Regulations* (1999) (the 'UK settlement finality regulations'), which implements the EU Settlement Finality Directive in the United Kingdom, so that the finality of both securities and payment transfers (including those effected through all three payment systems) is protected from legal challenge in the event of an insolvency. The protection provided by the UK settlement finality regulations also extends to the CREST settlement banks' arrangements for taking collateral to secure their customers' debit caps. There are bilateral and multilateral contractual arrangements between EUI, the Bank and the CREST settlement banks governing the operation and provision of the DvP payment arrangements in sterling and euro (including the operation of settlement accounts at the Bank of England and the self-collateralising repo mechanism that may be used by CREST settlement banks to generate intraday liquidity from the Bank). These contracts are governed by English law. Even in the case of CREST settlement banks that are the branches of banks incorporated outside the European Economic Area, EUI has obtained legal opinions confirming that these banks have the authority to commit themselves to abide by the relevant rules, and that the

relevant home-country legal systems of the parent banks would not interfere with those bank's ability to fulfil their obligations. **The Bank assesses the CREST sterling and CREST euro payment arrangements to observe Core Principle I.**

The US dollar payment arrangements are currently supported by end-of-day settlement of bilateral net obligations between pairs of settlement banks. The arrangements for such settlement are part of the overall relationship that each settlement bank has with its US dollar correspondent in the United States, and fall outside the scope of EUI's responsibility. Although the US dollar arrangements have been given the protection of the UK settlement finality regulations, and involve settlement of bilateral rather than multilateral net obligations, it remains unclear whether the provisions of US insolvency law might prevent completion of an orderly settlement in the United States if a US-incorporated CREST settlement bank failed. **The Bank assesses the CREST US dollar payment arrangements broadly to observe Core Principle I.**

## CP II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.

The payment arrangements do not have their own separate rules and procedures; instead, there are rules and procedures governing the DvP arrangements for the three settlement currencies included in CREST documentation (the *CREST Rules and Manual*) and, for the sterling and euro payment arrangements, in the RTGS documentation (specifically the *RTGS Reference Manual*). CREST documentation also describes in detail the operation of members' Cash Memorandum Accounts (CMAs) and the management of CMA debit caps. This documentation is updated regularly. Over the past year, the US dollar CREST settlement banks and EUI investigated the possibility of improving the payment mechanism to reduce the size of the interbank exposures generated. They concluded that potential risk reduction measures were either

(1) While the assessment focuses on the payment arrangements between the 14 CREST settlement banks, these settlement bank arrangements are underpinned by payments between over 45,000 CREST members across Cash Memorandum Accounts (CMAs) held with settlement bank members. Payment obligations arise between settlement bank members when a trade takes place between members that hold CMAs at different settlement banks.

(2) Formerly CRESTCo Ltd.

disproportionate or would not lead to a significant risk reduction (see Core Principles III and IV). **The Bank assesses CREST's payment arrangements to observe Core Principle II.**

**CP III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.**

As sterling and euro CREST settlement banks settle their obligations across central bank accounts in real time, these two payment arrangements generate no credit risk between settlement members. There are likely, however, to be credit exposures between settlement members and the members to whom they offer CMAs. EUI provides the technical and legal infrastructure to reduce the exposure of settlement members to second-tier members by means of collateralisation (and such collateralisation has the protection of the UK settlement finality regulations — see Core Principle I). The extent to which uncollateralised credit is granted depends on the terms of the agreement between each settlement bank member and its customer. Responsibility falls clearly to the parties who would bear any losses in the event of default.

Liquidity risk could arise in the sterling or euro payment arrangements if settlement members were unable to raise the liquidity to settle transactions, or unable to repay intraday liquidity provided by the Bank of England. Liquidity can be raised in CREST either by transfer from CHAPS, or, in the case of CREST sterling, by self-collateralising repo to the Bank of England. The mechanism for transferring liquidity between the CREST settlement accounts and the banks' CHAPS settlement accounts has proved reliable and flexible. Settlement banks can consider the two accounts as a 'virtual single pot' of liquidity, with the option of repositioning balances between the accounts after each of over 200 CREST settlement cycles each day. The rules on generating and transferring liquidity are set out in the *RTGS Reference Manual*.

By value, 98.2% of CREST transactions settled on their intended settlement date in 2007. There is no indication that liquidity shortages are the cause of the failure to settle the remainder, even in the period of market turbulence, during which there were record volumes and values of market transactions. Both the RTGS and CREST documentation describe the responsibilities of the different parties involved in the daily operation of the DvP mechanism in contingency as well as normal conditions. **The Bank assesses CREST sterling and CREST euro payment arrangements to observe Core Principle III.**

The payment arrangements supporting CREST US dollar settlement are deficient in a number of respects as regards

Core Principle III. Settlement banks take on their CREST customers' gross bilateral payment obligations during the CREST settlement day. These are converted into bilateral net obligations only at the end of the day and the obligations are not extinguished until the settlement banks' US dollar correspondents have made the necessary payments on their behalf in the United States. Settlement banks have arrangements with their clients which would allow them to claw-back funds they have paid to their clients if they themselves fail to receive payment (for example, in the event of a default by another settlement bank). These arrangements are specified in bilateral agreements between each CREST member and its settlement bank. Assuming such arrangements are enforceable, members are exposed to the risk that, having delivered a security, they fail to receive payment (or payment is clawed-back) because their counterparty's settlement bank has failed to deliver.

To the extent that settlement banks pre-fund their accounts at their US dollar correspondent, they are subject to the small risk of settlement agent failure until the settlement is completed. Participants, however, have the right incentives to manage these risks.

Although US dollar settlement values remain modest relative to those for sterling settlement, they have risen significantly over the past four years, increasing from a daily average value of US\$0.5 billion until end-2003 to approximately US\$9.5 billion end-2006. Daily US dollar settlement values have been volatile throughout 2007, fluctuating by over US\$20 billion. In 2007, average daily values were approximately US\$12.8 billion.

In October 2006, CRESTCo (now EUI) established a working group to consider how these risks could be significantly and permanently reduced. The group concluded that measures used in other systems (including collateralisation agreements, the introduction of RTGS or a move to multilateral net settlement) were either disproportionate to the risks involved or would not significantly reduce the largest exposures. This conclusion reflects the high concentration of activity at a settlement bank level and the fact that values are driven by a limited number of extremely large transactions.

It is however most important that settlement banks and CREST members understand these risks and have in place the appropriate systems and controls to manage them. During 2008 the FSA will be raising this issue with major participants in the CREST US dollar settlement arrangements as part of its ongoing supervisory relationship with these firms.

Since there have been no changes to mitigate US dollar settlement risks, **the Bank continues to assess the current US dollar payment arrangements partly to observe Core Principle III.**

**CP IV. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.**

There are no material changes to report in respect of this Core Principle compared to last year's assessment. For sterling and euro settlement, the payment arrangements offer real-time finality of the settlement banks' gross obligations at the end of each CREST settlement cycle. Cycle duration on the Single Settlement Engine (SSE) is determined by a time-based parameter agreed by EUI and the Bank. There are typically between 200 and 250 settlement cycles per day.

For the US dollar payment system, cash finality is achieved when the bilateral interbank payments are settled in the United States. Given the time difference, it may be that a settlement bank does not become aware that finality has been achieved until the following morning. Since there have been no changes to the US dollar settlement arrangements, **the Bank assesses CREST sterling and CREST euro payment arrangements to observe Core Principle IV, and the US dollar payment arrangements partly to observe Core Principle IV.**

**CP V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.**

None of the CREST payment arrangements employ multilateral netting, so this Core Principle is not relevant to CREST arrangements.

**CP VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.**

Interbank settlement in both the sterling and euro payment arrangements takes place in central bank money. Although the tiered nature of the CREST settlement arrangements means that non-settlement bank CREST members receive a claim on a commercial bank (a CMA balance) in final settlement of their transactions, such CMA postings generate an irrevocable instruction to the Bank to debit the settlement account of the buyer's settlement bank and credit the settlement account of the seller's settlement bank. For the US dollar payment arrangements, the interbank settlement involves transfers of funds between major US correspondent banks. **The Bank assesses CREST sterling and CREST euro payment arrangements to observe Core Principle VI, and the US dollar payment arrangements partly to observe Core Principle VI.**

**CP VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.**

CREST's sterling and euro payment arrangements rely on the Bank-CREST DvP link. If the link between CREST and the Bank of England's accounts were interrupted, or in the event of an operational failure of the Bank's RTGS system, CREST is able to continue settling in 'recycle mode'. This involves CREST continuing settlement using the last verified set of settlement bank liquidity postings, with a contingency facility for banks to top up and draw down such liquidity. Both CREST and RTGS have back-up processing capability that can be made fully operational within an hour of a major failure at the prime site. These arrangements are tested regularly.

The US dollar payment arrangements operate on a highly decentralised basis. There have been very few instances (and they have involved small bilateral net payments) of the end-of-day settlement not completing on the day because of operational difficulties.

Following CREST's migration to the SSE in August 2006, CREST experienced a number of operational problems. Operational problems have continued in 2007 — there have been six major outages.<sup>(1)</sup> However the majority of these outages were not caused by problems related to the SSE. Two recent outages were caused by manual error. These problems have caused considerable inconvenience for some members, and, on occasions, significant extensions to the settlement day, with knock-on effects in CHAPS.

EUI continue to monitor, review and follow up these operational incidents; and have implemented permanent fixes to address known software issues. In addition, a further programme of software releases is planned for the coming year, which should strengthen operational stability. EUI also have plans to improve the robustness of testing and the effectiveness of incident reporting. Many of these follow-up actions were outlined in Euroclear SA's Post Implementation Review, described in the 2006 *Oversight Report*.

Reflecting recent operational incidents, **the Bank assesses CREST's payment arrangements broadly to observe Core Principle VII.** A sustained period of operational stability should strengthen observance of Core Principle VII.

(1) Lasting over one hour for sterling settlement. This figure only includes outages caused by operational problems with the EUI-owned CREST system.

**CP VIII. The system should provide a means of making payments which is practical for its users and efficient for the economy.**

There are no material changes to report in respect of this Core Principle compared to last year's assessment. CREST serves over 45,000 members who range from private clients (the vast majority) to banks and broker dealers, generating a mixture of low, medium and high-value payments. As mentioned under Core Principle III, in 2007, 98.2% of trades by value (92.5% by volume) settled on their intended settlement date. The liquidity transfer mechanisms supporting the sterling and euro payment arrangements appear practical, and the self-collateralising repo mechanism enables settlement banks to economise on the liquidity devoted to the sterling payment arrangements. **The Bank assesses CREST's payment arrangements to observe Core Principle VIII.**

**CP IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.**

A prospective CREST settlement bank has to meet EUI's participation criteria (which are also applied to other CREST participants or users). These criteria are both objective and publicly disclosed (in the *CREST Rules and Terms and Conditions*). The *CREST Manual* also describes the functions which a CREST settlement bank is required to perform. However, the Bank and the existing CREST settlement banks have a right to determine whether a prospective participant should be admitted as a CREST settlement bank. This right is represented in an *Agreement of Adherence* that EUI, the Bank, the existing settlement banks and any prospective participant have to agree and sign. The Bank published its policy on the provision of CREST settlement accounts in November 2002. In 2003 it became possible to become a member of the sterling and/or euro embedded payment arrangements without also being a member of CHAPS.

