



Payment Systems Oversight Report 2005

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Useful information

The *Payment Systems Oversight Report 2005* is available as a complete document in pdf format on the Bank of England's website:

www.bankofengland.co.uk/publications/psor/psor2005.pdf

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Executive summary

Payment systems are fundamental to the functioning of the economy. In the United Kingdom payment systems are not subject to statutory oversight; but the Bank of England, under the terms of the 1997 Memorandum of Understanding with HM Treasury and the Financial Services Authority, and on the basis of its experience as a designer, operator and user of payment systems, applies a non-statutory oversight regime, focusing especially on those systems whose reliable functioning is critical to financial stability. The *Oversight Report* explains how the Bank is discharging its public policy responsibilities in this field.

Overall, the main UK payment systems continue to exhibit a high level of robustness by international standards. Specifically, the high-value payment systems in the United Kingdom come close to observing fully the internationally-recognised *Core Principles for Systemically Important Payment Systems*, and stand favourable comparison with high-value systems in other countries. The Bank's oversight activity in the past year has aimed at further addressing systemic risk in UK payment systems. Significant progress has been made in a number of the areas identified in last year's inaugural *Oversight Report*, including:

- the Bank of England becoming concentration bank for sterling and euro payments in LCH.Clearnet Ltd's Protected Payments System (in September);
- CLS Bank and Abbey becoming members of CHAPS Sterling (in November), and UBS AG announcing its intention to become a member in 2007;
- the implementation of a *Liquidity Funding and Collateralisation Agreement* for BACS and the Cheque and Credit Clearings (in May); and
- the designation of BACS under the UK settlement finality regulations (in December).

These developments are among a number that are described in more detail in the main text of this *Oversight Report*, along with the Bank's current assessment of UK payment systems against the Core Principles. For UK and relevant international systems, the Bank continues to encourage progress where its assessment suggests improvement to be desirable.

The structure of this *Oversight Report* is as follows. After setting out the general rationale for, and the Bank's role and approach to, payment systems oversight (Chapter 1), it picks up on the themes set out in the previous *Oversight Report*, and updates on progress (Chapter 2). Developments in individual UK payment systems are assessed against the Core Principles (Chapter 3 and annexes). Finally, as part of the Bank's forward-looking agenda, a number of possible issues related to updating and extending the Core Principles are discussed (Chapter 4).

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Chapter 1: An introduction to payment systems oversight

The role of central banks in, and the Bank of England's specific responsibilities for, oversight of payment systems were set out in the first issue of the *Payment Systems Oversight Report* last year (hereafter 'the previous *Oversight Report*').⁽¹⁾ A more recent article in the Bank of England's *Quarterly Bulletin* summarises the role of central banks in payment systems oversight.⁽²⁾ The opening chapter of this second issue of the *Oversight Report* draws out the salient points from these earlier publications. It also reports on work by the Bank to put together a quantitative, risk-based framework for guiding its oversight activities, as presaged in the previous *Oversight Report*.

1.1 The role of central banks in the oversight of payment systems

A payment system is an organised arrangement — often described as a network — for transferring monetary value between its participants. In broad terms, payment systems support wholesale financial market activity, and allow transactions to take place between individuals and/or companies. Both types of payment activity are vital for a market economy to function. In 2004, the total value passing through UK payment systems was around £160 trillion, and this is estimated to have increased to around £175 trillion in 2005 (Table A).⁽³⁾ These are enormous sums: more than 140 times UK annual GDP. As a general rule, these payments are effected smoothly. This is because the systems are designed and operated robustly.

Payment systems are nevertheless exposed to a variety of risks; and because payment systems are networks, some of these risks can be transmitted through the financial system. For example, the financial or operational failure of one payment

system participant can adversely affect other participants, if exposures have arisen during the course of making payments. Alternatively, the financial or operational failure of a component of a payment system can cause payments between participants not to be effected at the intended time (or indeed at all), again with potentially adverse impacts on others. If these risks crystallise, there can be losses to the real economy — both directly, because payments have been delayed, have had to be redirected through other (more expensive or less efficient) payment systems, or have not been effected at all; and indirectly, because the failure of one participant has caused losses among one or more other participants.

Privately operated payment systems and their participants have incentives to mitigate these risks insofar as they might have an impact on their own objectives. However, since such incentives may not always be perfectly aligned with the public good, the risks may not be mitigated to the degree that would be optimal for the wider economy. Systemic risk in payment systems has, in effect, the characteristics of a 'public bad'. Furthermore, competitive pressures on providers of payment services are often limited, because, for different types of payment service, payment systems are subject to various economies of scale and other factors that limit competition. Among other things, this can mean that technological and organisational innovation, which can also help to mitigate risks in payment systems, is slower than might otherwise be the case.⁽⁴⁾ All this provides the rationale for a third party, acting in the public interest, to carry out oversight with the purpose of securing systemic stability in payment systems. That third party has typically been some public

(1) Bank of England (2004), *Payment Systems Oversight Report*, Chapters 1 and 2 in particular, available at: www.bankofengland.co.uk/publications/psor/psor2004.pdf.

(2) Haldane, A and Latter, E (2005), 'The role of central banks in payment systems oversight', *Bank of England Quarterly Bulletin*, Spring, pages 66–71, available at: www.bankofengland.co.uk/publications/quarterlybulletin/qb050106.pdf.

(3) These figures are based on the value of flows through CHAPS (Sterling and Euro), BACS, the Cheque and Credit Clearings (C&CC), Visa, MasterCard, LINK and the payment arrangements supporting CREST and LCH.Clearnet Ltd.

(4) Some of these points are set out in more detail in a paper to the Bank of England's *Future of Payments* conference (2005), Leinonen, H, 'e-Settlement: Soon a reality?', May, a draft of which is available at: www.bankofengland.co.uk/financialstability/futureofpayments/leinonen.pdf.

Table A
Volumes, values and main payment types (daily averages, 2005)^(a)

	Volume	Value (£ millions) ^(b)	Important payment types	Most likely short-term substitutes
Payment systems				
CHAPS				
Sterling	117,657	206,514	● Settlement of financial market transactions	● CHAPS Sterling bypass mode
Euro ^(c)	27,468	172,680	● House purchases	● Manual procedures for making a small number of payments
			● CLS pay-ins and pay-outs	● Possible use of correspondent banking arrangements for some other payments
			● Other time-critical payments	
BACS	20,537,001	12,601	● Salary and benefit payments	● Perhaps some limited scope for switching to other instruments in the short term — eg cheques or cash
			● Bill payments by Direct Debit	
			● Telephone and internet banking	
C&CC^(d)	7,634,307	4,869	● Payments for goods and services by consumers and businesses	● BACS
			● Bill payments and small financial transactions (eg payments into savings accounts)	● Card networks
			● Person-to-person payments	● Cash
Visa (credit and debit cards)^(e)	16,063,000	886	● Payments for goods and services by consumers and businesses	● Cheques
				● Other card networks
				● Cash
MasterCard^(f) (credit and debit cards)^(e)	14,906,000	776	● Payments for goods and services by consumers and businesses	● Cheques
				● Other card networks
				● Cash
LINK	6,749,315	260	● Withdrawal of cash using an ATM not operated by the customer's own bank	● Own bank's ATMs
				● Other cash withdrawal channels
CREST (payment arrangements supporting CREST)^(g)				
Sterling		300,038	● Settlement of gilts, equities and money market instruments	● Increased free-of-payment transfers of securities could be accommodated within CREST but with increased principal risk
US dollar		1,236	(including in respect of OMOs and repo market transactions more generally)	
Euro		1,018		
Total CREST	272,178	302,292		
LCH.Clearnet (Protected Payments System)^(h)				
Sterling	182	453	● Settlement in respect of cash margin payments	● If disruption does not prevent calculation of settlement obligations, contingency payment procedures may be invoked
US dollar	155	727	● Payments for commodity deliveries	● Contingency algorithms can be used to calculate obligations if usual mechanisms are unavailable
Euro	126	585	● Cash settlements	
Other	244	90	● Default fund contributions	
Total LCH	707	1,855		
Foreign exchange settlement system				
CLS			● Settlement of foreign exchange trades	● Correspondent banking arrangements in the relevant countries but with increased principal risk
All currencies	92,000	574,000		
Of which sterling ⁽ⁱ⁾	14,000	82,000		

Sources: APACS, Bank of England, CLS Bank International, CRESTCo, LCH.Clearnet Ltd and LINK Interchange Network Ltd.

(a) Except where indicated.

(b) US dollar, euro and 'other' figures are shown as sterling equivalent.

(c) Comprises domestic and cross-border euro payments (including both inward to and outward from the United Kingdom).

(d) Volumes include items drawn on other branches of the same bank. Values only include those drawn on other banks.

(e) Data for 2004 are shown.

(f) Includes UK Maestro and Solo transactions.

(g) Value figures refer to cash movements within CREST (and will therefore include the value of transactions settled between CREST members who use the same settlement bank). The volumes figure refers to all transactions processed within CREST, of which not all involve cash movements.

(h) Figures for the LCH.Clearnet Ltd Protected Payments System refer to the sum of all (net) payments between LCH.Clearnet Ltd and its members through the PPS. Volume figures are for August 2004.

(i) Trades in which one leg is denominated in sterling.

sector agency, and generally the central bank,⁽¹⁾ given that its liabilities ('central bank money') have long provided the ultimate, risk-free, means of discharging financial obligations between participants.

1.2 The oversight process in the United Kingdom

In the United Kingdom, the Bank of England's oversight responsibilities in respect of payment systems were formalised in the Memorandum of Understanding (MoU) with HM Treasury and the Financial Services Authority (FSA) agreed in 1997.⁽²⁾ The MoU places responsibility with the Bank for oversight of UK payment systems in general; in practice, the Bank focuses oversight resources on those payment systems and infrastructure providers where the crystallisation of risks would have the greatest impact on the wider economy — ie those systems which pose the greatest systemic risk.

Unlike many other central banks, the Bank of England does not have statutory powers to carry out its oversight.⁽³⁾ It therefore seeks to convince the management and owners of payment systems of the rationale for risk-reducing changes, where it assesses that the risks to the wider economy are not sufficiently recognised or, where appropriate, addressed by the operators of payment systems and their participants. In making any recommendations, the Bank bears in mind the Better Regulation Commission (BRC) principles of proportionality, transparency, accountability and consistency.⁽⁴⁾

Generally, the Bank's dialogue with system operators (on the case for, and progress with agreed risk-reducing changes) takes place in a pragmatic and co-operative environment. The

significant progress in implementing risk-reducing measures reported in Chapters 2 and 3 of this *Oversight Report* is testimony to the fact that these arrangements are capable of working effectively. If, however, they do not, then the Bank has a number of means for pursuing an issue, including through publications such as the *Oversight Report*, and speeches by senior Bank officials.⁽⁵⁾ Ultimately, if the Bank were unable to secure the risk-mitigating actions that it thought necessary, then the MoU requires 'the Bank to advise the Chancellor [of the Exchequer]... on any major problem inherent in the payments system'.

As part of its ongoing oversight, the Bank also assesses a number of those payment systems, with which it maintains an ongoing oversight relationship, against the internationally-recognised standards provided by the *Core Principles for Systemically Important Payment Systems*.⁽⁶⁾ It publishes the results in the annexes to this *Oversight Report*, which have been expanded on this occasion to provide detailed assessments of two further payment systems against the Core Principles — LINK and UK Maestro.

The Bank expects payment systems' degree of observance of the Core Principles to be proportionate to the systemic importance of the system in question. The expected degree of observance for a system may differ as between different Core Principles. For the most systemically important systems, the Bank may expect standards that go beyond those that would qualify for full observance of the Core Principles; for some other systems, full observance of all the Core Principles may not be deemed necessary.

(1) As set out in Table 1 of the previous *Oversight Report*, this is the approach that an increasing number of countries have adopted.

(2) *Memorandum of Understanding between HM Treasury, the Bank of England and the Financial Services Authority* (1997), available at: www.bankofengland.co.uk/financialstability/mou.pdf.

(3) The Bank does have some limited statutory responsibility for designating UK payment systems under the UK settlement finality regulations, which implemented the EU *Settlement Finality Directive* (SFD) (1998) in the United Kingdom. Once designated, the payment system's relevant rules are protected from legal challenge if a participant should become subject to insolvency proceedings. Payment systems do not require designation in order to operate, and the Bank cannot oblige payment system operators to seek it. The EU SFD has been the subject of a recent evaluation report by the European Commission, which noted that increasing numbers of systems want to be designated in order to gain the SFD's quality label. This evaluation report is available at: http://europa.eu.int/comm/internal_market/financial-markets/docs/settlement/evaluation_report_en.pdf.

(4) More information on the role of the BRC is available at: www.brc.gov.uk.

(5) For example, the Governor of the Bank of England's comments at the Mansion House on 16 June 2004, available at: www.bankofengland.co.uk/publications/speeches/2004/speech222.pdf. Publications (and speeches) are also vehicles for acknowledging action taken to mitigate risks — for instance, comments by the Bank's Governor in the subsequent Mansion House speech on 22 June 2005, available at: www.bankofengland.co.uk/publications/speeches/2005/speech250.pdf.

(6) The full text of the Core Principles and guidance on their implementation are available on (among others) the Bank for International Settlements website — CPSS (2001) *Core Principles for Systemically Important Payment Systems*, available at: www.bis.org/publ/cpss43.pdf.

In some instances, the Bank works together with other public bodies, where more than one such authority has an interest in the payment system in question. Within the United Kingdom, the Bank works closely with the FSA on the oversight of CREST and LCH.Clearnet Ltd, dovetailing its responsibilities for oversight of the payment arrangements in these systems with the FSA's responsibilities as supervisor of CRESTCo and LCH.Clearnet Ltd. The Bank is also a member of a number of international co-operative oversight arrangements, since some systems serve markets in several countries including the United Kingdom. These international arrangements are described in greater detail in Chapter 2 of this *Oversight Report*.

1.3 A new risk-based framework for oversight

During 2005, the Bank has aimed to strengthen the way in which oversight is conducted, by designing a new risk-based framework for oversight. The new framework seeks to deliver a more consistent and structured approach, and help the Bank focus its attention and resources where the level of risk is greatest. The framework is set to be implemented during 2006.