Over the past two years, EUI have been working with the CREST settlement bank community and the Bank to ensure that all criteria which apply to settlement bank access (and ongoing participation) are publicly disclosed. A new rule ('Rule 16') was published in January 2008. The rule draws together EUI's own participation criteria, the Bank's policy on the provision of CREST settlement accounts and criteria specified by the existing settlement banks. It also details orderly exit procedures in the event that an existing settlement bank were to fall below the requirements specified. The criteria focus on aspects important to the continued smooth functioning of the payment arrangements supporting CREST settlement and seem suitable for controlling the risks that arise in the system. The settlement banks have sought legal advice to ensure that the criteria specified are objective and fair. Reflecting completion of work in this area, **the Bank**

**has upgraded its assessment of Core Principle IX to fully observed.**

**CP X. The system's governance arrangements should be effective, accountable and transparent.**

As mentioned under Core Principle I, the provision of sterling and euro payment services is governed by a variety of contracts between EUI, the Bank and the individual members of the payment systems. These detail which elements of the sterling and euro payment arrangements each party is responsible for, and are supported by external audit, with both RTGS and CREST subject to an external SAS 70 audit. The governance arrangements of CREST as a system have a number of desirable features, in particular the involvement of independent Board directors within the Euroclear corporate structure. These help maintain accountability of the EUI executive and ensure that wider public interest objectives are considered. However, the operational problems following the SSE launch highlighted a number of areas where improvement to the governance of the CREST system might be desirable, in particular, ensuring clarity of roles between ESA and EUI.

There are a variety of fora at which the interests of the CREST community can be represented. These include the UK Market Advisory Committee: a consultative body set up as part of the Euroclear group's policy to ensure a high degree of user governance in the various national markets where Euroclear provides settlement services.

The settlement banks, EUI and the Bank have held meetings to discuss operational and business issues related to payment systems. In February 2007, EUI established a new Settlement Bank Committee to act as a dedicated forum for discussion of issues relating to the interbank payment arrangements. The Bank welcomes this regular interaction between settlement banks and EUI.

The 2006 *Report* noted the weaknesses in change management revealed by the operational problems following the SSE launch. The Bank has met with EUI senior management to discuss the actions designed to address issues highlighted in the Post Implementation Review. Although these actions have largely been implemented, the Bank would like to see evidence that the improvements to change, configuration and release management scheduled for 2008 are implemented effectively. Consequently, **the Bank continues to assess the payment arrangements partly to observe Core Principle X.** The Bank will review this assessment once further evidence is available.

# Annex C LCH.Clearnet Ltd

LCH.Clearnet Ltd provides central counterparty services for the clearing of equities, commodities and derivatives. It clears for both exchange-traded and OTC markets.

LCH.Clearnet Ltd operates a payment mechanism to effect transfers of funds to and from its members in the currencies in which it incurs exposures. This is known as the Protected Payments System (PPS). The PPS is the mechanism by which LCH.Clearnet Ltd discharges obligations relating to cash-settled transactions, collects initial margin and transfers variation margin.<sup>(1)</sup> The PPS consists of a network of commercial banks, which provide a settlement bank service to, and process payment transfers between, LCH.Clearnet Ltd and its members. LCH.Clearnet Ltd holds an account at each PPS bank and each member must have an account at a PPS bank in each currency in which it does business. For each currency, there is also a 'concentration bank' for LCH.Clearnet Ltd. Positive balances on LCH.Clearnet Ltd's accounts at the PPS banks as a result of the transfers between LCH.Clearnet Ltd and members are collected in LCH.Clearnet Ltd's account at the concentration bank. LCH.Clearnet Ltd meets any net debit positions with PPS banks, as well as investing surplus funds in the money market, through its concentration bank account.

The PPS in fact consists of two separate systems. The UK PPS is used for making calls (member debits) and pays (member credits) during the day. A second PPS operates in the United States (the US PPS), which is used to meet intraday margin calls made late in the day after the UK payment systems have closed. Given that average daily flows in the US PPS are less than 1% of the average daily flows in the UK PPS, the risks present within the US arrangements are much smaller than in the UK PPS. The US PPS is therefore not covered in this assessment, except where explicitly mentioned.

## CP I. The system should have a well-founded legal basis under all relevant jurisdictions.

The arrangements for transfer of payments between LCH.Clearnet Ltd and its members through the UK PPS are governed by English law. The PPS is covered by LCH.Clearnet Ltd's designation under the *Financial Markets and Insolvency (Settlement Finality) Regulations* (1999) implementing the EU Settlement Finality Directive in the United Kingdom (the 'UK settlement finality regulations'). Under these regulations, payment transfer orders through the PPS are protected from the potentially disruptive effects of insolvency proceedings

against participants in the system. Separate *Settlement Finality Regulations* form part of LCH.Clearnet Ltd's *General Regulations, Default Rules and Procedures*. PPS banks that are not members of LCH.Clearnet Ltd are also signatories to the same *Settlement Finality Regulations*. In addition, LCH.Clearnet Ltd has obtained legal opinions to confirm that members who are not resident in the United Kingdom are able to commit to governance of their relationship with LCH.Clearnet Ltd under English law. **The Bank assesses the PPS in the United Kingdom to observe Core Principle I.**

## CP II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.

The participants in the PPS comprise LCH.Clearnet Ltd, its members, the PPS banks and the concentration banks. LCH.Clearnet Ltd's *General Regulations, Default Rules and Procedures* contain a section (*Settlement Finality Regulations*) setting out how the PPS operates and the obligations of the various parties. The *Settlement Finality Regulations* also define when payment transfers are considered to have entered into the system, and the point at which they become irrevocable. Members of LCH.Clearnet Ltd are required to sign a PPS mandate, which grants permission for the PPS bank to debit the member's account according to instructions received from LCH.Clearnet Ltd. This mandate states the actions that the PPS banks are able to take without seeking further authority from the member.

PPS banks sign a *PPS Agreement* with LCH.Clearnet Ltd, which explains the obligations of each PPS bank in the system. The *PPS Agreement* fully explains the financial risks that PPS banks incur during the transfer process, particularly with regard to sending payment confirmations. The US *PPS Agreement* also explains financial risks to a similar level. **The Bank assesses the PPS to observe Core Principle II.**

(1) 'Initial margin' is a returnable deposit required from a member for each open position, designed to offset the costs to LCH.Clearnet Ltd of settling open positions in the event of member default. 'Variation margin' is funds paid by (or received by) members to (or from) LCH.Clearnet Ltd to settle any losses (or gains) resulting from marking open positions to market.

**CP III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.**

Credit exposures arise between members and LCH.Clearnet Ltd as the central counterparty, rather than bilaterally between members. Since payments to and from LCH.Clearnet Ltd are made through the PPS banks, credit and liquidity exposures can also arise between a PPS bank and members, and between LCH.Clearnet Ltd and the PPS banks. However, because all the exposures are bilateral, the failure to pay by one of the PPS banks or by an individual LCH.Clearnet Ltd member would not disrupt the PPS arrangements more broadly, unless the amounts were large enough to affect LCH.Clearnet Ltd's ability to meet its own obligations in a timely manner. The failure of the 'concentration bank' in any currency would be likely to cause more severe disruption to LCH.Clearnet Ltd, since the net funds held by LCH.Clearnet Ltd are collected in an account at this bank before they are invested in the money market.

The *PPS Agreement* between LCH.Clearnet Ltd and the UK PPS banks includes a formal deadline for transfer of funds to the concentration bank. This is two hours from the time that LCH.Clearnet Ltd notifies PPS banks to transfer funds to the concentration bank, or the CHAPS cut-off time, whichever is earlier. Although these funds are already held in the name of LCH.Clearnet Ltd on accounts at the PPS banks, the transfer of funds to the concentration bank allows LCH.Clearnet Ltd to offset the outgoing payments resulting from other obligations and to invest excess funds in the money market. Hence, if PPS banks make these transfers earlier in the day, the credit and liquidity pressures on LCH.Clearnet Ltd are reduced, and the central counterparty does not have to use intraday credit lines at the concentration bank in order to meet its obligations.

The 2006 *Oversight Report* noted that, following the introduction of a new SWIFT message type which allowed straight-through processing of transfers from PPS banks to the concentration bank, performance in meeting the two-hour deadline for the transfer of funds from the PPS banks to the concentration bank had improved.

The *PPS Agreement* specifies the two-hour deadline for transferring funds from PPS banks to the concentration bank. These terms and conditions also set out rules governing non-compliance by PPS banks in meeting the deadline: if the deadline is not met on four or more occasions during any one calendar month, LCH.Clearnet Ltd can demand explanations for non-compliance and proposals to prevent recurrence. If improvements are not made, or if two or more late pay-ins occur within the following two month period, the PPS bank is

required to meet with representatives of LCH.Clearnet Ltd to discuss its performance. Thereafter, LCH.Clearnet Ltd has the contractual right (but not the obligation) to terminate a PPS bank's participation in the UK PPS, should any further late pay-ins arise.

The 2006 *Oversight Report* noted that LCH.Clearnet Ltd's approach to the application of the procedures for dealing with late pay-ins by PPS banks did not fully reflect the terms of the *PPS Agreement*. It was noted that LCH.Clearnet Ltd exercised discretion in deciding the extent to which such procedures were applied. The Bank therefore encouraged LCH.Clearnet Ltd to follow up breaches by PPS banks fully in accordance with the provisions available to it within the *PPS Agreement*.

Over the past year, LCH.Clearnet Ltd has been working further to improve PPS banks' observance of the two hour pay-in deadline. LCH.Clearnet Ltd has been taking a more active stance in enforcing the terms of the PPS Agreement. This has involved more thorough investigation into reasons for non-compliance and working with PPS banks on ways to improve performance.

There continue to be instances where the pay-in deadline has been missed by PPS banks. Reasons for the breaches during 2007 (without specific reference to currency) can be placed into three main categories:

- i) *nostro* issues (where arrangements between the PPS bank and its own correspondent may benefit from some further analysis);
- ii) systems issues (where PPS banks' system changes have resulted in delays — albeit usually short-lived); and
- iii) delays in PPS banks' manual processes (where human error is statistically more likely).

**The Bank assesses the PPS broadly to observe**

**Core Principle III.** Observance would be strengthened were fewer banks to miss the deadline through, for example, more rigorously applying existing controls or designing and implementing additional controls.

**CP IV. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.**

PPS banks are required, by 09.00 UK time on the day of receipt of the payment instruction, to confirm to LCH.Clearnet Ltd that they will meet the required payments on behalf of the clearing members. At this point, the PPS banks have made an irrevocable commitment to pay the amount owed to LCH.Clearnet Ltd. However, final settlement of these transfers between the members and LCH.Clearnet Ltd takes place when the relevant individual debit and credit entries are made across the accounts of the PPS banks.

In sterling and euro, the net amount due between LCH.Clearnet Ltd and the relevant PPS bank is then transferred between accounts in the name of LCH.Clearnet Ltd at the PPS bank and at the Bank of England, which acts as concentration bank for LCH.Clearnet Ltd in those currencies. These transfers are made via CHAPS and thus are settled with intraday finality. As noted above, prompt payment of these amounts by the PPS banks reduces the intraday risk to LCH.Clearnet Ltd.

US dollar transfers take place in both the UK and the US PPS systems. The arrangements for US dollar transfers in the UK PPS system are the same as those for sterling and euro, except that the transfers to and from the concentration bank (Citibank in this case) take place across *nostro* accounts, rather than via CHAPS. The US PPS system is used for intraday calls after 16.00 UK time. Again, PPS banks are required to confirm their commitment to pay LCH.Clearnet Ltd. Concentration bank transfers are made via Fedwire, the US RTGS system, so these concentration payments are also final on the same day.

While sterling, euro, US dollar and Canadian dollar transactions are processed with same-day value in the PPS, for Australian dollar, Swiss franc, Danish krone, Hong Kong dollar, Icelandic krona, Japanese yen, Norwegian krone, New Zealand dollar, Polish zloty, South African rand and Swedish krona transactions, the *nostro* arrangements in place only allow for final settlement on the day after the payment instructions are sent. However, as LCH.Clearnet Ltd makes calls in these currencies for next day value, final settlement still occurs on the day of value. In addition, LCH.Clearnet Ltd receives an irrevocable commitment on the same day as instructions are sent out, and the amounts transferred in these currencies are currently small relative to those processed with same-day value, representing less than 6% (£157 million on average per day) of the total amount transferred on average through the PPS. For some of the above currencies, time-zone constraints will prevent same-day finality. **The Bank assesses the PPS to observe Core Principle IV.**

**CP V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.**

There is no multilateral netting of payments in the PPS. This Core Principle is not applicable to the PPS.

**CP VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.**

The first stage of the two-leg transfer of funds from members to LCH.Clearnet Ltd occurs via a book-entry transfer in

commercial bank money on the books of the PPS banks. This transfer occurs if the member has sufficient funds on its account, or has in place adequate credit lines with its PPS bank to allow the payment to take place. The credit risk at this stage for LCH.Clearnet Ltd is on the PPS banks, while for the PPS banks there may be a credit exposure to the members for which they provide PPS services. Credit risks also occur in the opposite direction when LCH.Clearnet Ltd is due to make payments to members. PPS banks must have a minimum long-term rating of A- from Fitch Ratings or the equivalent from Moody's or Standard & Poor's.

The net amount transferred between LCH.Clearnet Ltd and its members is collected in an account in the name of LCH.Clearnet Ltd at the concentration bank. All transfers of funds to and from LCH.Clearnet Ltd and its members, as well as the transfers resulting from LCH.Clearnet Ltd's investment of cash in the money markets, pass across the concentration bank accounts. Hence the concentration bank plays a key role in the PPS arrangements.

The Bank of England performs the role of sterling and euro concentration bank, ensuring that LCH.Clearnet Ltd has access to a settlement asset free of credit risk. The concentration process in sterling and euro occurs by transfers from the other PPS banks to the Bank of England via CHAPS. Not all of the PPS banks are direct members of CHAPS, which results in the possibility of credit or liquidity risks arising between indirect members and the CHAPS banks that process their payments. However, there is no evidence that those PPS banks that do not have direct access to CHAPS experience delays in making transfers to the concentration bank.

In the remaining currencies, the concentration bank transfers are made across *nostro* accounts at commercial banks. Citibank is the concentration bank for US dollars in both the UK and US PPS, and HSBC acts as concentration bank for the other currencies. The amounts transferred in these currencies are small, with the exception of transfers in US dollars in the UK PPS system. Given the size of US dollar flows, it would materially reduce the overall risk in the PPS if LCH.Clearnet Ltd were able to establish an arrangement in US dollars which resulted in funds being transferred through a RTGS system, and then being held in the form of central bank account balances free of credit risk. Currently US dollar flows are transferred from the PPS banks to an account held in LCH.Clearnet Ltd's name at Citibank. Given there is potential for these flows to build up throughout the day, LCH.Clearnet Ltd can have a significant intraday credit exposure to Citibank.

The 2006 *Oversight Report* suggested improvements for strengthening current arrangements surrounding concentration of US dollars in commercial bank money. The Bank encouraged LCH.Clearnet Ltd to investigate further the possibility of concentrating US dollars in central bank money.

If this proved impossible or impractical, LCH.Clearnet Ltd was encouraged to investigate whether steps could be taken to reduce further the risk of using a commercial bank settlement asset. Such steps could include using a committed intraday credit facility. Over the past year, LCH.Clearnet Ltd, together with the Bank, has been investigating the possibility of concentrating US dollar flows in central bank money. During the course of 2007, LCH.Clearnet Ltd has reduced its exposure to its US dollar commercial concentration bank somewhat through the introduction of tri-party repo arrangements for its US dollar business.

**The Bank assesses the PPS to observe Core Principle VI for transfers in sterling and euro. For US dollar transfers, the Bank assesses the UK PPS partly to observe Core Principle VI, and the US PPS broadly to observe Core Principle VI.** For transfers in other currencies, the Bank assesses the PPS broadly to observe Core Principle VI. However, for these other currencies the impact of a concentration bank failure is not deemed sufficiently large for there to be a need at this stage to eliminate the very small probability of commercial bank default.

**CP VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.**

The PPS arrangements rely on SWIFT and the CHAPS system, as well as on the operational reliability of the individual PPS banks, the concentration banks and LCH.Clearnet Ltd's Treasury Operations department. LCH.Clearnet Ltd has both alternative data centres and operations sites, so that primary facilities do not represent a potential single point of failure in the event of a major disruption. The exact recovery times for processing to switch to the secondary sites would depend on the nature of the disruption, but plans allow for recovery of 'business critical' functions (including treasury operations) within two hours.

In the event of a SWIFT outage of sufficient coverage and/or duration, LCH.Clearnet Ltd would consider communicating with the PPS banks by fax, as one form of contingency. SWIFT and CHAPS have taken measures to ensure continuity of core services. In addition, LCH.Clearnet Ltd can make calls in the PPS system in the United States, which uses the Fedwire system. In November 2007, LCH.Clearnet Ltd extended the deadline for the US PPS from 18:30 to 21:00 UK time. This further strengthens the valuable contingency arrangements of the US PPS. The operational reliability and resilience of the systems used across the LCH.Clearnet group are important for the functioning of the PPS. The PPS itself is an arrangement to transfer amounts owing between LCH.Clearnet Ltd and its members, but the calculation of these amounts is undertaken in other systems within LCH.Clearnet Ltd. These systems are

also part of the 'business critical' functions under the business continuity plans mentioned above. **The Bank assesses the PPS to observe Core Principle VII.**

**CP VIII. The system should provide a means of making payments which is practical for its users and efficient for the economy.**

Each LCH.Clearnet Ltd member is required to hold an account in each currency in which it incurs settlement obligations. There are currently 13 banks in the UK PPS arrangements, and 8 in the US PPS. Although not all the UK PPS banks provide accounts in all currencies, there is ample competition between PPS banks to ensure that members receive an adequate level of service and costs. **The Bank assesses the PPS to observe Core Principle VIII.**

**CP IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.**

All members of LCH.Clearnet Ltd are required to hold an account with at least one PPS bank. This requirement to participate forms part of the *General Regulations* of LCH.Clearnet Ltd, which are publicly disclosed. Members sign an LCH.Clearnet Ltd standard account mandate at the opening of an account, but all other aspects of the arrangement between the PPS banks and the members for whom they provide PPS services are part of a general banking relationship. Members are free to choose which PPS bank to use and may use a different bank for each currency.

LCH.Clearnet Ltd sets the criteria for participation in the PPS, which are publicly available. These detail the minimum financial and operational requirements important to the continued smooth operation of the PPS, which the PPS banks must maintain. They also detail orderly exit procedures for PPS banks if they either fall below the minimum financial and operational requirements, or choose to resign their membership. The criteria are published on the LCH.Clearnet Ltd website.<sup>(1)</sup> The website also advises interested parties how to obtain further information on participation in the PPS. **The Bank assesses the PPS to observe Core Principle IX.**

**CP X. The system's governance arrangements should be effective, accountable and transparent.**

Since the PPS is the payment mechanism that serves the LCH.Clearnet Ltd system as a whole, it does not have clearly distinct governance arrangements. However, LCH.Clearnet Ltd is subject to regulation by the FSA and its governance arrangements include the presence of independent

(1) See [www.lchclearnet.com/risk\\_management/ltl/pps/pps\\_bank\\_requirements.asp](http://www.lchclearnet.com/risk_management/ltl/pps/pps_bank_requirements.asp).

non-executive directors (both on the Board of LCH.Clearnet Ltd and its parent, LCH.Clearnet Group Ltd), as well as a User Consultative Group and other representative bodies to take account of members' interests. In addition, LCH.Clearnet Ltd holds a meeting with the group of PPS banks in the United Kingdom four times a year and annually in the United States. The Bank has not identified any weaknesses in the effectiveness, accountability or transparency of the governance arrangements for the PPS. The Bank will continue to monitor any changes to risk management and governance procedures. **The Bank assesses the PPS to observe Core Principle X.**

# Annex D Bacs

The Bacs payment system provides processing of bulk electronic automated payments. Its principal products are Direct Debits, Direct Credits and standing order payment instruments. The payment system is owned by Bacs Payment Schemes Limited (BPSL), the members of which outsource provision of core processing services to VocaLink Ltd, a third party company that provides the central infrastructure for Bacs.

## **CP I. The system should have a well-founded legal basis under all relevant jurisdictions.**

Settlement of interbank obligations in Bacs is governed by the *Bacs Settlement Agreement*, a formal contract between members providing assurances regarding the multilateral net settlement process.

Bacs was designated under the *Financial Markets and Insolvency (Settlement Finality) Regulations* (1999), which implemented the EU Settlement Finality Directive (1998) in the United Kingdom in December 2005. Following designation, the Bank judges the legal basis for enforcement of the rules governing irrevocability of instructions, the multilateral settlement process, the finality of settlement and default arrangements in Bacs to be robust.