The foundation of the Bank's new risk-based framework is a payment systems 'risk register' — a comprehensive list of the most likely causes of disruption to individual payment systems. This is designed to deliver consistency across risk assessments of different payment systems — by providing a common starting point for those assessments.

The risk register incorporates the main types of risk that can arise in payment systems. A counterparty may fail to meet an obligation for full value, either when due, or at any time thereafter — 'credit risk' — or may fail to settle an obligation for full value when due, but then do so at a later time or date — 'liquidity risk'. Losses may result from inadequate or failed internal processes or systems, people (such as human error or fraud) or external events (such as terrorist attacks or extreme weather) — 'operational risk'. It is also possible that the unexpected interpretation of the law, or legal uncertainty, leaves payment system participants

and users with unforeseen financial exposures — 'legal risk'.

In practice, these types of risk are interrelated and overlapping. If, for example, an operational disruption delays receipt of funds, this can create liquidity problems for those who were relying on funds received to make their own outgoing payments. The crystallisation of these risks can be both cause and effect of problems in a payment system — one party's failure to pay can, for example, cause others' failure to pay. To ensure that, to the extent possible, the list of risks is not overlapping, the risk register groups the events that could lead to disruptions to payment systems under three headings:

- 'settlement risk' is the risk that a participant in a system cannot or does not meet its financial obligations when, under the rules of the system, they fall due, or that another institution that facilitates the settlement of those obligations — such as the settlement agent — becomes insolvent;
- 'operational risk' is the risk that a system operator or core infrastructure provider to the system is operationally unable to process or settle payments as intended; and
- 'business risk' is the risk that the payment system or any of its components — eg an infrastructure provider serving it — cannot be maintained as a going concern in the face of adverse financial shocks, which may disrupt or terminate its capacity to deliver processing services.

The risk-based approach to oversight begins with assessments of the risks in the risk register for each of the UK payment systems within the scope of ongoing oversight. This first involves analysis of whether and how the risk can crystallise. Among other things, this entails an assessment of the main risk 'controls' that the system operator has implemented, and of the quality of those controls. The assessment of payment systems against the Core Principles is an important input. Bearing in mind these controls, the next step is to seek to quantify how likely the risk is to occur — the 'probability'

of the risk — and the range of plausible adverse effects on the economy should it do so — the ‘impact’. This quantification is made in relation to the direct and indirect channels through which risks in payment systems can affect the real economy (Section 1.1).

Overall risk in a payment system is calculated by aggregating estimated probability and impact ‘scores’ for all the risks affecting that system. These assessments can then provide management information to guide where oversight resources should be concentrated.

The risk assessment process acknowledges the fact that systems do not exist in isolation and that risks in different systems are not necessarily independent (Section 4.4). The Bank takes these correlations into account when risks are aggregated across payment systems.

The risk-based framework for oversight is supplemented by ongoing monitoring of the systems that the Bank oversees. The Bank seeks access to a variety of regular information from

system operators and other sources, with the aim of detecting new developments that could affect assessments of risk — for example, an upgrade/downgrade to the credit rating of a major participant or an increase/ decrease in the number of operational problems experienced by the system. If new risks are identified through this regular monitoring, these are incorporated into the risk register as it is updated.

As noted above, Core Principles assessments of the quality of risk controls continue, in the context of this new risk-based framework, to play an important role in the oversight of UK payment systems. The new methodology for assessing risks should ensure that the Bank has a consistent, risk-based approach for deciding whether the level of observance that a system currently achieves against the Core Principles is sufficient. It is one contributor to the Bank’s work to support a possible update and extension to the Core Principles. This goal is discussed in greater detail in Chapter 4. The Bank intends to publish more details of its new risk-based framework for oversight during 2006.

Chapter 2: Progress since the previous Oversight Report

The previous *Oversight Report* set out a number of priorities for the oversight work of the Bank in 2005. This chapter reports on progress. The issues (with cross-references to the discussion in this *Oversight Report*) were:

- settlement risk in payment and settlement systems (system-by-system, throughout Chapter 3 below);
- tiering in UK infrastructures (Section 2.1 below);
- operational risk and business continuity planning (Section 2.2 below);
- corporate governance and financial infrastructures (Sections 2.3 and 4.1 below);
- co-operative oversight models (Section 2.4 below);
- the operational implications of the CREST-Euroclear merger (Section 3.3 below); and
- a new risk-based framework for oversight (Section 1.3 above).

2.1 Tiering in UK infrastructures

The previous *Oversight Report* set out the potential credit, legal and operational risks associated with ‘tiering’ in payment systems and especially with the tiered structure of the high-value payment systems in the United Kingdom. These risks may arise when direct members, or ‘first-tier’ participants, of a payment system make payments on behalf of their banking customers. It is worth noting, however, that some degree of tiering may be economically efficient as a way of structuring payment arrangements. The important issue from a public policy point of view is to identify any associated systemic risk and take measures to address it, whether through reducing the degree of tiering or otherwise.

The Bank has carried out work to quantify the credit risk arising from intraday settlement-related unsecured exposures between first and second-tier banks in CHAPS Sterling. It has found that, in normal circumstances, these exposures, though sizable in absolute terms, are relatively small in relation to the capital of first-tier banks.⁽¹⁾ The Bank has also analysed risks from tiering in the payment arrangements supporting CREST sterling, Continuous Linked Settlement (CLS) and the payment arrangements supporting LCH.Clearnet Ltd.

A comparison with securities settlement systems in other G10 countries appears to suggest that the degree of tiering in CHAPS Sterling and CREST sterling’s payment arrangements is relatively high, reflecting the relatively small number of settlement banks. However, the total number of direct members in a payment or settlement system is not always a good indication of its degree of tiering. In the market for securities settlement of government bonds in the United States, for example, two commercial banks account for over 75% of transfer volume despite the fact that around 8,000 institutions are direct members of the securities settlement system.⁽²⁾

In CREST sterling, tiering arises because just 15 settlement banks settle the payment leg of securities transactions on behalf of over 2,400 corporate and financial institutions and over 40,000 personal members. Transactions between CREST members who share the same settlement bank can be internalised, that is, settled across the books of the settlement bank rather than through the central payments infrastructure. It is estimated that the value of these internalised transactions is around £55 billion a day.

Data collated from a survey of CREST settlement banks carried out by the Bank indicate that the intraday credit limits extended for

(1) *Bank of England Financial Stability Review* (December 2004), pages 77–81, available at: www.bankofengland.co.uk/publications/fsr/2004/fsr17art4.pdf.

(2) Figures for 2004.

settlement to non-clearing members were larger than for CHAPS. However, in contrast to CHAPS where the majority of intraday credit extended for payment purposes is unsecured, in CREST a substantial proportion of these lines is secured with securities held in CREST by the customers of these banks.

Most banks allocate limits on a bilateral counterparty rather than on a system-by-system basis. As membership of CREST sterling and CHAPS Sterling is almost identical,⁽¹⁾ the Bank analysed the credit risks to settlement banks arising from these exposures using data for the sum of their unsecured CREST and CHAPS exposures. The results indicated that, overall, tiering does not pose substantial systemic credit risk in normal circumstances. This is because settlement-related exposures represent only a small proportion of first-tier bank exposure to customers.

In very stressed market conditions, however, it is possible that the combination of a substantial increase in second-tier banks' own credit exposures and an increase in their utilisation of intraday credit lines extended by first-tier banks could lead to a significant increase in the credit risk faced by the latter. This combination of circumstances has not materialised so far.⁽²⁾

This analysis does not, however, take account of the likely behavioural response of first-tier banks to an increase in credit risk of second-tier banks. One possible reaction might be to cut credit lines to the affected second-tier banks, but this might sharply exacerbate the impact of the initial shock and potentially lead to wider market dislocation.

One alternative approach would be for more firms to become direct members of the large-value payment systems.⁽³⁾ In the case of CHAPS and the

payment arrangements supporting CREST, this facilitates access to intraday credit from the Bank, subject to them having adequate collateral available.⁽⁴⁾ This may be particularly important to large complex financial institutions with large payment values, on which liquidity pressures might build up quickly in stressed conditions. Since the previous *Oversight Report*, Abbey and CLS Bank have now become members of CHAPS Sterling and Abbey has also joined CREST sterling. UBS AG has announced its intention to join CHAPS Sterling in 2007.

Tiering exists in LCH.Clearnet Ltd because 13 Protected Payments System (PPS) banks make payments to LCH.Clearnet Ltd on behalf of LCH.Clearnet Ltd members (116 in total at the end of November 2005), via a 'concentration bank'. The profile of LCH intraday credit is reasonably predictable, with payments of initial margin and contract cash settlement funds being made in the morning, followed by smaller variation margin payments later in the day.⁽⁵⁾ Total payments made through PPS banks are around £1.7 billion a day. The credit risks, though, taken by PPS banks in the payment system supporting LCH.Clearnet Ltd are a small proportion of each of the PPS bank's total assets, and considered in isolation do not constitute a significant systemic risk.

Many of the large UK clearing banks are also settlement members of the CLS foreign exchange settlement system. Tiering exists in CLS insofar as 56 settlement members settle trades on behalf of a much larger number of 'third-party users' (657 at the end of 2005, from just over 200 at the end of 2004). This development has reduced systemic risk because third-party participation in CLS significantly reduces foreign exchange principal exposure compared with settling outside CLS (Section 3.5). Settlement members in CLS can, however, have unsecured intraday exposures to

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- (1) The exceptions are KAS Bank which is a CREST sterling member but not a CHAPS Sterling member and CLS Bank which is a member of CHAPS Sterling but not CREST sterling.
- (2) For more detail, see Harrison, S, Lasaosa, A and Tudela, M (2005), 'Tiering in UK payment systems: credit risk implications', *Bank of England Financial Stability Review*, December, pages 63–72, available at: www.bankofengland.co.uk/publications/fsr/2005/fsr19art6.pdf.
- (3) The efficiency gains from settling on the books of a central bank are analysed in Kahn, C M and Roberds, W, 'Payments settlement: tiering in private and public systems', presented at the Bank of England's *Future of Payments* conference, May 2005. The paper is available at: www.bankofengland.co.uk/financialstability/futureofpayments/kahnroberdsBOE.pdf.
- (4) One consequence of the reforms to the sterling money markets currently being implemented by the Bank may be to make direct settlement membership of CHAPS more attractive.
- (5) '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 (received by) members to (from) LCH.Clearnet Ltd to settle any losses (gains) resulting from marking open positions to market.

their third-party users or *vice versa*. The value of trades settled involving third-party users is approaching 30% of total settled value. While many of the exposures between settlement members and third-party users appear to be appropriately controlled, their overall magnitude is less well known — suggesting that further work on this front could be warranted.

2.2 Operational risk and business continuity planning

Operational vulnerabilities in payment systems are important both because they can significantly exacerbate existing credit and liquidity risks and because they can lead directly to disruption of the financial system. The previous *Oversight Report* highlighted the growing focus on operational risk and business continuity planning. The following section looks at how this work has developed over the past year.

Oversight of operational risk

The Bank has continued to pursue a number of approaches to ensure that operational risks in payment systems are adequately addressed. One approach has been to investigate and target types of operational risk that affect more than one system. Information security risk, which could affect the integrity, confidentiality and availability of systems' networks, is one such area. Payment system business continuity is another major example of cross-system work.

In parallel, the Bank has looked to identify system-specific operational risks and support their mitigation. The encouragement given to CLS to become a direct member of CHAPS Sterling (Section 3.5) in order to remove a layer of operational dependency in its sterling payment arrangements is one example.

Risks can be identified as a result of operational incidents. Following major incidents, the Bank seeks assurance from system operators that adequate controls are in place to ensure that the specific problems can be dealt with effectively. It is also important that systems give full consideration to understanding the wider aspects of incidents and their full implications. For example, an outage to the UK Real-Time Gross Settlement (RTGS) processor occurred in January

2005 when operational difficulties experienced by a non-UK large-value payment system (connected to RTGS via TARGET) led to an unanticipated slowdown to the processing of payments in RTGS and disruption to CREST payments. As well as addressing the underlying technical issues which caused this problem to arise, the unexpected knock-on effects of the event suggested that a number of systems might usefully strengthen their stress testing to include operational incidents arising from dependencies between systems.

The Bank continues to assess observance of recognised standards for operational robustness, security and contingency planning, and seeks to establish new standards where gaps exist. As shown in the annexes to this *Oversight Report*, existing assessments for CHAPS, CREST, LCH.Clearnet Ltd, BACS and the Cheque and Credit Clearings (C&CC) against Core Principle VII (which concerns operational risk) have been reviewed in the light of recent developments and new assessments have been undertaken for LINK and UK Maestro. International work is under way to establish a more structured framework for the assessment of SWIFT's operational risk management (Section 3.10). The Bank has also reviewed systems' approaches to operational risk management.

Quantitative information on operational risk is a crucial input to the Bank's analysis of a payment system's observance of best practice standards. To that effect, the Bank has collected new data on operational performance from systems such as LCH.Clearnet Ltd and LINK over the past year. Additional qualitative information on operational risk has resulted from holding more meetings with systems' external auditors.

Over the next year, this work will be synthesised within the new risk-based framework for oversight. As part of implementation, the Bank plans to use new qualitative techniques to benchmark different systems' underlying vulnerability to operational risks; to assess the controls used by systems to mitigate and reduce these risks; and to produce 'residual' risk exposure assessments. Using scenario analysis techniques, quantitative

estimates of the probability and impact of severe operational risk events are also being built up.

A major constraint in making robust quantitative estimates of operational risk in payment systems is the limited availability of usable data, particularly on the extreme — perhaps once in every 50 year — events that can have greatest impact on the financial system. The Bank is in the process of building its own database of operational incidents affecting UK payment systems. Separately, arrangements already exist to collect and share information on incidents affecting euro large-value payment systems among the European System of Central Banks (ESCB) (Section 3.2).

Oversight of business continuity

Business continuity analysis and policy has been a particular focus over the past year, its importance underlined by the terrorist attacks in London on 7 July 2005. These attacks led to widespread disruption, particularly through the impact on the transport network. The direct impact on the financial sector, however, was small.