### **The Bank assesses Bacs to observe Core Principle I.**

## **CP II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.**

The *Bacs Settlement Agreement* governs settlement of obligations between members, whereas the *Liquidity Funding and Collateralisation Agreement* (LFCA, implemented in May 2005 and discussed in the 2005 *Oversight Report*) provides a greater degree of clarity as to surviving members' financial obligations in the event of another member's failure to pay. Both agreements, as well as the clear and comprehensive rules governing Bacs, ensure members understand the financial risks related to settlement of multilateral net positions.

### **The Bank assesses Bacs to observe Core Principle II.**

## **CP III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.**

The basic obligation of Bacs members to settle multilateral net amounts is clear, and the *Bacs Settlement Agreement* between members makes that obligation enforceable.

Introduction of the LFCA clarified the procedure for managing liquidity and credit risks and is structured on the basis that those who bring risk to the system bear the cost of meeting it. Whilst the LFCA has significantly reduced settlement risk in Bacs (and the C&CC), it has not eliminated it completely. This is because the obligations to the system of an affected member could still exceed the amount of liquidity committed by other members, leaving surviving members with residual exposures. There are currently no clear controls to avert such situations or clear procedures to manage residual liquidity and credit risks were such a situation to arise.

Functionality to apply appropriate thresholds to members' net debit positions in Bacs is now available through the NewBacs processing platform and work continues to investigate the practical issues around their introduction. In addition, NewBacs provides the functionality to remove the payments of an affected member from the start of the processing day (so-called 'regression'). System exclusion functionality is also in place to remove payments from a specific point in time, or from the start of the next processing day. Removing the affected member's intraday exposures on the day of default would further reduce the probability of the affected member's settlement obligations being larger than the liquidity committed under the LFCA.

Completion of work on debit thresholds and regression could contribute to managing credit and liquidity risks.

**The Bank assesses Bacs broadly to observe Core Principle III.** Implementation of the innovations described above could strengthen observance.

**CP IV. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.**

Under normal circumstances, final settlement in Bacs occurs on the day of value. Although the point of finality is not defined in the Bacs rules, the *Bacs Settlement Agreement* does state when Bacs payment messages become irrevocable, and it seems likely that settlement would be considered final when the net positions have been posted to members' settlement accounts at the Bank of England. It is at this point, on day three of the clearing cycle, when members receive value.

Outside normal circumstances, the LFCA provides a mechanism for ensuring timely settlement of obligations between Bacs members in the event of the failure of a member in a net debit position to meet its obligations. This only occurs if the net debit position of the affected member can be met in full by the liquidity committed under the LFCA. Otherwise, settlement might not take place until after day three of the interbank clearing cycle.

**The Bank assesses Bacs to observe Core Principle IV.**

However, it notes the importance of implementing the innovations described in its assessment against Core Principle III for increasing the likelihood of timely settlement under the LFCA outside normal circumstances.

**CP V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.**

The LFCA covers both Bacs and the C&CC and provides a mechanism to ensure timely settlement in the event of a settlement member default. The introduction of the Capital Requirements Directive on 1 January 2007 triggered a right to renegotiate the LFCA. Members decided that the LFCA should remain unchanged, and this was recorded in a short agreement.

As noted under Core Principle III, net debit positions could still exceed the committed liquidity of surviving members. Even with the implementation of debit thresholds in Bacs, settlement risk could still exist because the LFCA covers both Bacs and the C&CC and debit cap functionality is currently not considered practical for the latter. This means that Bacs members could face uncapped exposures to a member in default which is also a member of the C&CC, and these exposures could be in excess of liquidity committed under the LFCA.

There is currently no arrangement ensuring any such liquidity shortfall would be met. Given the low probability of such a

shortfall occurring, any such arrangement would need to be pragmatic in design but could help Bacs achieve full observance of Core Principle V.

In the absence of such arrangements, **the Bank assesses Bacs broadly to observe Core Principle V.**

**CP VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.**

Settlement of multilateral obligations between members of Bacs takes place across accounts held at the Bank of England.

**The Bank assesses Bacs to observe Core Principle VI.**

**CP VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.**

BPSL has documented a wide range of operational risk controls applicable to member banks and users of Bacs. In particular, the implementation of the *Direct Debit Recall Agreement* in 2007 delivers benefits for all members and users of the system, particularly in relation to reducing operational risk in a default scenario.

Vocalink Ltd has well-established operational risk controls relating to the processing of Bacs payments. Operational performance against agreed standards is monitored by Vocalink Ltd management and the BPSL Operations and Compliance Committee. An external SAS70 Audit covering both the payment scheme and infrastructure provides further independent assessment of the performance of controls against control objectives.

Cumulative delays to settlement caused by members were significantly lower during 2007 than in 2006 and remained generally of very short duration.

BPSL has established disciplinary procedures and mechanisms for monitoring member behaviour against operational rules, including self-certification. However, it remains unclear what powers of sanction BPSL can draw on in the event of rule breaches other than the exclusion of the offending member(s) from the system.

BPSL members are responsible for their own processing arrangements in Bacs and have all established contracts with Vocalink Ltd for the provision of core processing services. Vocalink Ltd's processing performance is measured against target levels defined in the Service Level Agreement (SLA) with BPSL members and is reported on a monthly basis.

Since the successful delivery of the NewBacs infrastructure renewal programme in July 2006, the existing SLAs are being reviewed with VocaLink Ltd and the members to reflect over a year of live operation. One example is the current SLA requirement for Bacstel-IP to exhibit 99.5% availability each month (which amounts to submission unavailability for just in excess of two hours per month). An improvement to the existing Service Level Agreement (SLA) for the availability of Bacstel-IP is currently being agreed between Bacs and VocaLink Ltd. Which would increase the existing 99.5% availability requirement, measured monthly, to a 99.7% requirement, measured over a rolling three-month period. After a six-month measurement period, if the improved SLA is achieved, and subject to agreement with VocaLink Ltd, the SLA will become a 99.7% availability requirement, measured monthly. This would begin in August 2008. The Bank encourages BPSL and VocaLink Ltd to agree this increase as tighter operational controls would help deliver greater observance of Core Principle VII.

In March 2007, Bacs experienced a slowdown in the central Bacstel-IP service resulting in some originators being unable to connect to the service by the normal submission deadline. The system was kept open to allow these files to be submitted, however, as they were submitted after the normal closedown time, some submitters' (non-VocaLink Ltd) software moved the payment date forward by one day. As a result of the slowdown in Bacstel-IP and the subsequent date stamping issue, around 450,000 payments were applied late to customers' accounts. The incident received considerable media attention.

During 2007, the availability of payment file submission channels was typically in excess of SLA-defined minimum levels. In support of its operations, VocaLink Ltd has continued to enhance its extensive business continuity arrangements which are tested regularly, including switching of payment processing from primary to secondary sites.

It is important for member banks to understand the potential implications of a significant delay to output from VocaLink Ltd. If a delay of more than one processing day occurred, members could be required to process two or more days' output in a single processing day.

Over the year, BPSL has developed an extensive disaster recovery framework which has involved looking at how quickly Bacs, the VocaLink Ltd infrastructure and members could process payments in order to catch up a delay caused by an unforeseen disaster. The framework outlines communication plans and how cycles would be run in particular scenarios. The Bank considers testing the framework to be one of the key priorities for BPSL in early 2008.

#### **The Bank assesses Bacs broadly to observe**

**Core Principle VII.** Clear confirmation that member banks have in place processes to handle a backlog of payments, could strengthen observance.

#### **CP VIII. The system should provide a means of making payments which is practical for its users and efficient for the economy.**

The use of Direct Debits and Direct Credits has increased significantly over the past decade, partly as users have substituted out of other payment instruments, suggesting that Bacs payment instruments offer members a practical and efficient means of making customer payments. Bacs' operational performance also suggests, for the most part, a high degree of operational efficiency.

In 2005, the OFT Payment Systems Task Force (PSTF) recommended that a faster electronic retail payments service be introduced for telephone and internet banking payments. This is scheduled to be implemented by the industry in May 2008 with the Faster Payments service and there will be clear associated net benefits to the UK economy, users and member banks through reduced settlement risk.

PSTF's industry forecasts indicate that such a service could initially attract up to 10% of existing Bacs volumes. Although this could grow, it suggests that current clearing cycles will be of appropriate duration for those payments which do not migrate from Bacs to the new service. That said, reduction of the current Bacs clearing cycle could still deliver risk-reducing benefits to member banks and practical benefits to users. Progress has been made over the year on a shorter Bacs settlement cycle (for example, where a customer's account is debited or credited as early as a day after the payment file is submitted). BPSL should consult with its members and VocaLink Ltd to assess carefully the appetite for and risks of introducing a shorter cycle.

#### **The Bank assesses Bacs partly to observe**

**Core Principle VIII.** Although beyond BPSL's control, the successful implementation of a Faster Payments service for electronic retail payments would strengthen observance. Work to reduce existing Bacs clearing cycles would also strengthen observance, if such a reduction can be shown to deliver clear net benefits.

#### **CP IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.**

In order to limit the risk that multilateral net settlement could fail to complete on account of a settlement member's failure to meet its obligations in a timely fashion, BPSL restricts

settlement membership to credit institutions which are subject to prudential capital and liquidity regulation. Following introduction of the LFCA, costs of settlement membership for existing members have become, in terms of collateral pledged, directly related to the risk that such members bring to the system as measured by the historical profile of their net settlement positions. To manage settlement risk brought by prospective settlement members, for whom such positions may be unobservable, BPSL could consider arrangements to relate collateral pledged to the credit ratings of applicants.

BPSL (and the C&CCC) have been considering how to deal with a settlement member whose credit quality deteriorates to an extent that it brings a high level of financial risk to the multilateral settlement. Arrangements could be established to determine the amount of additional collateral pledged by a member experiencing a rapid deterioration in its credit rating. However, this will need to be considered against any changes to broader arrangements for dealing with institutions in distress, and should include an assessment of when such measures are likely to be beneficial. This review is now expected to be completed in 2008.

Following the OFT Payment Systems Task Force Report a new membership category, the Affiliates Group, was formally launched in December 2005. It acts as the main vehicle for communication and decision making amongst the Bacs affiliates, volunteering attendees to assist BPSL with investigating potential innovations and educational opportunities relating to Bacs. This has helped improve access to the Bacs scheme without introducing additional risk to processing or settlement in the Bacs system.

#### **The Bank assesses Bacs broadly to observe**

**Core Principle IX.** Establishing a mechanism to deal with risks brought to the system by an existing member with deteriorating financial strength could strengthen observance.

#### **CP X. The system's governance arrangements should be effective, accountable and transparent.**

The governance arrangements of BPSL are clear and effective in relation to the needs of members. Control over and responsibility for management of the system ultimately rests with the BPSL Board, which exercises effective control of the company's executive team. The Board is supported by a number of technical committees, which operate under clear terms of reference and benefit from industry-wide membership, helping to ensure an appropriate level of expertise.