Following the attacks, the Tripartite Authorities (HM Treasury, the Bank of England and the FSA) conducted a post-incident review of the impact on the financial sector. Over 40 institutions, including the major infrastructure providers, were consulted. The review found that most payment and settlement systems experienced relatively low levels of physical disruption. Of the systems with which the Bank maintains an ongoing oversight relationship, only LCH.Clearnet Ltd was directly affected, due to its proximity to one of the attacks (Section 3.4).

The Bank has also discussed the events with many of the payment systems. Although not directly affected, a number of systems reviewed their internal procedures in the light of the attacks. Areas where systems have looked to strengthen procedures include improving processes to identify the location of staff following a major event.

During 2005, the UK payment systems took part in the Resilience Benchmarking Project organised by the Tripartite Authorities. The objective of the project was to determine the robustness of the UK financial services sector in the event of major operational disruption. To this end, the resilience and recovery capacity of over 60 major market participants and financial market infrastructure providers was assessed — both individually and collectively. The project also looked at the dependencies between participants. The project established that the major UK payment systems are highly resilient, with rapid recovery times to be expected for such crucial parts of the UK financial system.⁽¹⁾

The Tripartite Authorities also organise UK financial sector market-wide exercises. These exercises are designed to practise co-ordination of responses to sector-wide disruption among key participants in the financial sector; to enhance the understanding of, and confidence in, the role of the financial authorities in the event of major operational disruption; to provide an opportunity for participants to run internal exercises based on the scenario; and to identify areas for improvement in existing procedures. The latest exercise took place in November 2005 and involved some 80 financial sector organisations, including most of the UK payment systems.⁽²⁾

Other UK developments in the past year include the establishment of the Cross Market Business Continuity Group (CMBCG) and work by the Money Markets Liaison Group (MMLG). The CMBCG is convened in a crisis as a forum for the Tripartite Authorities, infrastructure providers and key firms to pool information. The CMBCG was first convened in its crisis mode on 7 July.⁽³⁾ The MMLG provides a high-level forum for discussion of structural developments affecting sterling money markets and related infrastructure. Its recent contingency planning work has included clarifying responsibilities for decision-making in the event of major operational disruption to the

(1) The discussion paper is available at: www.fsc.gov.uk/section.asp?catid=320&docid=942. Further information on the exercise is available on the UK Financial Sector Continuity website: www.fsc.gov.uk.

(2) A report on the exercise will be published later in 2006 and will be available on the UK Financial Sector Continuity website.

(3) *The Financial Sector Business Continuity Annual Report* (October 2005) has more detail on the authorities' business continuity work: www.fsc.gov.uk/section.asp?catid=350&docid=948.

sterling money markets or major UK payment systems.

Business continuity is one area where best practice has evolved since the publication of the Core Principles. To reflect this, the Bank has worked with international authorities to develop and strengthen standards in this area. In May 2005, the ESCB published draft implementation guidelines for payment systems business continuity based on Core Principle VII.⁽¹⁾ The guidelines set out more comprehensively the key elements of business continuity planning, such as the formulation of business continuity objectives and the development, testing and updating of business continuity plans. The Bank intends to reflect the guidelines in its oversight assessments.

2.3 Corporate governance and financial infrastructures

In 2005, the Bank participated in a number of working groups under the Office of Fair Trading (OFT) Payment Systems Task Force (Box 2), exploring the benefits of various governance arrangements. Across these working groups, the Bank made the case for strengthening the influence of non-bank stakeholders in the payment schemes'⁽²⁾ decision-making.

Observance of a number of the Core Principles increased during 2005 (Chapter 3; annexes), which, in itself, can be seen as evidence for effective governance. Nonetheless, there is room for improvement of governance arrangements (Section 4.1). As the schemes have been awaiting the working groups' recommendations, which are due between 2006 and early 2008, progress has been limited in the past year, although governance arrangements improved in BPSL (Section 3.6).

2.4 Co-operative oversight arrangements

Many of the systems assessed in this *Oversight Report* operate cross-border, or are part of a cross-border group, and are systemically important in a number of countries. The United Kingdom's ability to minimise systemic risk depends therefore, in part, on the robust design and

smooth functioning of systems located abroad. However, oversight responsibilities for infrastructures continue to be organised on a national basis. It follows that co-operative arrangements between central bank overseers and other interested authorities are needed to facilitate adequate mitigation of the systemic risks posed by cross-border and multicurrency payment systems in all jurisdictions.

Since 1990, co-operative oversight arrangements between G10 central banks have been guided by the Lamfalussy Principles for co-operative oversight.⁽³⁾ Box 1 discusses a recent report from the Committee on Payment and Settlement Systems (CPSS) on *Central bank oversight of payment and settlement systems*, which, among other things, reviewed and updated the Lamfalussy Principles. A number of the specific co-operative arrangements in which the Bank is involved are described below.

Co-operative arrangements for CLS

The CLS system settles foreign exchange transactions in 15 currencies using the large-value payment systems (RTGS or equivalent) of the countries of issue for these currencies. The US Federal Reserve authorises the establishment, and is the primary supervisor, of CLS Bank International (CLS Bank) — the institution that provides the CLS service — and accepts primary responsibility for the oversight of the CLS system.

As required by Lamfalussy Principle 3, central banks, led by the Federal Reserve, work with CLS to update their Core Principles assessment of CLS where necessary — for example, prior to new currencies being introduced or material changes being made to risk management arrangements.

The CPSS Foreign Exchange Settlement Risk sub-group (hereafter 'the sub-group'), which is chaired by the Federal Reserve, serves as the primary forum for co-operation between overseers of CLS. All central banks and monetary authorities that issue currencies settled in CLS are represented on the sub-group, along with

(1) Available at: www.ecb.int/ecb/pdf/cons/paysysbusinesscontinuity/paysysbusinesscontinuity.pdf.

(2) Several payment systems in the United Kingdom have separated the company providing the infrastructure service from the scheme that is responsible for setting out the rules that determine the way the system operates.

(3) Available at: www.bis.org/publ/cpss04.pdf.

five euro-area national central banks. The Federal Reserve has agreed to provide the members of the sub-group with information relevant to the oversight of CLS on a confidential basis.

In accordance with Lamfalussy Principle 4, prior to the inclusion of a currency into the CLS system, the Federal Reserve asks each of the relevant central banks to confirm that it is satisfied that CLS's settlement arrangements are sufficiently robust. New information and analysis regarding CLS's settlement and failure-to-settle procedures is provided to the relevant central banks on a timely basis, when major changes to the system are made.

Co-operative arrangements for SWIFT

Co-operative oversight arrangements for SWIFT have developed out of discussions at CPSS, and, like the arrangements for CLS, draw heavily upon the Lamfalussy Principles. Unlike the other co-operative arrangements discussed here, the National Bank of Belgium (NBB) as lead overseer has no statutory enforcement powers over SWIFT; therefore central banks rely on moral suasion to influence SWIFT.

The NBB acts as lead overseer because SWIFT is incorporated in Belgium. A protocol has been signed between SWIFT and the NBB, in order to formalise a common understanding of SWIFT oversight objectives, and the activities that will be undertaken to achieve these objectives.

The NBB conducts its oversight in co-operation with the other G10 central banks. The arrangements between these central banks and the NBB are laid down in bilateral Memoranda of Understanding (MoU). In particular, these specify the details of three SWIFT oversight groups, all chaired by the NBB, which have responsibility for different aspects of SWIFT oversight. The Bank is a member of all these groups.⁽¹⁾

The bilateral MoU contain provisions for the treatment of confidential information being

shared under the co-operative agreement. In accordance with Lamfalussy Principle 5, they expressly allow an overseer, in extreme circumstances, to make public any concerns it has over a potential systemic threat posed by SWIFT, even where this view is based on the analysis of confidential information.

Oversight arrangements do not currently include provisions for periodic comprehensive assessments of the design of SWIFT against agreed standards. A notable obstacle to such an assessment is that no appropriate internationally agreed standards exist for messaging systems. Collective work by overseers is now under way to establish a more structured framework for the assessment of SWIFT's operational risk management (Section 3.10).

Co-operative arrangements for the Euroclear group

CRESTCo is incorporated in the United Kingdom and subject to supervision by the FSA, with the Bank having responsibility for the oversight of the payment arrangements supporting securities settlement. CRESTCo is a wholly-owned subsidiary of Euroclear SA/NV (ESA), which is incorporated in Belgium. Under Euroclear's long-term business plan, settlement in the group's centralised securities depositories (CSDs) which include CREST, will shift to common data centres in Europe and, ultimately, occur on a single platform owned and operated by ESA (Section 3.3).

This concentration of the main settlement activities creates a need for enhanced co-operative oversight arrangements between authorities with responsibility for entities within the Euroclear group. To this end, a multilateral MoU has recently been signed between the relevant authorities in Belgium, France, the Netherlands and the United Kingdom. The MoU specifies arrangements for both the exchange of information between authorities, and the organisation of the co-ordinated assessment of the common services provided by ESA. As ESA is a regulated entity under Belgian law, the NBB and

(1) A detailed description of co-operative oversight arrangements for SWIFT — and Euroclear — can be found in the National Bank of Belgium's *Financial Stability Review* (2005), pages 95–103, available at: www.bnb.be/doc/ts/Publications/FSR/FSR_2005_EN.pdf.

the Belgian Banking, Finance and Insurance Commission (CBFA) are the co-ordinating authorities with respect to co-operative oversight and supervision.

In practice, two committees, co-chaired by the co-ordinating authorities, have been set up to implement the co-operative framework. Both committees are given administrative support by a permanent secretariat managed by the Belgian authorities. The intention is that the supervisory assessment and resulting supervisory actions should be agreed by all relevant authorities.

Where relevant, the CPSS-IOSCO (International Organization of Securities Commissions) Recommendations for Securities Settlement Systems (RSSS) will be used as a benchmark for the co-ordinated assessment.

Co-operative arrangements for the LCH.Clearnet group

Co-operative arrangements for the LCH.Clearnet group have much in common with those for the Euroclear group: individual entities within the group are subject to local supervision, central banks are required to co-operate with banking and securities regulators, and recent consolidation has led to a need for enhanced co-operation between authorities.

LCH.Clearnet Group Ltd has two wholly-owned subsidiaries, LCH.Clearnet Ltd, and LCH.Clearnet SA. LCH.Clearnet Ltd, the London-based central counterparty (CCP), is subject to supervision, as a Recognised Clearing House (RCH), by the FSA, with the Bank having responsibility for the oversight of its payment system. LCH.Clearnet SA, which clears trades on, among others, the Euronext exchanges, is incorporated in France and subject to supervision and oversight by the French authorities as a bank, a CCP clearing house, and an operator of a securities settlement system. As LCH.Clearnet SA is also a CCP for regulated markets in the Netherlands, Belgium and Portugal, this supervision is conducted in close co-ordination with the relevant Dutch, Belgian and Portuguese authorities. LCH.Clearnet Group Ltd, the parent entity, is incorporated in the

United Kingdom. However as LCH.Clearnet SA is regulated as a credit institution in France, its parent company is defined as a financial holding company under the EU Banking directive and thus is subject to consolidated supervision by the Commission Bancaire.

A MoU has been agreed between the relevant French, Belgian, Dutch, Portuguese and UK authorities to facilitate effective supervision and oversight of LCH.Clearnet Ltd, LCH.Clearnet SA and LCH.Clearnet Group Ltd. The authorities undertake to harmonise their supervisory methods where possible, to co-operate in identifying key risks attached to the group and to develop policies to address these risks.

Additionally, an exchange of information letter has been signed by the Dutch and UK authorities to complement the wider MoU relating to LCH.Clearnet group activities (Section 3.4).

Co-operative arrangements for international card schemes

The Bank and the European Central Bank (ECB) have recently initiated discussions which seek to increase co-operation in collecting information relevant to the oversight of Visa Europe, whose European operations are based in the United Kingdom.

Effectiveness of co-operative arrangements

In the previous *Oversight Report*, the Bank undertook to review the degree to which international co-operative arrangements have enabled the Bank to fulfil effectively its responsibility for oversight of UK payment systems. As outlined above, considerable progress has been made in developing suitable arrangements, designed in accordance with the Lamfalussy Principles, which enable the Bank to discharge its oversight responsibilities. The arrangements for CLS and SWIFT are well-developed and have been working without major problems for several years. Euroclear group and LCH.Clearnet group are still in the process of developing their key systems and therefore it is too early to comment on the effectiveness of the co-operative arrangements for these groups.

Going forward, the design and operation of co-operative oversight arrangements will continue to provide challenges to overseers. Further consolidation of infrastructures seems likely, requiring existing arrangements to adapt and new arrangements to be made. The main areas where the Bank considers further improvement in the design of co-operative arrangements to be necessary are: (i) specifying which authorities are represented, and to what extent, in co-operative arrangements; and (ii) agreeing the appropriate degree of disclosure by authorities in a co-operative arrangement (discussed further in Section 4.2).

A common issue when designing co-operative arrangements is arriving at an appropriate level of representation. It is clearly desirable to include in the arrangement all authorities to whom an infrastructure is of potential systemic importance. However, this must be weighed against the need to make co-operative arrangements as efficient as possible. For example, SWIFT supplies messaging services in over 200 countries, but it would be unworkable to attempt to include authorities from all these countries in a co-operative oversight arrangement for SWIFT.

The Bank, along with the FSA and HM Treasury, has argued that the composition of authorities involved in co-operative arrangements should be guided by criteria that capture the potential impact of a disruption to an institution, on the

financial systems of the countries in which it is active.⁽¹⁾ That is, oversight responsibilities should be aligned with measures of systemic risk.

Such an alignment is allowed for within the framework of the Lamfalussy Principles. However, to date, central banks have not attempted to agree specific guidance on potential impact criteria that could be used to measure the relevance of an infrastructure. In the Bank's view this would be a worthwhile exercise.