The relationship between BPSL, its members and Vocalink Ltd is specified through a number of contractual arrangements. The quality of relationship between BPSL and Vocalink Ltd

appears sound, the former monitoring the latter's operational performance and broader financial position as a control against risks to payment processing.

BPSL is a member-operated company whose Board has no independent representation, in contrast to best practice in corporate governance for listed companies.<sup>(1)</sup> Vocalink Ltd has both an independent Chairman of its Board and Audit Committee. In view of Bacs' importance to the smooth running of the UK economy, the Bank considers BPSL to have a clear public role and that best practice in corporate governance is relevant to it. To that end, including independent directors on the BPSL Board could help to ensure the interests of external stakeholders are more widely represented in BPSL's decision-making process.

In light of changes to governance arrangements in the UK payment systems, BPSL now has a contractual relationship with the Payments Council. Under the terms of the contract, the scheme will comply with directions given by the Payments Council's Board in relation to, *inter alia*, strategic issues, innovation and integrity. In essence therefore, introduction of the Payments Council could go some way to addressing concerns noted in the 2005 *Oversight Report* about the degree to which BPSL's own objectives accommodate systemic risk considerations, alongside those of other stakeholders.

#### **The Bank assesses Bacs broadly to observe**

**Core Principle X.** Extending Board representation to independent directors would strengthen observance.

(1) The Combined Code on Corporate Governance (2003) recommends that the board of a listed company include independent, non executive directors (see: [www.fsa.gov.uk/pubs/ukla/tr\\_comcode2003.pdf](http://www.fsa.gov.uk/pubs/ukla/tr_comcode2003.pdf)).

# Annex E The Cheque and Credit Clearings

The Cheque and Credit Clearings (C&CC) consist of three separate clearings, which provide clearing and settlement for sterling debits (cheques); euro debits; and sterling credits respectively. While these instruments are processed separately and in slightly different ways (in particular, the degree of automation of processing is higher for the majority of sterling cheques than for other payment instruments) they are part of a single payment scheme. The C&CC are managed by the Cheque and Credit Clearing Company (C&CCC). Most members of the C&CC have chosen to outsource their processing operations. The following assessment covers all three clearings.

## CP I. The system should have a well-founded legal basis under all relevant jurisdictions.

Members have all signed the *Membership Agreement*, a formal contract committing them to abide by the rules and decisions of the company Board: this clearly defines the obligations of members.

Unlike other payment instruments, there is a substantial body of English law pertaining to cheques. Statutes relate to the treatment of paper cheques and the C&CC must operate in accordance with these statutes. The rules and procedures of the C&CC cover the main aspects of the system's operations and appear to provide an adequate legal basis for its operation.

The settlement of inter-member obligations within the C&CC, which takes place on day three of the clearing cycle, is governed by the *Settlement Agreement*. This is a formal contract between members and the C&CCC which seeks to remove legal uncertainties about whether these inter-member obligations would be upheld following the insolvency of a member. Additional assurance of the enforceability of the system's default arrangements could be obtained if the C&CC were designated under the *Financial Markets and Insolvency (Settlement Finality) Regulations (1999)* (FMIRs), UK law's implementation of the EU Settlement Finality Directive. The C&CC submitted an application for Designation in May 2007. The Bank's Designation Committee requested additional assurance regarding a number of issues, about which the C&CCC continue to liaise with both its members and the Bank. Obtaining Designation will strengthen observance of Core Principle I.

All members have signed up to the *Cheque and Debit Recall Agreement*. This aims to prevent a liquidator seeking to return via the unpaids process<sup>(1)</sup> all cheques drawn on a failed member and its customers, which could cause operational difficulties for members in handling a large volume of unpaid cheques (unless permitted under usual procedures), and impose credit exposures on surviving members in respect of dishonoured cheques already credited to their customers' accounts. The *Cheque and Debit Recall Agreement* was signed in 2007 Q3, reducing legal, credit and operational risk within the system and strengthening the system's observance of Core Principle I.

The C&CCC was encouraged to seek legal advice on the existence and extent of conversion risk.<sup>(2)</sup> Counsel opined that, in the event of collecting bank insolvency, it was highly unlikely that the payee would have a claim against the paying bank for any loss arising from the payment of the cheque: that is, that the paying bank would not be subject to conversion risk.

## The Bank assesses the C&CC partly to observe

**Core Principle I.** *The Cheque and Debit Recall Agreement* has been signed and implemented, strengthening observance of Core Principle I. Additionally, should the application for designation under the UK SFD regulations be successful this would further strengthen observance of Core Principle I.

## CP II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.

The C&CCC has Immediate and High Value Adjustment processes in place to deal with significant errors in settlement figures. These processes help mitigate the risk of significant errors in settlement figures and reduce settlement risk in the system. The High Value Adjustment process is designed for the rare occasion when there is a need to correct a settlement due to a large error in an individual payment, which could otherwise have implications for a member's liquidity. It

(1) There are instances in which a cheque might not be paid by the paying member bank. For example, if the payer had insufficient funds in its account to cover the full value of the cheque. The unpaids process is used to return to the collecting member bank those cheques that cannot be paid by the paying member bank.

(2) Conversion risk is the theoretical risk that a member (acting in its capacity as a paying bank) might face claims in the tort of conversion from customers of another failed member (acting in its capacity as a collecting bank) if it settled its obligations to the failed member instead of returning the cheque as unpaid.

permits two members, in consultation with the C&CCC, to submit a bilateral settlement adjustment which is settled in RTGS at the same time as the relevant main settlement. The Immediate Adjustments process was developed in response to the *Settlement Agreements*, which require settlement to be based on the totals exchanged before any in-clearing adjustments. The process allows the receiving bank to revert the same overall settlement position as would have been the case prior to the *Settlement Agreements*, avoiding the need to re-engineer in-clearing systems or carry forward or hold over clearing errors to subsequent days.

Work on the *Settlement Agreement* and the *Liquidity Funding and Collateralisation Agreement* has enabled members to examine, clarify and reduce the credit and liquidity risks associated with the settlement of multilateral net positions. Work on the *Cheque and Debit Recall Agreement* (and associated conversion risk) has also identified and sought to mitigate further the financial risk that members incur through participation in the system.

#### **The Bank assesses the C&CC to observe Core Principle II.**

**CP III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.**

The basic obligation of members to settle net amounts is clear and the *Settlement Agreement* makes those obligations enforceable.

The *Liquidity Funding and Collateralisation Agreement* (LFCA) covering the C&CC and Bacs clarifies the procedures for managing liquidity and credit risks that would crystallise in the event of a member failing to settle. It aims to ensure that settlement could complete. Each member contributes a quantity of collateral determined by a historical measure of their debit positions. The LFCA substantially reduces, but does not eliminate completely, credit and liquidity risk from the system. As with Bacs, a residual risk remains that a member could default with a larger net amount than the liquidity that surviving members would be committed to provide. There are currently no clear controls to avert such situations or clear procedures to manage residual liquidity and credit risks were such a situation to arise.

Following the Bank of England's decision not to join TARGET2 as a sponsoring central bank, the payment systems using the Bank for euro settlement were asked to make alternative arrangements. Consequently, in October 2007, C&CC euro debit settlement migrated from the Bank of England to the Central Bank and Financial Services Authority of Ireland

(CBFSAI). C&CCC has decided to make the LFCA apply only to sterling payments via Supplementary Agreement, leaving the new euro settlement arrangements without a liquidity funding arrangement. The implication of this is that if a member failed to fund its settlement obligation for any reason, a non-settlement day would result. Due to the values and volumes involved, however, the associated risks and implications are judged to be small and the Bank has accepted that no new agreement is necessary.

In June 2006 the C&CCC implemented the High Value Adjustment process to deal with the possibility of significant errors in settlement figures. The Bank considers this process to be a necessary control against settlement risk. Additionally, the signing and implementation of the *Cheque and Debit Recall Agreement* has further strengthened observance of Core Principle III.

**The Bank assesses the C&CC broadly to observe Core Principle III.** Should further controls be introduced to strengthen the LFCA, eliminating the remaining residual settlement risks, this would strengthen observance of Core Principle III.

**CP IV. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.**

Although the point of finality is not defined in the C&CC rules, it is likely that settlement would be considered final when the net positions of members had been posted to members' settlement accounts (on day three of the interbank clearing cycle).

Outside of normal circumstances, the LFCA provides a procedure to ensure timely settlement in the event of the failure of a settlement member in a net debit position to make its pay-in. A residual risk remains that liquidity committed by members under the LFCA could be insufficient to cover the net debit settlement position of the affected member. If this occurs, settlement might not take place until after day three of the interbank clearing cycle. Under normal circumstances, however, final settlement occurs on the day of value, so this risk is not sufficient to prevent the system from observing the Core Principle. Euro settlements are no longer covered by the LFCA now that settlement takes place at the CBFSAI (see Core Principle III), although this additional risk is also too small to significantly reduce observance of the Core Principle.

If the C&CCC's application for Designation under the UK Settlement Finality Directive regulation is successful, this will provide additional enforceability of the point of finality of settlement in the event of a member default, as described under Core Principle I, above. This would strengthen observance of this Core Principle.

The Bank assesses the C&CC to observe Core Principle IV.

**CP V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.**

The LFCA has established a procedure to ensure timely completion of sterling settlement if a settlement member fails in a net debit settlement position. However, a small risk remains that the largest single net debit settlement obligation could exceed the amount of liquidity committed by surviving members under the LFCA. This residual risk could be mitigated if Bacs and the C&CC had the ability to implement thresholds at appropriate net debit positions. The use of debit thresholds is currently being explored by Bacs, but the Bank recognises that there may be practical obstacles to placing debit thresholds on members' multilateral net settlement positions in a paper-based system such as the C&CC.

Given the inability to cap exposures in the C&CC, the system could instead define procedures to allocate residual risk. For example, any shortfalls in liquidity could be met by surviving members in proportion to their underlying bilateral net settlement positions in the C&CC *vis-à-vis* the defaulter. This would ensure that, in the event that multilateral net debit positions exceeded the liquidity committed by surviving members, only those exposed to the defaulter would suffer any loss. The Bank has encouraged the C&CCC to consider whether allocation of residual risk on the basis of underlying bilateral settlement positions is a legally robust and practical solution.

**The Bank assesses the C&CC broadly to observe Core Principle V.** Work to define procedures to allocate residual settlement risk would strengthen observance of Core Principle V.

**CP VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.**

Sterling settlement between members takes place across accounts held at the Bank of England. Euro settlement takes place across accounts held at the Central Bank and Financial Services Authority of Ireland.

The Bank assesses the C&CC to observe Core Principle VI.

**CP VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.**

The systems and controls set out by the C&CCC for controlling operational risk are wide-ranging and are generally well documented. Policies and procedures are in place to identify and address potential weaknesses. These are reviewed regularly, including an external SAS70 review of performance against control objectives. Contingency arrangements appear extensive and no significant shortcomings have been identified.

A core piece of infrastructure for the sterling cheque clearing — by far the largest clearing within the C&CC by both value and volume — is the Interbank Data Exchange (IBDE) network, across which details of cheques are sent to members. In 2006, an IBDE upgrade was successfully completed and the overall record of reliability of the network remains high.

IBDE aside, there is relatively little central infrastructure. Members are responsible for processing their paper cheques and credits, and most have chosen to outsource this function to a third-party supplier. The C&CCC has no direct, formal relationship with the outsourced service providers. Members self-certify their compliance with the system's control objectives. The Bank has been encouraged that, during 2007, the C&CCC has involved third-party suppliers in industry wide projects such as 'T plus 2-4-6' (see Core Principle VIII), and would like to see this trend continue.

Over time, if the processing model changed, a different relationship structure might be optimal. For example, if further consolidation led to the creation of a single infrastructure provider, a contractual model similar to Bacs might be preferred, where the infrastructure provider entered into a service level agreement with both the scheme and also its individual members. This would allow for greater leverage on the supplier, and more transparency between members, the supplier and the scheme as a whole. In the meantime, the C&CCC is currently undertaking work to ensure it receives adequate assurances regarding the risks posed by multiple-member supplier relationships.

**The Bank assesses the C&CC broadly to observe Core Principle VII.** Observance would be strengthened if the direct relationship between the C&CCC, the scheme and third-party suppliers was more clearly defined. The C&CCC obtaining adequate assurance from third-party suppliers of their compliance with the system's requirements would also strengthen observance.

**CP VIII. The system should provide a means of making payments which is practical for its users and efficient for the economy.**

The OFT Payment Systems Task Force established the Cheque Working Group (CWG) in 2005, which examined the costs and benefits of, and demand for, change to the current system given the rapidly declining cheque volumes in the United Kingdom. Significantly, the Task Force concluded that there was not a strong case for a complete rebuild of the cheque clearing system. Research showed that the number of cheques in circulation is falling by around 8% per year and this rate of decline is likely to increase substantially when the new Faster Payments service for phone and internet payments becomes available in May 2008. In addition, several major retail groups are either trialling not accepting cheques as a payment mechanism or have stopped taking cheques altogether. Furthermore, unit processing costs are relatively high in comparison to other retail payment instruments, and will rise further as cheque volumes decline.

The three-day interbank clearing cycle and the process for returning unpaid cheques is slow in comparison with other developed countries. The decline in volumes, however, weakens the business case for investing in improvements to clearing cycles. The argument that costs are likely to exceed benefits is particularly powerful for the less automated parts of the clearings, where volumes and values are considerably lower than for sterling cheques.

Therefore the key recommendation of the Working Group was the 'T plus 2-4-6' promise, which was successfully implemented in November 2007. This was deemed easier than accelerating the sterling cheque clearing, which is already relatively highly automated. The key features are: sterling cheques deposited into a UK current, business or basic bank account will start to earn interest or will count against overdrafts no later than two working days after the cheque is deposited; all consumers and businesses will be able to withdraw funds deposited by cheque into current and basic bank accounts no later than four working days after the cheque is deposited; and they can be sure that the cheque cannot bounce and that the money in their account cannot be reclaimed any later than six working days after the cheque is deposited, unless fraud is involved to which the beneficiary is a knowing party. The '2-4-6' framework represents a core offering: financial institutions remain able to compete to offer shorter timescales. Additionally, a '2-6-6' promise has been implemented for savings accounts. This differs from the '2-4-6' framework in that withdrawals, where they are allowed, can be made six working days after the cheque has been deposited.

Given the constraint on realistically achievable efficiency levels noted by the CWG, the Bank assesses observance of this

Core Principle to have strengthened from partly to broadly observed.

**The Bank now assesses the C&CC broadly to observe Core Principle VIII.** This improvement follows implementation of the 'T plus 2-4-6' promise.

**CP IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.**

The criteria for settlement membership seem suitable for controlling the risks that arise in the system. In particular, the restriction of settlement membership to credit institutions, public authorities and publicly guaranteed undertakings, subject to prudential capital and liquidity regulation provides some assurance that members can meet their settlement obligations in a timely manner, and so prevent the possible disruption to the wider system and public that a failure to settle could cause.

The outstanding gap in the membership criteria, previously identified in the *Oversight Report*, is a procedure to deal with a settlement member whose credit quality deteriorates to an extent that brings a high level of risk to the multilateral settlement. The C&CCC (in conjunction with BPSL) have been working on how to deal with this issue during 2007. Proposals are expected early in 2008. Arrangements could be established to determine the amount of additional collateral pledged by a member experiencing a rapid deterioration in its credit rating.

**The Bank assesses the C&CC broadly to observe Core Principle IX.** Amendment of the system rules to include criteria to deal with a settlement member whose credit quality has deteriorated to an extent that unreasonable financial risk was brought to the clearings would strengthen observance.

**CP X. The system's governance arrangements should be effective, accountable and transparent.**

The C&CCC has a clear governance structure, with ultimate responsibility for management of the clearings resting with the Board. The Bank considers the C&CCC's executive to be broadly accountable to the Board. The C&CCC Board is composed entirely of settlement member banks. The Board has both the incentives and tools to pursue the interests of the system and its settlement members. The C&CCC Board has an independent chairman, to pursue actively incentives and tools for the benefit of the system and its settlement members. Incentives to pursue the interests of the public and wider economy more generally are less clear. There may be a case for the C&CCC to consider the case for further independent or public interest representation on the Board.

Another potential weakness in the system's governance arrangements is that there is no formal relationship between the C&CCC and the third-party infrastructure suppliers that process the majority of cheques, although suppliers are invited to attend some operational-orientated committees. Members of the C&CC do, however, enter into bilateral contracts with their suppliers, and must certify annually that processing is conducted in accordance with the C&CCC's various risk controls. The C&CCC audits the initial outsourcing arrangements of members, and conducts an audit review of any high-risk change to processing proposed by members. The C&CCC has indirect rights to audit members' outsourced suppliers, but has so far chosen not to exercise these existing audit rights.

Observance of Core Principle X would be strengthened if the direct relationship between the C&CCC, the scheme and third-party suppliers was more clearly defined. The C&CCC obtaining adequate assurance from third-party suppliers of their compliance with the system's requirements would also strengthen observance.

In light of changes to governance arrangements in the UK payment systems introduced by the Payments Council, the C&CCC has a contractual relationship with the Payments Council. Under the terms of the contract, the scheme will comply with directions given by the Payments Council's board in relation to, *inter alia*, strategic issues, innovation and integrity.

**The Bank assesses the C&CC broadly to observe Core Principle X.**

# Annex F The LINK card scheme

The LINK ATM Scheme (the Scheme) is the United Kingdom's largest ATM network, which enables its members' customers to withdraw cash from all but a few of the United Kingdom's ATMs, irrespective of the bank at which they hold their account. The LINK Interchange Network Ltd (the Company), since July 2007 a subsidiary of VocaLink Ltd, provides transaction switching for members of the Scheme, by routing transaction information from the ATM used by the cardholder to the card issuer's own computer systems.

## CP I. The system should have a well-founded legal basis under all relevant jurisdictions.

All members enter into formal contracts with each other as part of their membership of the Scheme. These contracts specify members' rights and obligations, and commit them to abide by the system's rules and procedures. The rules and procedures of the system cover the main aspects of the system's operation, including what would happen to aggregate settlement figures in the event of a settlement member default.

The Operating Rules clearly define the obligations of members in all circumstances, increasing robustness of the system's legal basis. Additional assurance of the enforceability of the system's default arrangements might be obtained if the Scheme were designated under the UK settlement finality regulations.

**The Bank assesses the Scheme broadly to observe Core Principle I.** Designation under the UK settlement finality regulations would strengthen observance.

## CP II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.

ATM operators incur both credit and liquidity risk through participation in the Scheme. Rules and procedures exist to manage credit and liquidity risk within the system, with the card-issuing members who bring these risks to the system required to show that they meet appropriate regulatory requirements.

Procedures in the event of a participant insolvency are defined in the Rules. A defaulting member would be removed from

multilateral settlement, preserving multilateral netting for the membership as a whole and helping protect members against the liquidity risk that would arise if a default caused the entire settlement to fail. The Rules make clear that through participation in the system ATM operators bear credit risk equal to their bilateral net position with each card-issuing member.

**The Bank assesses the Scheme to observe Core Principle II.**

## CP III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.

The system's default procedures are adequately defined in the main body of the system's Rules, such that participants' obligations within the system should be clear, both under normal circumstances and in the event of default (see Core Principle II).

The system places few restrictions on access (see Core Principle IX). For example, card issuer participants — who can accrue net debit settlement positions — are not required to be financial institutions. In consequence, participants might face credit exposures *vis-à-vis* non-financial institutions. The Core Principles suggest that criteria that impose few membership restrictions should be coupled with appropriate risk management controls, to ensure that no participant brings an unacceptable level of credit and liquidity risk to the system. The default procedures, which set out members' settlement obligations in the event of default, mean that LINK should have the controls in place to appropriately manage this risk.

LINK now nets settlement positions accumulated over weekends and bank holidays, rather than submitting these as separate files on the first following working day as had been done previously, and software is in place to allow settlement figures to be broken down easily by product and by participant.<sup>(1)</sup> VocaLink Ltd has continued to develop a new

(1) Settlement of the LINK card scheme is combined with settlement of a number of other schemes or 'products' for which the LINK Interchange Network Ltd provides infrastructure services, such as a mobile phone top-up scheme enabling individuals to top-up pay-as-you-go phones at ATMs.

settlement system capable of monitoring participants' settlement positions intraday, which is expected to be implemented by 2008 Q3. This would also make it possible for some kind of debit cap arrangements to be introduced, although this is not likely to happen initially. Appropriate use of this functionality would allow the Scheme to manage credit and liquidity risk more effectively within the system.

**The Bank assesses the Scheme broadly to observe**

**Core Principle III.** Successful completion of work already under way to enable the monitoring of participants' settlement positions intraday would strengthen observance.

**CP IV. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.**

The Scheme is a deferred multilateral net settlement system operating on a T+1 cycle: Scheme members dispense cash from an ATM to customers of other members on day T; settlement of multilateral net positions occurs across accounts held at the Bank of England on day T+1. Although the point of finality of interbank settlement is not defined in the Rules of the system, it is likely that settlement would be considered final once postings of net positions had been made to participants' settlement accounts on day T+1.

The Network Members Council (NMC) is informed of delays to settlement and the Scheme discourages late pay-ins, by formally identifying at the NMC any members responsible for a delay to settlement and asking them to report on their plans for preventing any repeat delays.