The impact of a disruption to an infrastructure might be analysed using the following four broad criteria:

- (i) Scale** — of the infrastructure's activity in the domestic currency or markets; both relative and absolute measures might be appropriate;
- (ii) External interlinkages** — potential for spillovers from the infrastructure to other institutions or markets;
- (iii) Internal interlinkages** — potential for spillovers between entities within an infrastructure group; and
- (iv) Substitutability** — potential for the activities being performed by the infrastructure to be performed elsewhere within a reasonable time period.

(1) These arguments are set out at: www.bankofengland.co.uk/publications/other/europe/fsapjan05.pdf.

Box 1: CPSS Report on *Central bank oversight of payment and settlement systems*

In May 2005 the Committee on Payment and Settlement Systems (CPSS) published its report on *Central bank oversight of payment and settlement systems*.⁽¹⁾ On the basis of the analysis contained in that report, two sets of principles are laid out to guide central banks in organising and conducting effective oversight. One set is generally applicable to all oversight arrangements; the other set is specifically applicable to co-operative oversight arrangements.

This box discusses the set of general principles which are applicable to the oversight of any scheme, arrangement or institution involved in clearing, netting or settlement. Each principle is listed below accompanied by an explanation of how it is met by the Bank.

Principle A: Transparency

‘Central banks should set out publicly their oversight policies, including the policy requirements or standards for systems and the criteria for determining which systems these apply to.’

The Bank publicly set out its oversight policies in *Oversight of Payment Systems* (2000).⁽²⁾ Chapter 2 of the previous *Oversight Report* explained the framework in which payment systems oversight was conducted in the United Kingdom. Section 1.3 of this *Oversight Report* outlines a new risk-based framework for oversight to be implemented during 2006.

The Bank believes that it can further enhance the transparency and accountability of its oversight by publishing an assessment of the systems it oversees in an annual *Oversight Report*. A discussion of transparency provisions in the Core Principles can be found in Section 4.2 of this *Oversight Report*.

Principle B: International standards

‘Central banks should adopt, where relevant, internationally recognised standards for payment and settlement systems.’

The Bank has adopted the Core Principles as applicable standards against which to oversee payment systems. Chapter 4 of this *Oversight Report* discusses areas where, in the Bank’s view, the Core Principles could usefully be updated and extended.

Principle C: Effective powers and capacity

‘Central banks should have the powers and capacity to carry out their oversight responsibilities effectively.’

Under normal circumstances the Bank’s requests for information or attempts to induce change from the systems it oversees are fulfilled through moral suasion. By regularly publishing oversight assessments of individual systems, the Bank can strengthen a system’s incentive to co-operate, for example by creating pressure for change from system participants.

A number of UK payment systems settle interbank obligations by means of credits and debits to accounts at the Bank of England. Settlement membership of many payment systems therefore depends on having a settlement account at the Bank. The Bank can attach contractual conditions to its agreement to act as settlement agent. If these conditions were considered too onerous, however, this could encourage use of alternative settlement agents, thereby undermining the Bank’s risk-reduction objectives.

Of the 15 central banks who are represented in the report, the Bank is one of a small minority who lack any direct statutory powers to obtain information and induce change from the system operators they oversee.⁽³⁾

Principle D: Consistency

‘Oversight standards should be applied consistently to comparable payment and settlement systems, including systems operated by the central bank.’

(1) Available at: www.bis.org/publ/cpss68.pdf.

(2) Available at: www.bankofengland.co.uk/publications/psor/ops.pdf.

(3) The Bank does have some limited statutory responsibility for designating payment systems under the ‘UK settlement finality regulations’, which implemented the EU *Settlement Finality Directive* (1998) in the United Kingdom. This role is described in Bank of England (2000), *Oversight of Payment Systems*.

By assessing all overseen payment systems against the Core Principles, the Bank seeks to ensure a consistent application of oversight standards. In the Bank, the functions of oversight and operation of key payments infrastructure are organisationally separated. The Systemic Risk Reduction Division has responsibility for oversight of payment systems, and is located within the Bank's Financial Stability directorate. Policy towards and the operation of the RTGS platform that, among other things, settles CHAPS transactions is the responsibility of the Market Services Division, which is located within the Banking Services directorate.

Principle E: Co-operation with other authorities

'Central banks, in promoting the safety and efficiency of payment and settlement systems, should co-operate with other relevant central banks and authorities.'

In the United Kingdom a framework for co-operation between the Bank, FSA and HM Treasury in the field of financial stability was specified in the MoU signed in 1997 (Section 1.2). This sets out the Bank's responsibility for the overall stability of the financial system as a whole including, among other things, an involvement with payment systems at home and abroad. The FSA is given responsibility for, among other things, the supervision of clearing and settlement systems.

Principles for international co-operative oversight

The CPSS report reviews and updates the Lamfalussy Principles, which have guided co-operative oversight between central banks since their publication in 1990.⁽⁴⁾ These principles were originally developed with netting schemes as their primary focus, but have subsequently been applied to a variety of co-operative arrangements. The CPSS report concludes that these principles continue to provide a useful framework for international co-operative oversight and makes clear that their scope is not limited to netting schemes. The revised principles are listed below. Section 2.4 of this *Oversight Report* discusses the role of these principles in the co-operative

oversight arrangements of which the Bank is a member.

Principle 1 is relevant to any cross-border or multicurrency scheme, while the remaining four principles apply only to systems deemed to be of sufficient relevance to more than one central bank to warrant a co-operative oversight arrangement.

1: Notification — 'Each central bank that has identified the actual or proposed operation of a cross-border or multicurrency payment or settlement system should inform other central banks that may have an interest in the prudent design and management of the system.'

2: Primary responsibility — 'Cross-border and multicurrency payment and settlement systems should be subject to oversight by a central bank which accepts primary responsibility for such oversight, and there should be a presumption that the central bank where the system is located will have this primary responsibility.'

3: Assessment of the system as a whole — 'In its oversight of a system, the authority with primary responsibility should periodically assess the design and operation of the system as a whole. In doing so it should consult with other relevant authorities.'

4: Settlement arrangements — 'The determination of the adequacy of a system's settlement and failure-to-settle procedures in a currency should be the joint responsibility of the central bank of issue and the authority with primary responsibility for oversight of the system.'

5: Unsound systems — 'In the absence of confidence in the soundness of the design or management of any cross-border or multicurrency payment or settlement system, a central bank should, if necessary, discourage use of the system or the provision of services to the system, for example by identifying these activities as unsafe and unsound practices.'

(4) The principles were set out in the 1990 Lamfalussy report, formally titled the *Report of the Committee on Interbank Netting Schemes of the central banks of the Group of Ten countries*, and are available at: www.bis.org/publ/cpss04.pdf.

Table B
Summary assessment of the main UK payment systems against the Core Principles

	CHAPS £ & €	CREST £ & €	CREST US\$	LCH. Clearnet Ltd PPS ^(a)	BACS	C&CC	LINK	UK Maestro
I: Legal basis								
II: Understanding financial risks								
III: Management of financial risks								
IV: Prompt final settlement								
V: Settlement in multilateral netting systems								
VI: Settlement asset								
VII: Security and operational reliability								
VIII: Efficiency								
IX: Access criteria								
X: Governance								

Key									
	Not observed	Partly observed	Broadly observed	Observed	N/A	Under review	Not rated	2004 rating	

(a) The LCH.Clearnet Ltd Protected Payments System (PPS) enables settlement of obligations between LCH.Clearnet Ltd and its members in twelve currencies. The assessment shown in Table B relates to the main three currencies settled, namely sterling, euro and US dollar. One exception to the assessment shown in Table B is that the Bank continues to assess the UK PPS's arrangements for US dollar settlement partly to observe Core Principle VI, and for the US PPS's arrangements for US dollar settlement broadly to observe Core Principle VI (Annex C).

Chapter 3: Updated Core Principles assessments of the main UK payment systems

This chapter discusses developments in individual UK payment systems during 2005. It draws on the Bank's detailed Core Principles assessments that have been updated from the previous *Oversight Report*.⁽¹⁾ These are available in the annexes to this *Oversight Report*. Table B summarises these assessments. In addition to updated Core Principles assessments for CHAPS, the payment systems supporting CREST and LCH.Clearnet Ltd, BACS and the Cheque and Credit Clearings, this *Oversight Report* introduces Core Principles assessments for the LINK (ATM) network and the UK Maestro card system. It also reviews, as last year, the main developments and their implications for systemic risks in CLS and SWIFT, two of the international infrastructures for which the Bank is part of a co-operative oversight process. In addition, risks at other main UK debit and credit card systems are again reviewed.

As in the previous *Oversight Report*, the overall message is encouraging: the high standards noted last year are being maintained. The broad direction is towards a further reduction in systemic risk. Overall, more UK payment systems are now closer to observing the minimum standards defined by the Core Principles. Among the risk-reducing initiatives driven forward by some payment systems owners and operators in the past year, the most significant advances have been at LCH.Clearnet Ltd, BACS and the Cheque and Credit Clearings. Such work — described in detail later in this chapter — has resulted in more robust and resilient payment systems. This is reflected in their improved assessments against the Core Principles. The expansion of CHAPS membership to include CLS Bank and Abbey is also welcome. At the same time, there are still various areas where further risk-reducing measures could usefully be undertaken by each of the operators of UK payment systems. The main areas where further

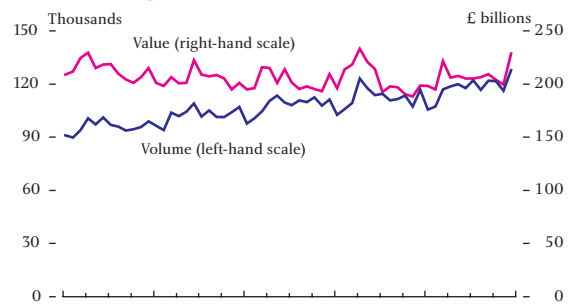
improvements may be warranted are also set out in this chapter.

3.1 CHAPS

The Bank assesses CHAPS (both CHAPS Sterling and CHAPS Euro) to observe fully six of the nine relevant Core Principles, with the other three broadly observed. This is unchanged from the previous *Oversight Report*. Although CHAPS is clearly an effective and highly resilient system, there are a number of outstanding areas where observance of the Core Principles could be reinforced. The limited progress made by CHAPS Clearing Company Ltd (CHAPSCo) in addressing these areas over the past year suggests that a more ambitious timetable for change may need to be set.

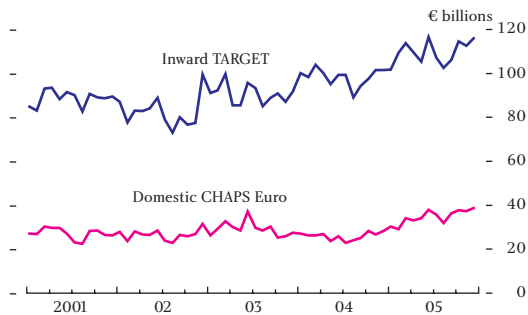
The Bank attaches particular importance to the mitigation of risk in CHAPS because of the very high value of transactions processed by the system: average daily values exceed £200 billion, which is roughly equivalent to a sixth of annual UK GDP (Chart 1). CHAPS Euro typically processes daily domestic euro transactions with a value of over €30 billion and incoming and outgoing TARGET transactions, both with a value of over €110 billion. Domestic CHAPS Euro and TARGET values have risen strongly during 2005 (Chart 2).

Chart 1
Average daily volume and value of payments processed in CHAPS Sterling



Source: Bank of England.

(1) The Bank's approach to Core Principles assessments of UK payment systems is set out in Section 1.2 of this *Oversight Report*.

Chart 2**Average daily value of CHAPS Euro payments and payments sent to the United Kingdom via TARGET^(a)**

Source: Bank of England.

(a) The value of payments sent to the United Kingdom via TARGET is approximately equal to the value of payments sent out of the United Kingdom via TARGET.

On 31 December 2005, there were 14 members of CHAPS Sterling (excluding the Bank of England), an increase of two on last year. Abbey and CLS Bank, both of which joined CHAPS Sterling in November 2005, are the first new CHAPS Sterling members since ABN AMRO in 1997. There are 18 members of CHAPS Euro (excluding the Bank), unchanged from last year.

Settlement risk (Core Principles V, VI and IX)

CHAPS operates on a Real-Time Gross Settlement (RTGS) basis, settling in central bank money. This means that credit risk exposures between CHAPS members do not arise within the system. However, some settlement risk issues remain, associated with tiering and in the unlikely event that CHAPS had to invoke its tertiary contingency method: the operation of CHAPS Sterling when in 'bypass mode'.

Tiering

Section 2.1 discusses how the highly tiered membership structure of payment arrangements for systems such as CHAPS Sterling has potentially negative implications for settlement risk. The Bank therefore sees risk benefits in a reduction in the degree of tiering and has encouraged institutions to consider joining CHAPS Sterling directly, especially if payment values are large. In this context, the

decisions by Abbey to join in 2005, and UBS AG to join in 2007, are welcome.⁽¹⁾

One step in addressing tiering in CHAPS Sterling is to ensure that there are no unnecessary barriers to membership of the system. The previous *Oversight Report* highlighted how the fixed costs of joining CHAPS (including a £100,000 joining fee) and fixed annual fees were high relative to other systems (if not high in absolute value) and fall disproportionately on lower-volume members. Since then, CHAPSCo has reduced the joining fee to £70,000. The Bank believes there is scope for reducing this fee further.

One consequence of the reforms to the sterling money markets currently being implemented by the Bank may be to make direct settlement membership of CHAPS more attractive.⁽²⁾ Following the reforms, CHAPS Sterling banks will be able to use reserve accounts at the Bank, remunerated at the Monetary Policy Committee official rate, to support intraday payments.

Bypass mode

An area where settlement risk in CHAPS Sterling may potentially emerge is in contingency situations. In the very unlikely event of an operational problem at the Bank of England preventing the settlement of payments on an RTGS basis, CHAPS Sterling operates in 'RTGS bypass mode'; that is, a multilateral deferred net settlement (DNS) system.⁽³⁾

As with other multilateral DNS systems, careful consideration needs to be given to how the failure to pay by a member in a net debit position would be handled if CHAPS Sterling operated in bypass mode, to ensure that settlement could complete in a timely fashion and that credit risk exposures between members were limited. Over the past few years, CHAPSCo has introduced procedures to reduce potential exposures between members in bypass mode. For example, since 2003, commercial bank settlement members have had 'net sender caps' to ensure that multilateral net

(1) The decision by CLS Bank to join CHAPS Sterling is likely to have minimal implications for tiering, but is also welcome because of the potential benefits it could bring in reducing CLS operational risk (Section 3.5).