For historical reasons a small group of Scheme participants are currently also members of the Funds Transfer Sharing (FTS) group. FTS members 'sub-settle' among themselves and submit a single multilateral net settlement amount to the main LINK settlement, connecting to LINK via a third party. If FTS is in a net debit position, the main LINK settlement cannot complete until FTS members have settled among themselves and the FTS account is funded. This arrangement complicates the system's settlement procedures and can lead to settlement delays. The delays caused by FTS have often been due to operational issues rather than late settlement by individual FTS members, although the FTS group has significantly improved settlement performance during 2007. Despite this, FTS members have decided that the most effective long-term solution is for FTS to disband, and this is expected to be completed by end 2008 Q2. Current FTS members will subsequently settle in the main LINK settlement. This should help reduce the risk of delays to settlement and strengthen observance of this Core Principle.

LINK has been encouraging its card issuing members that hold banking accounts at the Bank of England for settlement to

migrate to reserve accounts in RTGS, also at the Bank of England. Target balances on reserve accounts typically exceed settlement obligations in LINK. Additionally, banking accounts typically pay less than Bank Rate, making it less attractive to hold a large balance in them. The probability that additional funding will need to be added in the event of an unexpectedly large debit position is hence lower for members using reserve accounts for settlement, reducing the likelihood of delay to settlement. Card issuing members ineligible for reserve accounts are being encouraged to settle through the reserve account of a member that is eligible. The majority of affected members have now completed their migration, although a few remain yet to do so. This strengthens observance of this Core Principle.

Settlement would also be delayed in the event of a participant's insolvency. Under the procedures in place in the event of the failure of a participant in a net debit position to make its pay-in, settlement would be delayed until the next banking day. In normal circumstances, however, final settlement occurs on the day of value, and these risks are not sufficient to prevent the system from observing broadly this Core Principle.

**The Bank continues to assess the Scheme broadly to observe Core Principle IV.** Completion of the FTS disbandment and migration of members to RTGS accounts would strengthen observance.

**CP V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.**

The Scheme has procedures to ensure settlement completes if a system participant fails in a net debit position. Settlement of multilateral net amounts (excluding the insolvent participant) would take place on the next working day following the participant insolvency. This is considered appropriate given the relatively small settlement values involved.

The Scheme Operating Rules set out the system's default procedures such that LINK's default procedures are robust.

**The Bank assesses the Scheme to observe Core Principle V.**

**CP VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.**

Settlement between members takes place across accounts held at the Bank of England.

**The Bank assesses the Scheme to observe Core Principle VI.**

**CP VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.**

The system's record of operational availability continued to be very good in 2007. VocaLink Ltd's service obligations to the Scheme are set out in contracts between VocaLink Ltd and members of the Scheme. The service level agreements introduce penalties if obligations are not met. This increases the ability of the Scheme to hold VocaLink Ltd to account for the quality of processing services provided.

Both the LINK Scheme and VocaLink Ltd have structured risk control frameworks, through which risks are identified and monitored. VocaLink Ltd's risk control process is reviewed independently of day-to-day operations by senior management, and the overall framework is subject to independent external audit. The VocaLink Ltd Board has responsibility for determining the overall risk appetite of the framework. The Scheme has its own formal risk framework to monitor and manage risks to the scheme.

Business continuity arrangements are tested regularly and appear to be extensive.

VocaLink Ltd is currently working to strengthen the infrastructure at both the primary and back-up sites. This is expected to be completed in Summer 2008. Additionally, in 2009 VocaLink Ltd plans to replace the current 'warm' back-up site with a 'live' site to allow continuous processing of transactions over two sites. This should reduce the impact of any operational risks were they to crystallise, strengthening observance of this Core Principle.

The controls underlying the system's risk management framework for managing operational risk are determined by the LINK Interchange Network Ltd and appear wide-ranging and generally well documented. The system maintains standards — determined by the Scheme and VocaLink Ltd — which cover, *inter alia*, encryption, authentication and availability. Participants self-certify their compliance with the required standards.

**The Bank continues to assess the Scheme to observe Core Principle VII.**

**CP VIII. The system should provide a means of making payments which is practical for its users and efficient for the economy.**

The number of transactions processed by VocaLink Ltd for LINK Scheme members increased from 972 million to 2.7 billion between 2000 and 2007. However, annual growth in transaction volumes has decelerated from 31.5% to 5.0% over the same period.

The governance arrangements for the Scheme set out the contractual separation of the Scheme from VocaLink Ltd as infrastructure provider (see Core Principle X).

Card issuers pay a switching and settlement fee to VocaLink Ltd for the cost of routing transaction information from the ATM used by the customer to the card issuer's own computer systems. This cost-based fee is a small fraction of participants' total fees. System participants also pay membership fees to the Scheme. These fees are comparatively small.

Card issuers also pay a multilateral interchange fee to acquirers on shared ATM transactions that pass through the LINK network. The multilateral interchange fee is a flat-rate fee set centrally by the Scheme, based upon an independent cost survey. There is a separate multilateral interchange fee for branch and non-branch ATM transactions, and only a fraction of the multilateral interchange fee is applicable to non-cash withdrawal transactions, such as account balance enquiries. In December 2006 the LINK Scheme announced agreement, within a Working Group set up by HM Treasury, to new interchange arrangements that provide incentives to ATM operators to install free-of-charge cash machines in target communities where Government, Members of Parliament and consumer groups consider there to be a risk of financial exclusion.

ATM operators may also impose charges on cardholders using their ATMs. Whether or not to do so is outside of the Scheme rules and hence determined by individual system participants who are free to compete in this market — and is therefore not considered in this assessment.

While it is not straightforward to assess the efficiency of a payment system, **the Bank assesses the Scheme to observe Core Principle VIII.**

**CP IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.**

The system's membership criteria appear objectively justified and are available to all prospective members. The criteria in theory allow open access to the Scheme.

The criteria impose few restrictions on membership, and the Scheme Operating Rules should ensure that participants do not bring an unacceptable level of credit or liquidity risk to the system (Core Principle III).

**The Bank assesses the Scheme to observe Core Principle IX.**

**CP X. The system's governance arrangements should be effective, accountable and transparent.**

The contractual separation of the Scheme and Company means that LINK has met all of the recommendations of the LINK Access and Governance Working Group<sup>(1)</sup> that related to the relationship between scheme and infrastructure. The Company is accountable to the Scheme for processing services provided. This has improved the transparency of governance arrangements.

The NMC is chaired by an independent non-executive and is composed of one representative appointed from each of the Scheme members. The NMC has the tools and incentives to pursue the interests of both the Scheme and its members. The Scheme has a Standing Committee on Consumer Issues, chaired by the independent Non-Executive Chairman of the NMC, to represent the interest of consumers and advise the NMC on consumer issues that relate to the LINK ATM network and LINK ATM Scheme Rules. While the Committee is purely advisory, the NMC has an obligation to respond formally to any recommendations or questions put to it by the Committee.

**The Bank assesses the Scheme to observe Core Principle X.**

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(1) The LINK Access and Governance Working Group was set up by the Payment Systems Task Force, chaired by the Office of Fair trading, in July 2005 to consider access and governance issues relating to LINK. The Bank attends the Working Group as an observer.

# Annex G UK Maestro

UK Maestro is one of the largest debit card schemes in the United Kingdom. It enables its Licensees' customers (cardholders) to purchase goods and services at participating merchants. In certain cases, cardholders can also obtain cash at point-of-sale through the scheme (cashback).

The UK Maestro scheme is managed by S2 Card Services Ltd (S2), a company limited by guarantee. The UK Maestro scheme came into being on 1 July 2004, when the former 'Switch' debit scheme operated by S2 was rebranded following a brand migration agreement between S2 and MasterCard Europe (MCE). Following a separate transaction processing agreement between S2 and MCE, MCE is also now the infrastructure provider for authorisation, clearing and settlement of UK Maestro transactions. In the context of infrastructure provision, MCE is responsible to S2 as a service provider.

## CP I. The system should have a well-founded legal basis under all relevant jurisdictions.

The UK Domestic Maestro rules ('the Rules'), as set by S2, appear to provide an adequate contractual basis for the system's operation in most areas. UK Domestic Maestro Licensees ('Licensees') are authorised by MCE, and are not bound to become members of S2. Regardless of their membership status, all Licensees must adhere to the Rules set by S2 according to the conditions of their contract with MCE. S2 can enforce the Rules on Licensees in its capacity as agent for MCE in administering the right to use the Maestro branding in the United Kingdom.

The *Operating Agreement* between S2 and its members, which forms part of the Rules, is a formal contract, which clearly states the obligations of its members under the Rules. Members agree to be bound by their obligations under the Rules, to take all necessary action in response to changes to the Rules, and to comply with all written directions of the S2 Board in relation to the UK Maestro scheme. New members are required to sign a Deed of Accession, which states that they agree to be bound by the terms and conditions of the *Operating Agreement* and the Rules. The *Operating Agreement* also states the services that S2 provides to the members, including granting access to the Rules, and providing advice in relation to the interpretation of the Rules. English law applies to the *Operating Agreement*.

UK Maestro Licensees also enter into bilateral agreements with MCE for branding and transaction processing purposes, tailored to the services requested by the Licensee, and not seen by S2.<sup>(1)</sup> An umbrella agreement also applies between S2 and MCE, which states that English law must apply to these individual agreements.

In the event of a default by a Principal Licensee (a Licensee which does not access the scheme through another Licensee), MCE guarantees to complete the multilateral net settlement cycle using MasterCard Incorporated's pool of resources and credit lines. But while the Rules define the point by which members will be notified of their daily net settlement position, there is no defined point of final settlement in the Rules. As a result, there is no defined final point by which the key financial risk has transferred from a MCE guarantee to a deposit at the settlement agent. It is possible therefore that the scheme's arrangements for dealing with the insolvency of a member could be subject to legal challenge.

**The Bank assesses the UK Maestro scheme partly to observe Core Principle I.** UK Maestro could improve its observance by defining the point of final settlement in its rules.

## CP II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.

The UK Maestro scheme is a deferred multilateral net settlement system, operating on a 'same-day' clearing and settlement basis.<sup>(2)</sup> Principal Licensees of UK Maestro are not exposed to financial risks from other Principal Licensees in the clearing and settlement process, as MCE undertakes to complete settlement in the event that a Principal Licensee fails to discharge its settlement obligation, using MCE's own resources. Principal Licensees do incur potential financial risks from any Affiliate Licensees (Licensees who access the scheme through the Principal Licensee) that they sponsor. The *Operating Agreement* clearly explains the financial risks arising from Affiliate Licensees that the Principal Licensee is

(1) Note that MCE does not process 'on us' transactions (where the merchant and cardholder use the same Licensee). 'On us' transactions are processed by the Licensee.

(2) The clearing and settlement cycle is same-day. However, the time from initiation of the transaction at the point of sale to settlement will normally be at least one day, as there is a short time lag between the initiation of the transaction, and the merchant uploading the details to their bank.

responsible for meeting. However, the Rules do not define a point of final settlement (the commentary on Core Principle I provides further details on this).

The Rules explain that following the settlement of a transaction, an acquiring Licensee (a merchant's bank) may be later subject to a 'chargeback', where an equal and opposite transaction is applied by an issuing Licensee (a cardholder's bank). The Rules clearly specify both the circumstances in which a chargeback is permitted (for example, fraud performed on a 'Chip and PIN' card when the merchant was not 'Chip and PIN' compliant), and the procedures and timescales for initiating, handling and settling a chargeback, as well as procedures for resolving a dispute between an issuing Licensee and acquiring Licensee regarding a chargeback.

**The Bank assesses the UK Maestro scheme broadly to observe Core Principle II.** UK Maestro could improve its observance by defining the point of final settlement in its rules.

**CP III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.**

As UK Maestro transactions are cleared through MCE platforms, MCE undertakes to complete settlement if a Principal Licensee fails to meet its settlement obligations. This essentially eliminates credit and liquidity risks between the participants, or between the participants and S2 as UK Maestro governance authority.

MCE assesses the risk that Licensees pose to it using MasterCard International's member risk assessment framework. Licensees are required, among other things, to provide current audited financial statements and meet minimum credit ratings. Where a Licensee is deemed to pose an excessive credit or liquidity risk to MCE, MCE can take measures to reduce the size of the potential risk from the Licensee.

UK Maestro settlement arrangements operate on a 'direct debit' basis; Licensees are required to pre-fund their settlement accounts, except where they have sufficient overdraft facilities on their accounts as part of a commercial relationship with the settlement agent, HSBC. In the event of a Principal Licensee defaulting, MCE uses first its overdraft facility at HSBC, and then MasterCard Incorporated's pool of liquid resources to complete settlement (and repay the overdraft). There are no formal penalties for a failure to pre-fund accounts.

**The Bank observes UK Maestro broadly to observe Core Principle III.**

**CP IV. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.**

The Bank does not have sufficient information to conduct an assessment of UK Maestro against Core Principle IV.

**CP V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.**

As processor of transactions between Licensees, MCE guarantees to complete settlement in the event of operational problems or default by a Principal Licensee. It does this through overdraft facilities available to it at the settlement agent and access to MasterCard Incorporated's \$1.4 billion pool of liquid resources (as at end-September 2006) available for managing operations. Given Principal Licensees' typical and peak settlement positions, this pool should be sufficient to cover the UK Maestro Principal Licensee with the largest net debit settlement position. However, in the event that this pool was not sufficient, for example if the Principal Licensee also had a large net debit position in the MasterCard UK credit card scheme, and/or there had been other recent member defaults which had depleted the pool, MCE has access to MasterCard Incorporated's legally committed \$2.5 billion agreed credit facility in order to complete settlement.

**The Bank assesses UK Maestro to observe Core Principle V.**

**CP VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.**

Settlement is performed on a multilateral net basis over accounts held at HSBC. While this is not a central bank asset, HSBC is a highly credit rated institution. In addition, positive balances held at HSBC during the settlement process are relatively small compared with positive balances held at settlement agents in other payment systems. The Bank therefore believes that these commercial assets provide an appropriate settlement asset for the UK Maestro scheme.

**The Bank assesses UK Maestro broadly to observe Core Principle VI.** However, the Bank sees little benefit from a risk reduction perspective in UK Maestro seeking to strengthen observance of Core Principle VI further.

**CP VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.**

MCE is responsible to S2 for the authorisation, clearing and settlement platforms on which UK Maestro operates. A system specification document details the responsibilities of MCE to S2 as a service provider, the service level objectives and targets that MCE is expected to meet, and arrangements and responsibilities for monitoring and reviewing performance against these targets. The objectives include minimum operational availability of the inter-member network, transmission time targets for the payment authorisation system, and targets for the production and transmission of clearing files to members. In the event that MCE fails to meet these targets, MCE is obliged to correct the fault and arrange additional resources as necessary to meet the service levels at no cost to S2 members. S2 also specifies service targets for Licensees, covering issues such as availability of the Licensees' authorisation systems, and notice periods to S2 and MCE of planned system downtime.

As service provider, MCE is also responsible for business continuity arrangements for the systems. MCE has worked hard to ensure that there are no single points of failure in the systems. For critical systems there are strong contingency arrangements in place, with both duplicate servers at the primary site, as well as a distant secondary site. Contingency arrangements exist in case MCE is unable to deliver clearing files to members by the usual time.

**The Bank therefore assesses UK Maestro to observe Core Principle VII.** However, it must be noted that this assessment focuses solely on the authorisation, clearing and settlement process.

**CP VIII. The system should provide a means of making payments which is practical for its users and efficient for the economy.**

Debit cards in general are one of the most popular payment instruments in the United Kingdom by volume. In 2006, there were approximately 6.8 billion debit card transactions, including 2.5 billion using the Maestro scheme. Where on-line authorisation of a payment is conducted, the response time of the MCE authorisation system<sup>(1)</sup> is in nearly all cases less than a second. The recent transfer from magnetic stripe and signature authentication to 'Chip and PIN' authentication, co-ordinated by APACS, completed smoothly. Maestro cards can also be used for payments abroad, although for these transactions, the rules of MCE apply rather the S2 scheme rules. This suggests that the UK Maestro system is practical for its users.

In terms of cost efficiency, the costs of processing transactions are balanced between Licensees through a Payment Guarantee Charge (PGC). This is similar to what is known in other systems as an 'interchange fee'. PGCs are negotiated and agreed bilaterally between Licensees, rather than set centrally, and are not seen by S2. However the Rules do include arbitration procedures that must be followed in the event of deadlock in these negotiations, and provide interim PGC rates while an independent arbitrator resolves the dispute.

While it is not straightforward to assess the efficiency of a payment system, **the Bank assesses the UK Maestro scheme to observe Core Principle VIII.**

**CP IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.**

Under the agency and licensing agreement between S2 and MCE, MCE (as brand owner) is responsible for licensing the Maestro brand in the United Kingdom, although S2 is currently appointed as Sole Agent to administer licensing. MCE will currently grant licences to entities that meet the relevant eligibility criteria, the most important of which are to be a body duly authorised and regulated as a credit institution in a country in Europe, or at least 90% owned by such a body. MCE then applies MasterCard International's member risk assessment framework, designed to assess the potential risk that the Licensee could pose to the system. Less creditworthy institutions are eligible to join, provided that they are able to meet MCE's minimum financial standards, or can offer other protective arrangements to cover the credit and liquidity risks that their membership poses to MCE, as settlement guarantor. The MasterCard International member risk assessment framework is not published. However, Maestro applicants are given a range of information when applying to join the scheme. The Rules also explain the processes and procedures for Licensees to withdraw from the scheme.

Article 28 of the EU Payment Services Directive, which defines right of access to payment systems, is likely to require MCE to make some changes to their access arrangements. In particular, MCE will no longer be allowed to prevent an institution participating in its system based on factors such as the type of institution applying. MCE will still be able to specify criteria that must be met, however, such as the settlement risk the institution will bring to the system. Once the changes to the criteria have been made, the Scheme's observance of this CP will be strengthened.

In terms of other financial risks, the Rules explain that S2 members are expected to contribute to the costs of running

(1) This time is defined as the transmission time between the acquirer and MCE, MCE and the issuer, the issuer and MCE, MCE and the acquirer, plus the MCE processing time.

S2, and define the basis on which the costs are divided between members of the scheme. The Rules also state the fixed costs that Licensees incur in the case of chargebacks under certain circumstances, and for duplicate or erroneous transactions. For many services, Licensees are free to agree charges bilaterally; however, the Rules state a set of standard charges if Licensees are unable to agree.

Once an institution has obtained a Maestro licence to issue cards or acquire merchants in the United Kingdom, it automatically participates in the UK Maestro scheme as a Licensee. It need not become a member of S2, although it must abide by the Rules set by S2.

**The Bank assesses UK Maestro broadly to observe Core Principle IX.** However, the Bank sees little benefit from a risk reduction perspective in UK Maestro seeking to observe more fully Core Principle IX, which could be achieved through having a publicly disclosed set of criteria for participation in the scheme.

**CP X. The system's governance arrangements should be effective, accountable and transparent.**

S2 is responsible both for setting and modifying the rules of the UK Maestro scheme. S2 is independent of both MCE and MasterCard Members Forum UK Ltd.<sup>(1)</sup> It is able to determine Rules independently from MCE, although with a proviso that new rules do not discriminate against International Maestro cardholders, damage the Maestro brand, or undermine the international Maestro rules.<sup>(2)</sup> There are also certain circumstances under which this proviso does not apply, such as setting interim PGCs, where S2 has full control of the Rules. S2 is responsible for notifying MCE of rule changes, and MCE is given 30 days to object.

The UK Maestro scheme is governed by the S2 Board, which is responsible for setting and modifying its rules. Members receive voting rights in proportion to their transaction volumes; these rights are recalculated annually. Each member of S2 (or member group) with at least one of the 100 votes is an 'entitled' member, and allowed to appoint one director to the S2 Board. However, since the Board is limited to twelve members, if there are more than twelve members with at least one vote, only the eleven members with the highest number of votes appoint directors. The remaining members jointly appoint a 'minority director'.

Reporting to the S2 Board is the Business Management Committee (BMC), which is responsible for managing the UK Maestro operations, and agreeing and implementing business requirements, within policies established by the Board. The BMC delegates certain elements of its responsibilities to one of four committees (rules and compliance, fraud, operational,

technical), which all report to it. All of the committees consist of nominated representatives of members. The powers, duties, responsibilities, rules and procedures of each of S2's committees are described in the constitutional rules and procedures under which the committees must operate, and the Terms of Reference for the committees, all of which are included in the UK Maestro *Operating Regulations*. A separate document defines detailed operating rules and procedures.

The clear responsibilities and reporting lines of committees to the Board, and limited size of the Board, assist in ensuring governance arrangements are effective, accountable and transparent. However, the voting rights structure, and the composition of committees and the Board, may not be appropriate in the future if a number of new small members join the scheme and principal membership increases to more than twelve, as planned. This is because the scheme would then become more under the control of the larger incumbent members. S2 has indicated to the Bank it would review the governance arrangements if it was felt that with a change in membership structure the larger members had excessive control in the scheme.

Given the current arrangements and limited membership of the scheme, **the Bank assesses UK Maestro broadly to observe Core Principle X.**

(1) MasterCard UK Members Forum Ltd manages the MasterCard credit card scheme in the United Kingdom.

(2) The fact that UK Maestro rules differ from the international Maestro rules will not itself count as 'undermining' them.