(2) More details can be found at: www.bankofengland.co.uk/markets/moneymarketreform/index.htm.

(3) So far, it has never been necessary to use bypass mode. There is no bypass mode for CHAPS Euro.

obligations to each other are limited.⁽¹⁾ However, some weaknesses in the arrangements remain. The Bank has encouraged CHAPSCo to investigate and put in place during 2006 more robust arrangements for settlement in bypass mode.

Legal risk (Core Principle I)

A robust legal framework is critical to the overall soundness of a payment system. Taking into account general legal principles and the regulations that implemented the *Settlement Finality Directive* in the United Kingdom, the Bank believes that the UK legal framework provides a sufficient and enforceable legal basis for the operation of payment systems such as CHAPS. Where systems like CHAPS have a cross-border dimension (such as participants incorporated outside the United Kingdom), laws in other countries may also be relevant to the soundness of the system.

During 2005, CHAPSCo largely completed outstanding work to confirm that where settlement membership is held by a branch of a bank incorporated overseas, such a member has the authority to commit itself to abide by the CHAPS scheme rules, and that the home-country legal system of the parent bank would not interfere with the member's ability to fulfil its obligations under the rules. The conclusion of this work will be an important step towards CHAPS achieving full observance of Core Principle I.

The Bank would like two other pieces of legal work to be completed by CHAPS. First, CHAPSCo is looking to introduce requirements and processes to ensure that it is made aware of changes to the legal capacity of UK or foreign CHAPS members, or to the legal framework of their relevant local jurisdictions. This should help mitigate the risk that the legal soundness of the CHAPS systems diminishes as a result of changes to legal capacity occurring without CHAPSCo's knowledge.

Second, the Bank has encouraged CHAPSCo to review whether the lack of formal contracts committing members to abide by the CHAPS scheme rules and decisions of the CHAPS Board

represents an unnecessary risk. Although it is likely that a court would conclude that members had implicitly agreed to abide by the rules, any ambiguity would be eliminated through the use of written contracts. This is an approach recently adopted in both BACS and the C&CC.

Governance (Core Principle X)

The previous *Oversight Report* highlighted the desirability for CHAPSCo to consider proactively how its governance arrangements might better ensure that management pursued the interests of all stakeholders. Introducing Board representation for stakeholders outside of the community of CHAPSCo's shareholders could help achieve that. Given the systemic importance of CHAPS, there may also be a case for CHAPSCo adopting systemic risk considerations, alongside those of other stakeholders, into the Company's objectives. The Bank has therefore encouraged CHAPSCo to review its governance arrangements in the context of wider sector developments (Sections 2.3 and 4.1).

Operational risk (Core Principle VII)

The operational effectiveness of CHAPS is dependent on the robust availability and security of the different components of the system, including the RTGS infrastructure provided by the Bank of England, the information messaging system provided by SWIFT, and members' feeder systems and interfaces with RTGS. Over time, CHAPSCo has developed a set of service level agreements (SLAs), MoU, contracts, and internal policies and procedures, to help ensure a robust level of operational performance from all parties. So far, these have proven effective, with another year of robust operational performance in 2005.

RTGS

The recent operational performance of the RTGS system has been strong, with only two outages during 2005. Both outages resulted in the Bank missing a requirement under the MoU with CHAPSCo to ensure that settlement facilities are available for an average of at least 99.95% of the operating day over the course of each month.

(1) The net sender caps ensure that multilateral net obligations do not exceed unused intraday liquidity that would have been available from the Bank (if details of unused amounts are available) or £1 billion (if information on unused amounts is unavailable).

- On 28 February 2005, RTGS technical problems meant that the opening of CHAPS was delayed by 20 minutes.
- On 18 July 2005, overnight technical problems resulted in RTGS systems falling back from the primary to the secondary processor. Procedural errors during the fallback meant that it took longer than necessary, resulting in a delay to the opening of CHAPS of 1 hour 15 minutes.

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 expediently. However, it is also important that the wider aspects of incidents are considered and their potential implications fully understood. Since the 18 July incident, the Bank has reviewed the impact of developments such as split-site working and 24-hour manning on staff resources, and introduced arrangements to test system fallback more regularly.

SWIFT

CHAPS experienced no downtime due to SWIFT being unavailable during 2005.

CHAPS members

Member operational performance has been steady in 2005. The CHAPS *Procedures* set out various guidelines for the service levels expected of members, such as managing their payments so as to minimise requests for cut-off extensions to the daily CHAPS timetable. During 2005, members made recourse to fewer extensions, compared with either of the previous two years, though a few extensions were unusually long.

The previous *Oversight Report* highlighted the fact that CHAPS relies on peer pressure (a so-called ‘Star Chamber’) to enforce service levels. It was suggested that, if member operational standards were to slip, then CHAPSCo should investigate use of more stringent disciplinary processes, such as financial penalties. The record on member extensions over the past year suggests that such change is not pressing. Nevertheless, some further

consideration of what level of extensions is acceptable may be worthwhile.

Business Continuity Planning (Core Principle VII)

CHAPS’ business continuity and recovery procedures are extensive and of a high standard. Important developments during the year to strengthen resilience include the successful introduction of split-site working for RTGS operations.

Internationally, the benchmark for the resilience of the most important parts of the 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 CHAPSCo addresses the associated outstanding issues concerning settlement risk. The Bank has also encouraged CHAPSCo to put in place arrangements that will help minimise the time CHAPS Sterling would need to operate in bypass mode following a major event.

3.2 TARGET

CHAPS Euro is the second largest component of TARGET (the Trans-European Automated Real-time Gross settlement Express Transfer system) by volume and value of cross-border payments made (Chart 3), and fourth largest for all payments (cross-border and domestic euro payments).

Chart 3
Share of cross-border TARGET payments by TARGET component^(a)



Source: European Central Bank.
(a) Value of outward cross-border TARGET payments.

As a component of the TARGET system, CHAPS Euro is subject to the collective oversight arrangements of the Eurosystem. Although these arrangements are well established, work has been ongoing to develop a consistent framework for oversight across the 17 TARGET components. The recent development and implementation of a *TARGET Oversight Guide* has been an important milestone in this process.

Operational risk (Core Principle VII)

One of the outputs from the *TARGET Oversight Guide* has been the development of a common framework for reviewing and sharing information on significant operational incidents affecting TARGET components. Such a framework is particularly useful for understanding incidents that affect multiple systems or have common causes. One such incident occurred in June 2005, when technical problems experienced by a telecom company that provides access to SWIFT network services affected at least six different TARGET components. Although CHAPS Euro was not directly affected, the incident highlighted important issues concerning the robustness of telecom services and the maintenance of resilient telecom access. The operational problems in January 2005 (Section 2.2) were another example of a single incident that affected multiple infrastructures.

Looking forward, a key development is the introduction of TARGET2, which is expected to go live in 2007. In TARGET2 there will be a single technical platform for processing and settling payments, replacing the existing TARGET network and its component RTGS systems, including CHAPS Euro. The Bank will not participate as a direct member of TARGET2.

3.3 CREST

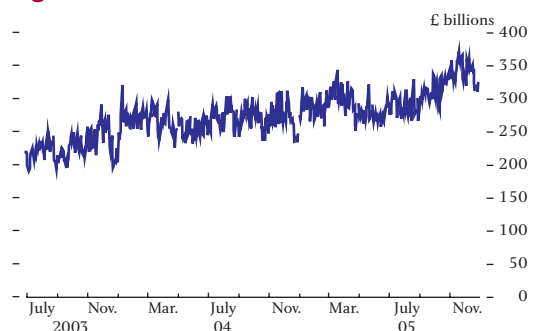
The Bank's summary assessment of the payment arrangements supporting CREST settlement is unchanged from that in the previous *Oversight Report*. CREST's sterling and euro payment arrangements observe fully seven of the nine relevant Core Principles. By contrast, the US

dollar payment arrangements — and, most notably, the interbank settlement of those payments — fall short of full observance in a number of areas (just three of the nine relevant Core Principles are fully observed). Some progress has been made, however, in planning alternative interbank settlement arrangements that, if implemented, will help to address these weaknesses.

Together with the FSA, the Bank is carrying out an updated assessment of CREST against the CPSS-IOSCO RSSS. These cover a wider range of a securities settlement system's activities than the Core Principles. The full assessment will be published in due course.

Chart 4 shows the daily value of sterling Delivery versus Payment (DvP) transactions in CREST. Averaging approximately £300 billion a day in 2005, these values are larger than those processed in any other payment system overseen by the Bank.⁽¹⁾ CREST also provides for transactions to be settled in euro and US dollars. In 2005, sterling equivalent daily averages for euro and US dollar settlement were approximately £1 billion and £1.2 billion respectively.

Chart 4
Sterling DvP transactions in CREST



Source: CRESTCo.

Settlement risk (Core Principles III, IV, V and VI)

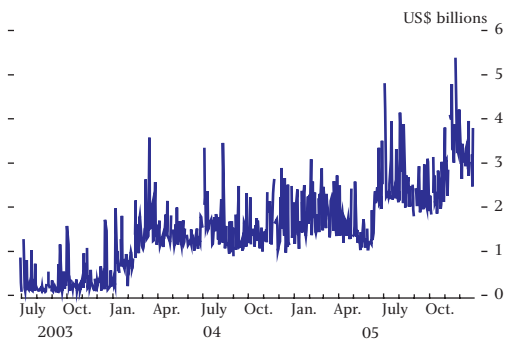
CREST's DvP settlement service provides settlement of UK securities in sterling and euro without any principal risk to participants. The

(1) This figure does not include liquidity flows generated by the Self-Collateralised Repo mechanism. This mechanism enables settlement banks to use certain categories of security as collateral for raising additional central bank liquidity on the platform.

interbank settlement arrangements for transactions in US dollars are not, however, as robust. Obligations are settled through settlement banks' correspondents in the United States, on an end-of-US-day bilateral net basis. As a result, settlement banks are briefly exposed intraday to the risk that the bank from which they are due to receive US dollars will fail to deliver.

Although US dollar settlement values remain small relative to those for sterling settlement, they have risen significantly since the beginning of 2004 (Chart 5) and are expected to rise further in the future.

Chart 5
US dollar transactions in CREST



Source: CRESTCo.

The possibility of developing a formalised and suitably robust multilateral net settlement arrangement is currently being investigated by CRESTCo and the settlement banks. Working with CRESTCo, the Bank is conducting a cost benefit analysis of these proposals. The results will be presented to settlement banks. They will then decide whether to proceed with the current proposals and, if so, how the costs of implementation should be spread.

The payment arrangements supporting CREST sterling settlement are tiered: cash settlement is provided by 15 settlement banks to over 2,400 corporate and financial institutions and over 40,000 personal members. The risks associated with such tiering and possible mitigation measures are discussed in Section 2.1.

Euroclear's business plan (Core Principles I, VI, VII, VIII and X)

On 1 January 2005, a corporate restructuring of Euroclear created a new holding company, Euroclear SA/NV, for the group's operating subsidiaries. As a result, CRESTCo, Euroclear France, Euroclear Nederland and CIK have become sister companies to Euroclear Bank rather than its subsidiaries.⁽¹⁾ This new structure is intended to create an appropriate framework to support Euroclear's business model and to help segregate the national securities settlement systems from Euroclear Bank's small unsecured credit exposures. The Bank of England is working with other regulators and overseers to ensure that the new structure achieves these aims.

While the merger and restructuring has had no impact on the settlement process in CREST, implementation of Euroclear's long-term business plan will have a significant effect. This will have implications, among other things, for settlement, legal and operational risk in CREST. Of particular relevance to CREST is the migration of its transaction processing onto Euroclear's Single Settlement Engine (the SSE), scheduled for August 2006, and the proposed migration of CREST's sterling central bank money settlement onto the new Single Platform, scheduled for late 2009.

Migration to the SSE will coincide with the shift of IT systems to new data centres in Continental Europe. In order to comply with the United Kingdom's *Uncertificated Securities Regulations*, which require that records of legal title reside in the United Kingdom, a separate system located in the United Kingdom — the 'Local Legal Record' — will be built and incorporated into the settlement process. Together with the FSA, the Bank is reviewing these arrangements to ensure that the legal basis of settlement remains robust and that operational risks are adequately managed.

CREST central bank money settlement currently takes place throughout the day, at the end of each of over 600 processing cycles. When CREST migrates to the SSE in 2006, this cycles-based processing will be replicated in so-called 'pseudo

(1) CIK joined the group on 1 January 2006, adopting the commercial name 'Euroclear Belgium'.

cycles'. As far as is consistent with settlement efficiency, the Bank will seek to ensure that, upon migration to the SSE, cycle duration is reduced during periods when high settlement values are generated. This is desirable because a reduction in cycle duration would increase the frequency of information flow from CREST to the Bank (during a cycle the Bank has no information on the liquidity positions of individual settlement banks) and would reduce the time taken to detect a mid-cycle processing malfunction.

The Bank is working closely with CRESTCo, Euroclear and other affected central banks to ensure that the operational risk controls following migration to the SSE and to the new data centres are at least as resilient as current arrangements. Indeed, in the light of the concentration of several markets' settlement activity on a single processing platform, operational risk management and business continuity arrangements may need to be even more robust than in current national systems.

As part of the co-operative oversight arrangements, a technical working group has been assessing Euroclear's project management. This will be kept under review as the projects move into the trialling and implementation phases.

Integration of CREST sterling settlement onto the Single Platform in 2009 will change the payment arrangements fundamentally. Euroclear's proposal is to introduce a harmonised 'integrated' central bank money settlement model for the group's CSDs. This will involve the outsourcing of the operation of central bank money accounts to Euroclear's settlement platform. This will contrast with the current UK model, in which CREST central bank money accounts are held by the Bank. Cycles-based settlement will be replaced by continuous settlement on a transaction by transaction basis.

The Bank has accepted this integrated settlement model, subject to the provision of monitoring and control tools that effectively replicate the current arrangements. These will ensure that:

- overdrafts cannot occur on central bank money accounts on the platform;

- the Bank has up-to-date data on each settlement bank's position on the platform for risk control and crisis management purposes; and
- the Bank has adequate control in the event of an error in the system and, more generally, over the automatic collateralisation process on the platform.

If the Bank's validation process were to indicate an error in Euroclear's settlement algorithm (for example, an overdraft on a bank's settlement account), then the Bank would need to be able to suspend UK settlement with immediate effect and until the situation is rectified. Such control is vital from a central bank perspective, since it is ultimately its balance sheet at stake. The Bank has set out these requirements in detail to Euroclear.

The implementation of this business plan will necessitate a reassessment of the system against the Core Principles and the CPSS-IOSCO Recommendations. Arrangements for co-operative oversight will also assume much greater importance. The effectiveness of current co-operative arrangements is discussed in Section 2.4.

The Bank is working with CRESTCo to devise suitable payment arrangements for euro settlement in CREST for the period between the launch of the TARGET2 platform (in which the Bank will not be participating directly) and CREST's migration to the Single Platform.

Operational risk (Core Principle VII)

Together with the FSA, the Bank monitors CREST's operational performance and business continuity arrangements. Overall, CREST provides a robust and resilient service, achieving average settlement availability of 99.8% in 2005.

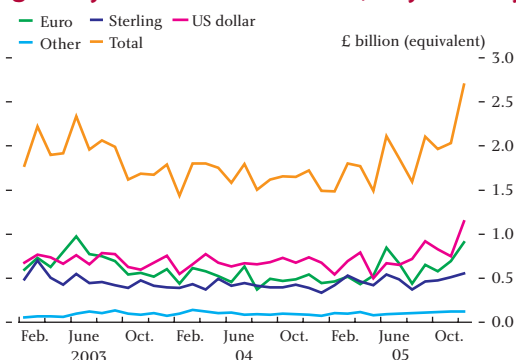
3.4 LCH.Clearnet Ltd

Over the past year, LCH.Clearnet Ltd, the London-based central counterparty (CCP), has completed a number of workstreams to improve observance of its Protected Payments System (PPS) with the Core Principles. The Bank now assesses the UK PPS, for transfers made in sterling and

euro, to observe eight of the nine applicable Core Principles. This section highlights the work done by LCH.Clearnet Ltd over the past year to improve observance of the PPS with the Core Principles, including the work to transfer the role of concentration bank for sterling and euro payments to the Bank of England.

Chart 6 shows the average value of payments made between LCH.Clearnet Ltd and its members through the 13 UK PPS banks. The amounts are small in comparison with those made through most other systems overseen by the Bank. However, a problem with the PPS could potentially cause wide disruption to financial markets and institutions, since LCH.Clearnet Ltd operates as CCP in a number of markets, and the PPS forms a critical element in the practical implementation of LCH.Clearnet Ltd's management of its counterparty risk.

Chart 6
Average daily flows over the UK PPS,^(a) by currency



Sources: LCH.Clearnet Ltd and Bank calculations.
(a) LCH.Clearnet Ltd Protected Payments System.

Financial and liquidity risk (Core Principles II and III)

In the previous *Oversight Report*, the Bank noted two particular weaknesses in the management of financial and liquidity risks within the PPS. The first was that the *PPS Agreement*, under which PPS banks conduct their business with LCH.Clearnet Ltd, did not explain sufficiently the financial risks that PPS banks incur. The second weakness was that there was no deadline by which PPS banks had to submit payments to LCH.Clearnet Ltd's concentration bank accounts, other than a requirement to submit before the CHAPS cut-off

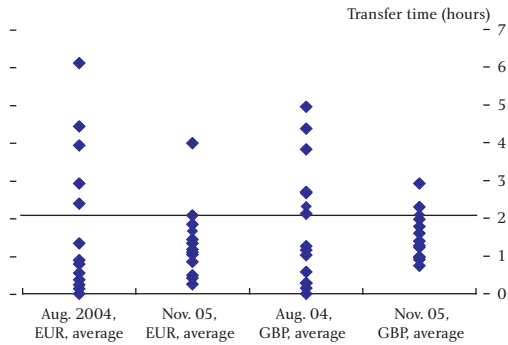
time. The concentration bank account is the account used by LCH.Clearnet Ltd to gather all positive balances from PPS banks, make payments to PPS banks in a net credit position, and invest surplus funds. Many PPS banks were making payments to the concentration bank late in the day, exposing LCH.Clearnet Ltd to unnecessary liquidity risk and resulting in LCH.Clearnet Ltd needing to use intraday credit lines at the concentration bank in order to meet its obligations.

In April 2005, LCH.Clearnet Ltd introduced a new *PPS Agreement* for UK PPS banks. This includes a more explicit description of the financial risks incurred through participation in the PPS and through performing particular tasks (such as sending payment confirmation messages). As a result, the Bank now deems the PPS to observe Core Principle II.

The new *PPS Agreement* also includes a requirement for PPS banks to transfer funds to the relevant concentration bank account no later than two hours after LCH.Clearnet Ltd sends the payment instruction (or before the CHAPS cut-off time, whichever is sooner). Non-financial penalties have been introduced for PPS banks that consistently fail to meet these deadlines, which require them to explain why they have not complied and provide a plan of action outlining how and by when they will be able to comply. If the PPS bank continues to miss deadlines, LCH.Clearnet Ltd is entitled to terminate that bank's participation in the PPS. The introduction of an appropriate deadline together with procedures for non-compliance brings the UK PPS into broad observance of Core Principle III.

Chart 7 shows that since the introduction of the new *PPS Agreement*, UK PPS banks are now generally making transfers to the concentration bank earlier in the day, and in particular within two hours. However, a few are still regularly making payments beyond the two-hour deadline. In order to reach full observance of Core Principle III, the disciplinary procedures will need to prove effective in ensuring that PPS banks consistently pay within the required two hours over the coming year.

Chart 7
Sterling and euro transfer times August 2004 vs
November 2005^(a)



Sources: LCH.Clearnet Ltd and Bank calculations.

(a) Each blue point represents a different UK PPS bank.

Settlement asset (Core Principle VI)

LCH.Clearnet Ltd's concentration banks play a critical role in the operation of the PPS. The failure of a concentration bank, or deficiencies in its operating systems and procedures, would have a significant impact on the functioning of LCH.Clearnet Ltd as a CCP. Over the past two years, preparations have been made to transfer the role of concentration bank for sterling and euro payments to the Bank of England. The transfer successfully took place on 29 September 2005. It effectively eliminates any possibility of commercial credit risk arising from the concentration bank in these PPS currencies. The Bank now deems the PPS to observe Core Principle VI for transfers in sterling and euro.

As shown in Chart 6, US dollar payment flows in the PPS are the largest of all currencies. Following the completion of the sterling and euro concentration bank project, LCH.Clearnet Ltd is investigating ways of eliminating, or at least reducing, credit risk in the US dollar payment arrangements. This would improve observance of the PPS with Core Principle VI for transfers in US dollars. For other currencies, the impact of concentration bank failure is not deemed sufficiently large by the Bank for there to be a need at this stage to eliminate the very small probability of commercial bank default.

Operational risk (Core Principle VII)

The operation of the PPS is dependent on a number of factors, including the ability of LCH.Clearnet Ltd to conduct office-based treasury operations. Following the London bombings on 7 July 2005, LCH.Clearnet Ltd was required to evacuate its head office and operate from its secondary office site. LCH.Clearnet Ltd regularly tests operations from its secondary site, and key staff were able to continue office-based operations within two hours of evacuating head office. PPS operations were unaffected and took place according to the normal timetable. This was within LCH.Clearnet Ltd's planned two-hour maximum recovery of business-critical functions, already deemed fully to observe Core Principle VII. The primary data centre, which is located away from the head office, was unaffected.

Access criteria (Core Principle IX)

LCH.Clearnet Ltd has now introduced a publicly available set of criteria for participation in the PPS.⁽¹⁾ These minimum criteria are based on the financial and operational requirements needed to maintain the smooth functioning of the PPS. The Bank now deems the PPS to observe Core Principle IX.

Co-operative oversight (Core Principle X)

In February 2005, the Bank and FSA, together with Belgian, Dutch, French and Portuguese central banks and regulators signed a MoU to promote co-operation and co-ordination between the LCH.Clearnet group regulatory authorities.⁽²⁾ Since the signing of the MoU, the regulatory authorities have jointly met with LCH.Clearnet group on a regular basis to discuss matters relating to the harmonisation of activities between the two central counterparties, LCH.Clearnet Ltd and LCH.Clearnet SA. The Bank hopes that over the next few years the MoU will prove to be an effective tool for addressing regulatory concerns, and will improve efficiency in communications between LCH.Clearnet group and the regulatory authorities.

(1) The criteria for participation in the PPS can be found at: www.lch.com/risk_and_margining/pps_bank_requirements.asp.

(2) The English version of the MoU can be found at: www.afm.nl/marktpartijen/upl_documents/Memorandum_of_Understanding_LCH_Clearnet_Groep_120505.pdf.

Additionally, in September 2005, the Bank and FSA, together with the Dutch central bank De Nederlandsche Bank, and Dutch regulator Autoriteit Financiële Markten, signed a separate exchange of information letter relating to the LCH.Clearnet Ltd's EnClear service, which is used to clear trades conducted on the Dutch regulated energy futures exchange operated by Endex. This exchange of information letter, which specifically focuses on and is restricted to sharing information on particular aspects of LCH.Clearnet Ltd's EnClear service, complements the wider MoU on co-operation relating to the supervision and oversight of LCH.Clearnet group activities.

3.5 CLS

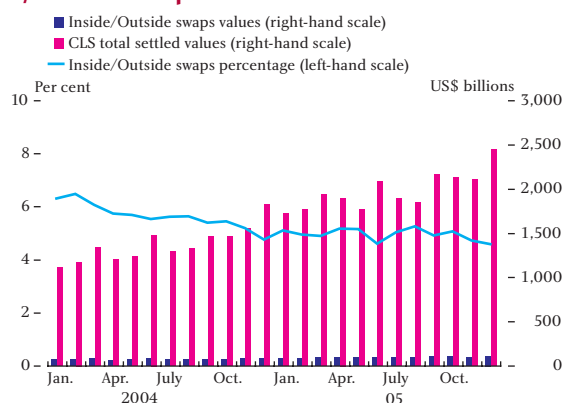
Continuous Linked Settlement (CLS) is a system designed to eliminate principal risk in the settlement of foreign exchange transactions. The US Federal Reserve authorises the establishment, and is the primary supervisor, of CLS Bank International (CLS Bank), the institution that provides the CLS service. Together with the other central banks (including the Bank of England) participating in the co-operative oversight of CLS, the Federal Reserve formally assesses the system against the Core Principles.

Settlement and liquidity risk (Core Principle III)

Central bank overseers have continued to work with CLS and its members in 2005 to ensure that CLS's risk management and operational procedures are consistent with the Core Principles. Central banks have also continued to monitor the extent to which the CLS Inside/Outside (I/O) swap mechanism, used by many settlement members to reduce the liquidity pressures generated by their pay-in requirements, reintroduces principal risk outside the system. An article in the December 2004 *Financial Stability Review* explained that UK members of CLS consider the reintroduction of a small proportion of foreign exchange principal risk to be an acceptable cost for reducing the liquidity risk that could otherwise result from having to make large pay-ins to CLS Bank according to tight

deadlines.⁽¹⁾ Chart 8 shows that the share of I/O swaps as a proportion of the total principal risk eliminated by the system remained relatively small throughout 2005, averaging around 5%. The liquidity/principal risk trade-off in CLS therefore remains acceptable.

Chart 8
Inside/Outside swaps^(a)



Source: CLS Bank International.

(a) The chart compares the average daily value of Inside/Outside swaps with the average daily total values settled in CLS. It also shows the percentage of principal risk reintroduced outside the system by the Inside/Outside swap mechanism.

CLS has been working with members to examine ways of expanding the scope of the risk-reduction and cost-saving benefits that it offers. In September 2005, CLS announced its intention to offer, subject to regulatory approval, services for the settlement of cash-flow positions for non-deliverable forwards and foreign exchange option premiums. These services will be introduced in a phased approach with non-deliverable forwards targeted to go live in 2006 Q4 and foreign exchange option premiums in 2007 Q1. Other possible new services currently being considered for introduction at a later date include additional (later) settlement sessions for foreign exchange trades, services for currencies not eligible for the full CLS settlement service and settlement of cash flows from some derivative products.⁽²⁾ Again, overseers will be working with CLS to satisfy themselves that the proposed new services are

(1) Sawyer, D (2004), 'Continuous Linked Settlement (CLS) and foreign exchange settlement risk', *Bank of England Financial Stability Review*, December, pages 86–98. This article also gives more information on the Inside/Outside swap mechanism, as well as setting out more broadly issues relating to the contribution by CLS to reducing foreign exchange settlement risk. It is available at: www.bankofengland.co.uk/publications/fsr/2004/fsr17art5.pdf.

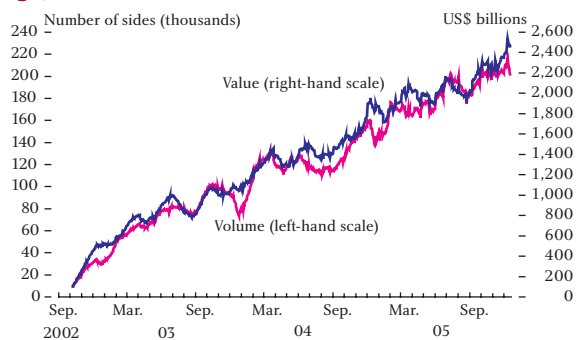
(2) Later settlement sessions could be used for settling same-day foreign exchange trades, which are agreed too late for settlement in the current main settlement window, and some of the current out legs of Inside/Outside swap transactions. Services for non-eligible currencies could include the provision of bilateral netting information.

introduced without adding undue risks to the system or its members.

Foreign exchange settlement risk

The central banks that oversee CLS are also monitoring the long-term progress of the G10 strategy to reduce foreign exchange settlement risk. Chart 9 shows that values and volumes of trades settled in CLS, and hence for which principal risk is eliminated, continued to increase in 2005. Factors responsible for the growth included a sharp increase in the number of third-party users (from just over 200 at the end of 2004 to 657 at the end of 2005) and existing members settling a larger share of their trades in CLS. Four more banks also became settlement members at the end of 2004 (there are now 56 in total) and four new currencies were added to the system in December 2004.

Chart 9
Daily volumes and values settled in CLS (30-day moving average)^(a)



Source: CLS Bank International.

(a) The unit of measurement for trade volumes is 'sides' — there are two sides to each transaction. Both sides are counted in the value figures.

The four new currencies — the Hong Kong dollar, Korean won, New Zealand dollar and South African rand — were, by 2005 Q3, accounting for an average \$56 billion of sides settled daily in CLS, or around 3% of the total settled across all currencies.⁽¹⁾ Other new currencies may be introduced into the system in the future if they satisfy CLS's eligibility criteria and the system with the new currencies observes the Core Principles.

CLS appears to have captured a significant share of the foreign exchange transactions of the largest

banks active in the foreign exchange market. For instance, in the United Kingdom, the four major banks operating in the foreign exchange market (Barclays, HSBC, RBS and Standard Chartered) have been settlement members since CLS went live. They reported to the Bank that by 2005 Q3 they were settling on average between 40% and 65% of the total value of their foreign exchange trades through CLS. As anticipated in the previous *Oversight Report*, other UK banks active in the foreign exchange market have also started participating in CLS as third-party users, as have two UK building societies. However, only a small number of non-bank UK institutions are currently third-party users.

Overall, estimates suggest that a substantial share of global foreign exchange settlement may still be taking place outside CLS. This raises questions about how the resulting settlement risk is being managed and controlled. Participation in CLS may not be appropriate for all users of the foreign exchange market, particularly those with small volumes or total values of business. Discussions with settlement members, together with the latest list of CLS members and third-party users, indicate, however, that there are still financial institutions and corporates with significant volumes and values of foreign exchange business that continue to settle outside CLS and therefore may generate avoidable settlement risk. Mindful of these gaps in CLS's market penetration, central banks continue to assess what further action is necessary to ensure the success of the G10 strategy to reduce foreign exchange settlement risk. As part of this process, they have decided to undertake a survey to find out how banks and other financial institutions currently settle their foreign exchange transactions and how well the ensuing risks are managed and controlled. This survey will be carried out in April 2006.

Operational risk (Core Principle VII)

Management of operational risk is given a high priority by CLS and the overseeing central banks, in particular to minimise the potential cross-border impact of an operational failure

(1) The other currencies settled in CLS are the Australian dollar, Canadian dollar, Danish krone, euro, Japanese yen, Norwegian krone, Singapore dollar, sterling, Swedish krona, Swiss franc and US dollar.

affecting any of its settled currencies. Service reports provided by CLS to its members and to the overseeing central banks during 2005 show that CLS experienced a few incidents of mainly low severity that had little or no adverse impact on settlement and pay-out target deadlines. There were no instances of the system failing to settle all the transactions submitted to it at the start of its settlement day.

CLS Bank uses the large-value payment systems (RTGS or equivalent) of the currencies that it settles to make and receive payments to and from members. Generally, it accesses these payment systems either as a direct participant or, as in the United Kingdom until recently, indirectly by using the central bank as its correspondent. While both types of arrangement have worked well in practice, the Bank of England believes that, given CLS Bank's critical role in the international payments infrastructure, it should make and receive its sterling payments with the minimum number of possible points of operational failure. To this end, CLS Bank has removed a layer of operational dependency in its sterling payments by joining CHAPS Sterling as a direct member at the end of November 2005.

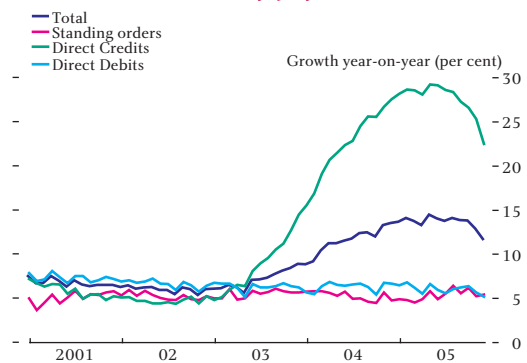
3.6 BACS

BACS is the United Kingdom's largest retail payment system by volume, processing on average around 20 million electronic payments (Direct Debits, Direct Credits and standing orders) with a value of around £12.5 billion each day during 2005.⁽¹⁾ In the period 2003–05 volume growth has accelerated, reflecting increased use of Direct Credits to make state benefit payments. In 2005 the total volume of BACS payments processed grew by around 12% year-on-year (Chart 10), while the aggregate value of those payments grew by 10% year-on-year.

Last year, the Bank assessed BACS to observe six Core Principles either fully or broadly, but to fall short on three others — most notably Core Principles III and V relating to settlement risk, but

also Core Principle IX relating to access criteria. Over the past year, BPSL and its members have made considerable efforts to improve observance of these Core Principles, a proactive approach that has paid dividends. The Bank now assesses BACS fully to observe four Core Principles and broadly to observe a further five. Only in relation to Core Principle VIII, concerning efficiency, does the Bank assess BACS to be partly observant.⁽²⁾

Chart 10
Growth in BACS volumes by payment instrument



Sources: APACS and Bank calculations.

Legal risk (Core Principle I)

The previous *Oversight Report* assessed BACS broadly to observe this Core Principle but noted that a successful application for designation under the UK settlement finality regulations would strengthen observance.

BACS was designated under these regulations in December and the Bank now assesses BACS fully to observe Core Principle I.⁽³⁾ This assessment reflects how the regulations are helpful for mitigating systemic risk arising from uncertainties surrounding the legal enforceability of a payment system's rules and its arrangements for dealing with participant insolvency. Specifically, designation under the regulations provides that a system's rules shall take precedence over the general provisions of insolvency law, such that payments, once entered into the designated payment system, continue to be subject to the rules of the payment system (eg rules relating to

(1) BACS Payment Schemes Ltd (BPSL) is responsible for the Direct Credit, Direct Debit and standing order payment products. The core processing of these transactions is outsourced to a single third party — Voca Ltd.

(2) The previous *Oversight Report* did not assess BACS against Core Principle VIII (efficiency) on account of insufficient evidence.

(3) As described in Section 1.2, the Bank of England is the UK authority responsible for designating payment systems under the *Financial Markets and Insolvency (Settlement Finality) Regulations* (1999), which implemented the *EU Settlement Finality Directive* (1998) in the United Kingdom.

irrevocability, calculation of multilateral net amounts) notwithstanding the insolvency of a participant. The benefit of greater legal certainty extends to the members and users of a designated payment system.

Settlement risk (Core Principles III and V)

In the previous *Oversight Report* the Bank assessed BACS not to observe the requirements of Core Principle V, which states that a DNS system should, at a minimum, be able to ensure timely completion of daily settlement if the participant with the largest obligation to the system is unable to meet that obligation. Following the implementation of the *Liquidity Funding and Collateralisation Agreement* (LFCA) in May 2005, the Bank now assesses BACS broadly to observe this Core Principle. The LFCA (which also covers the C&CC) additionally provides members of BACS with greater clarity concerning liquidity and credit risks faced through their participation in the system, such that the Bank now assesses BACS broadly to observe also Core Principle III.

Under the LFCA, settlement is completed by recourse to committed liquidity, backed by collateral. In the event of a member failing to meet its settlement obligations, liquidity to meet the affected member's obligations would be provided by other members. Those members providing liquidity would then be reimbursed (though not necessarily in full) through realisation of collateral pledged by the affected member. Committed liquidity would be drawn on first, helping to avoid sale of collateral at distressed values.

The total amount of liquidity committed is determined by reference to historical multilateral net debit positions of members in BACS and the C&CC. Currently, this is a little over £2 billion. Within this, the amount of liquidity committed by each member is determined by the amount of risk it brings to the system.⁽¹⁾ Members also pledge collateral sufficient to ensure that the total pool of collateral is equal to liquidity committed. In the

event of a member's failure to meet its settlement obligations, the loss to each unaffected member is measured by the liquidity it provides, less recoveries from the affected member including collateral pledged. Such residual losses are a direct claim on the defaulter or its liquidator.⁽²⁾

The LFCA has significantly reduced settlement risk in BACS (and the C&CC) but has not eliminated it, because the obligations to the system of an affected member could still exceed the amount of liquidity committed by other members. Functionality to cap debit positions within BACS will be available through the NewBACS processing platform, which is scheduled to be delivered in 2006. Additionally, NewBACS will provide the functionality to remove the payments of an affected member (so-called 'regression'). Removing intraday exposures on the day of default would reduce further the probability of the affected member's settlement obligations being larger than the liquidity committed under the LFCA. Implementation of debit caps and regression would thus further reduce settlement risk in BACS, potentially delivering greater observance of Core Principles III and V.

Even then, settlement risk would persist because the LFCA covers both BACS and the C&CC and debit cap functionality is not considered practicable for the latter. This means that BACS members could face uncapped exposures to a defaulted member who is also a member of the C&CC, with those exposures in excess of liquidity committed under the LFCA. There is currently no arrangement ensuring any such liquidity shortfall would be met. Given the very 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.

Operational risk (Core Principle VII)

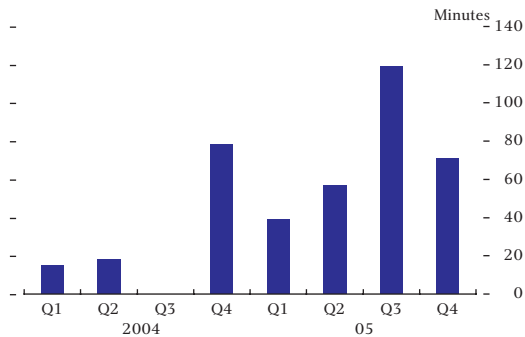
The Bank continues to assess BACS broadly to observe Core Principle VII. Target levels of performance that Voca must meet are specified in

(1) This is defined as the average of the sum of net debit settlement amounts for each member across BACS and the C&CC over the preceding twelve months, plus one standard deviation.

(2) The LFCA is considered in more detail in: Bank of England (2005), *Bank of England Financial Stability Review*, June, pages 83–86, available at: www.bankofengland.co.uk/publications/fsr/2005/fsr18art4.pdf.

SLAs with members, and performance against these targets is monitored by BPSL on a monthly basis. During 2005, performance was sound at all stages of the payment process. The availability of channels through which BACS users can submit payments to Voca for processing was typically in excess of target levels and Voca delivered processing output to members promptly. Separately, cumulative delays to settlement at the settlement agent were slightly longer during 2005 than during the previous year but remained generally short in duration (Chart 11).

Chart 11
Settlement delays in BACS



Source: Bank of England.

Even with such sound operational performance, it is important for member banks to understand the potential implications of a significant delay to output from Voca, because costs could be imposed on the users of BACS through disruption to transactions. If a delay of more than one day occurred, members could be required to process two or more days’ output in a single processing day. Agreed procedures for handling such a backlog of payments do not currently exist but would help to improve the operational robustness of BACS. Equally, agreed procedures would enable member banks to have greater certainty regarding the impact of a significant processing outage on their customers.

One way that a delay to processing might occur would be as a result of the unexpected financial failure of Voca. Although such a default could be triggered by a number of events, its impact would be operational. Controls exist to mitigate this risk — so-called business risk — if it were to materialise, and these are explored further in

Section 4.3. The Bank’s guidance has been for Voca to hold capital in excess of six months’ operating expenditure, the rationale being that this would be a sufficient period for Voca to address any adverse financial shock before the company’s operations (ie processing of BACS payments) were endangered. Recent agreement by Voca’s shareholders to provide additional funds will improve its financial robustness and help to ensure that the company adheres to the Bank’s guidance by 2007.

NewBACS

The NewBACS project involves the upgrade of Voca’s systems and networks which provide the central infrastructure to BACS. It is a large and complex undertaking for BPSL, its members and Voca. The project is necessary to ensure BACS has sufficient processing capacity for forecast payment volumes. Progress during 2005 has remained on the critical path and the project’s completion during 2006 should further improve the operational robustness of the system.

The key deliverable of NewBACS is a new processing platform. This will not only deliver the required processing capacity but also offer the risk-reducing debit caps and regression functionality already described. From a user perspective, NewBACS also provides a new payment submission channel — BACSTEL-IP — offering users greater security and faster payment confirmation. Migration of existing users to the new channel continued during 2005, with BPSL working to avoid any late surge in migration and associated resource constraints ahead of the end-2005 target completion date.

Management of risks to the NewBACS project has been undertaken by several parties. Voca has sought — and obtained — independent assurances regarding the suitability of the proposed system design for its intended use. Similar assurances regarding the quality of project management processes have also been obtained. BPSL and Voca have agreed on allocation of costs associated with any delay to delivery of NewBACS, including those relating to contingency arrangements for the existing processing platform. While the decision to establish contingency

arrangements means that processing of payments could continue even if delivery of NewBACS were delayed, these potential costs provide a clear incentive for Voca, BPSL and members to achieve delivery of NewBACS to schedule. It remains essential that BPSL and Voca work together to ensure an appropriate degree of member engagement with the project and ensure that problems involving the internal systems of BPSL members do not cause material delays to the overall project. To that end, recent efforts by Voca and BPSL to involve senior project sponsors at the member level should help to ensure that all parties remain committed to the project.

Practicality and efficiency of BACS (Core Principle VIII)

The previous *Oversight Report* noted that growth in the use of Direct Debits and Direct Credits was indicative of BACS payment instruments being a practical and efficient method for users to make payments. Continued growth in volumes during 2005 remains consistent with this view.

Faster payments

The Bank did not assess BACS against Core Principle VIII in the previous *Oversight Report*, in large part because work in this area was already underway by the OFT Payment Systems Task Force (Box 2). That work was completed in May 2005, and identified demand for shorter clearing cycles for telephone and internet banking payments across a range of user groups (Box 3). This suggests that some BACS payment instruments are not as practical or efficient for some users as they could be. The industry's response to the Task Force's findings has been to start work on building a faster payments service to be operational by November 2007. This service may attract some volumes away from BACS and other payment systems used for time-critical retail payments.

In the absence of a faster payments service, the Bank has assessed BACS partly to observe Core Principle VIII. Although beyond BPSL's direct control, successful delivery of such a service should help BACS to achieve greater observance, because payments remaining within BACS will be made through a payment system with a clearing cycle of appropriate duration for users.

Nevertheless, reduction of the existing three-day BACS cycle is not beyond BPSL's control and work by the Bank has shown that shorter interbank clearing cycles would deliver benefits to users and to the wider financial system. BPSL could consider these benefits further, weighing them against the cost to members in terms of required changes to their internal systems.

Access and governance (Core Principles IX and X)

The Bank assesses BACS broadly to observe Core Principles IX and X. Since the previous *Oversight Report*, BPSL has worked to improve access and governance arrangements.

In December 2005, BPSL introduced an Affiliate membership class, enabling BACS users (eg corporate users, consumer representative bodies) to obtain information on and contribute to BPSL Board discussions. Because Affiliate membership is open to any interested party, its introduction has made access to the payment scheme more open, without introducing additional risk to the processing and settlement of payments in the BACS system. This has been reflected in the Bank's improved assessment of BACS against Core Principle IX.

In terms of governance, during 2005 BPSL implemented a broader scheme objective, one which seeks to ensure that the scheme is responsive to the needs of its users and actively considers the need for innovation. Given the importance of BACS to the wider economy, this is a positive step. Nevertheless, the Bank still believes that there is a case for the BPSL Board to be wider in composition than the scheme's ownership, to help ensure that BPSL is transparent in its decision-making and accountable to the wide community of BACS stakeholders.

Box 2: OFT Payment Systems Task Force

The Cruickshank Report (2000) first raised concerns about competition in UK payment systems.⁽¹⁾ These concerns arose from the ‘network effects’ in payment systems. Network effects create benefits for existing users of payment systems if further users are added to the system, but can also adversely impact on competition, efficiency and innovation in payment systems. Following the Cruickshank Report, the payments industry carried out a number of reforms to both infrastructure — eg the initiation of the NewBACS programme — and governance arrangements — eg BPSL, the Cheque and Credit Clearing Company (C&CCC) and CHAPSCo became more independent of the Association for Payment Clearing Services (APACS).

The industry was reviewed again in 2003 by the Office of Fair Trading (OFT), which found that some competition concerns remained.⁽²⁾ Following the Chancellor’s Pre-Budget Report in November 2003, a Payment Systems Task Force, to be chaired by the OFT, was established to address these concerns. The Task Force seeks to bring together a range of stakeholders to identify, consider and seek to resolve competition, efficiency and incentive issues related to payment systems.⁽³⁾ Government legislation remains an option if the Task Force does not resolve these issues. The Task Force includes representatives from consumer and business associations, as well as the operators of UK payment systems. The Bank and HM Treasury participate in the Task Force as observers. The Bank has a particular interest in issues related to financial stability.

The first issue considered by the Task Force was the scope for, and costs and benefits of, innovation in BACS. In May 2005 the Task Force published a report which, while showing that BACS met many of its users’ needs, identified demand for, and the benefits of, shorter clearing cycles for telephone and internet banking payments in the United Kingdom. One component of these benefits is the reduction in settlement risk, discussed further in Box 3.

The Task Force is currently considering the demand for, and costs and benefits of, innovation in the cheque clearings.

The Task Force is also examining the access and governance issues of UK payment systems. The Bank places significant weight on good governance, which it recognises as a key principle of well-functioning financial infrastructures (Sections 2.3 and 4.1). The Task Force has considered access and governance in the BACS system and is currently considering these issues in LINK. The work of the Task Force in relation to BPSL has led to a broader debate about governance arrangements in the UK payments industry. The Task Force plans to examine access and governance in CHAPS, and the debit and credit card systems in 2006.

The Task Force is scheduled to examine the broader issues of price inefficiency, transparency and innovation in UK payment systems before its completion in 2008 Q1.

(1) Cruickshank, D (2000), ‘Competition in UK banking’, available at: www.hm-treasury.gov.uk/documents/financial_services/banking/bankreview/fin_bank_reviewfinal.cfm.

(2) OFT (2003), *UK Payment Systems*, available at: www.offt.gov.uk/NR/rdonlyres/10DB2458-FBD9-4B5C-9EE7-CEB7ACA472BB/0/oft658.pdf.

(3) More details are available at: www.offt.gov.uk/Business/Payment+systems+task+force/default.htm.

Box 3: Shorter clearing cycles

Background

Both BACS and the C&CC currently operate to a three-day interbank clearing cycle. Payments are submitted to the system on day 1, with the net obligations relating to those payments settled among the members of BACS and the C&CC on day 3. There are, therefore, up to three open settlement cycles at any one time. This increases the aggregate level of credit exposures between members of the system. Credit exposures can also arise between end users of both BACS and the C&CC if an end user receives a good or service before payment for that good or service is received. The duration of this credit exposure may or may not coincide with the length of the interbank clearing cycle. The point at which the end user obtains cleared funds is a competitive decision determined by individual banks.

So as well as benefits associated with greater efficiency and practicality, shorter interbank clearing cycles could reduce settlement risk within BACS and the C&CC.

Current position — Task Force and subsequent work

In 2005, under the aegis of the OFT-led Payment Systems Task Force, the payments industry and user-representative groups considered the case for shortening clearing cycles for BACS payments. It is currently looking at the same issue for cheques. The work of the Task Force has led to plans to introduce an alternative payment service with a shorter cycle.

The Task Force conducted research into demand for a faster electronic payments service among consumers and business users, as well as undertaking a cost-benefit analysis of such a service. The Task Force's work identified clear demand for a faster payments service offering

same or next-day clearing for telephone and internet banking payments.⁽¹⁾ The Task Force estimated annual net benefits to the UK economy of such a service of between £75 million and £134 million.

In response to the Task Force's findings, the payments industry has established a Faster Payments Implementation Group (FPIG), with responsibility for delivering a new faster payments service by November 2007. It is being developed on the basis of a 'near real time' service for users, with multiple settlement cycles occurring during the course of a processing day.⁽²⁾ Such a specification will directly reduce settlement risk because some payments operating on the three-day interbank clearing cycle in BACS will migrate to the new service. Initial estimates suggest that up to 10% of existing BACS volumes could migrate from the outset, along with payment volumes from other systems used to make same-day retail payments, such as CHAPS.⁽³⁾

The FPIG is currently working with Voca/LINK as its chosen infrastructure provider to develop the central payment processing system required for the new service, which will be established as a new payment scheme.

Shortening the BACS and C&CC clearing cycles

Through its membership (as an observer) of the Task Force, the Bank supported introduction of a new faster payments service on the basis of reduced settlement risk. However, because BACS and the C&CC will remain on a three-day interbank clearing cycle, a reduction in the interbank clearing cycles for these systems would yield benefits beyond those arising from the new faster payments service. Such benefits would comprise reduced settlement risk and the reduced cost of mitigating settlement risk.

(1) Further detail can be found in the Payment Systems Task Force (2005) *BPSL Innovation Working Group Report*, May, available at: www.of.gov.uk/NR/rdonlyres/6A1BE3AB-F702-4292-84C9-D59BE816E966/0/oft789b.pdf.

(2) In a 'near real time' system, the account of a customer receiving a payment can be credited as soon as the receiving customer's bank receives confirmation of the transaction from the paying customer's bank. In order to send confirmation to the receiving customer's bank, the paying customer's bank — following input of a transaction by the paying customer — must carry out a number of checks to authenticate the transaction and ensure that the paying customer has sufficient funds in its account. This confirmation process should take only a matter of seconds, hence the term 'near real time'.

(3) The implications of these and other initiatives on CHAPS volumes are explored in Bank of England (2005), *Bank of England Financial Stability Review*, December, pages 47–50, available at: www.bankofengland.co.uk/publications/fsr/2005/fsr19art4.pdf.

The main control for settlement risk in BACS and the C&CC is the *Liquidity Funding and Collateralisation Agreement* (LFCA), under which members commit to fund a shortfall up to the peak exposure to any member in the previous twelve months (Section 3.6). In the previous *Oversight Report* the Bank estimated that reducing both the BACS and C&CC interbank clearing cycles by one day would reduce the peak aggregate exposure to any member (and hence the settlement risk posed by members of the system) by £115 million. There would also be a welfare gain associated with this reduction in settlement risk, through a reduction in collateral committed under the LFCA.

Further work by the Bank has shown that additional benefits of shorter clearing cycles in BACS and the C&CC would arise through reduction in the settlement risk faced by end users of retail payment instruments.⁽⁴⁾ Such a risk arises if end users choose to release goods or services before payment is received, which they might choose to do rather than incur inventory and depreciation costs over the period the payment takes to clear.⁽⁵⁾ End users can mitigate this settlement risk with payment guarantee services or insurance; the insurance premia

represent in part a real resource cost. Reducing both the BACS and C&CC interbank clearing cycles by one day would reduce the cost of mitigating settlement risk associated with payments received in arrears of goods and services.

Of course, some payments will migrate from BACS and the C&CC to the new faster payments service. As mentioned previously, up to 10% of existing BACS payments are expected to migrate from the outset, reducing the benefits available from shorter clearing cycles in BACS and the C&CC. Some benefits would remain but set against these would be costs attached to investing in central infrastructures and banks' own systems. The payment schemes themselves would be well placed to undertake further work assessing the magnitude of such costs, allowing their members better to assess whether or not there exists a clear business case for shorter clearing cycles in BACS and the C&CC. For the latter in particular, the declining use of cheques may weaken any such business case. Nevertheless, for both systems the investment costs would largely be one-off, whereas the benefits, to both member banks and end users, would be enduring.

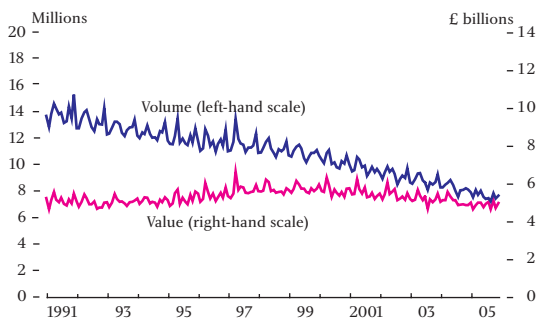
(4) This assumes that any reduction in interbank clearing cycles is passed on to the end user, ie the end user obtains cleared funds earlier.

(5) To the end user, 'settlement risk' is the risk that an individual might default on their payment obligation following receipt of goods or services in advance of payment.

3.7 The Cheque and Credit Clearings

The Cheque and Credit Clearings (C&CC) enable instructions given in paper form (cheques and paper credits) to be processed, exchanged and settled between banks. The C&CC are managed by the Cheque and Credit Clearing Company (C&CCC). The paper clearings process an average of around 7.6 million payments each day, with a total value of around £4.9 billion. The number of C&CC payments processed has fallen by around 46% since 1991, although the nominal value of payments processed has remained relatively constant over this period (Chart 12).

Chart 12
Average daily volume and value of payments processed in the C&CC^{(a)(b)}



Sources: APACS and Bank calculations.

- (a) Volumes include items drawn on other branches of the same bank (inter-branch). Values only include those drawn on other banks.
 (b) Changes in agency arrangements and individual member processing policies are likely to have resulted in a proportion of inter-branch transactions being excluded from the volume data in 2005.

In the previous *Oversight Report*, the Bank assessed the C&CC to observe six of the Core Principles either fully or broadly. This year, the Bank assesses the C&CC to observe eight of the Core Principles either fully or broadly. This reflects improvements made by the system during 2005. The Bank has chosen not to assess the C&CC against Core Principle VIII, pending completion of work by the OFT Payment Systems Task Force Cheque Working Group (Box 2). The Bank took the same approach in relation to Core Principle VIII in the previous *Oversight Report*.

Legal risk (Core Principle I) and settlement risk (Core Principles III and V)

The C&CC are a deferred multilateral net settlement system. The Bank highlighted in the previous *Oversight Report* that a drawback of multilateral netting was the potential uncertainty about who would bear any loss in the event of a default by a member in a net debit position. The *Liquidity Funding and Collateralisation Agreement* (LFCA), covering BACS and the C&CC, addresses this uncertainty by defining procedures to manage credit and liquidity exposures that would crystallise in such a situation (Core Principle III). Section 3.6 explains the LFCA in greater detail. Following the introduction of the LFCA in May 2005, the Bank assesses the C&CC to observe broadly Core Principle V. As with BACS, a residual risk remains in the C&CC that the largest single net debit position could exceed the value of liquidity committed. The Bank has encouraged the C&CCC and BPSL to consider approaches to reduce this residual risk, which would further strengthen observance of Core Principles III and V.

In 2005, the C&CCC progressed work further to establish clear procedures and incentives for the management of credit and liquidity risks. Once completed, this work will enhance observance of Core Principle III. The C&CCC has developed a process — due to be implemented in 2006 — that will deal with significant errors in settlement figures. Such errors increase settlement risk within the system: a member's net debit settlement position could be greater than the amount of liquidity available to it. The Bank considers this 'high value adjustment' process to be a necessary control against settlement risk, and encourages the C&CCC to complete this project as soon as possible. Members are also working to agree a *Cheque and Debit Recall Agreement*, which aims to prevent a liquidator seeking to return by way of the unpaids process all cheques drawn on a failed member and its customers.⁽¹⁾ This would reduce legal, credit and operational risk within the system, strengthening the system's observance of Core Principles I, II and VII in addition to Core Principle III.

(1) There are instances in which a cheque could 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.

In the event of a member default, a surviving member has two possible courses of action for dealing with cheques drawn on itself and already exchanged with the failed member but not yet settled: honour those cheques exchanged with the failed member and settle its obligation in respect of those cheques by way of the interbank settlement; or return the cheques as unpaid to the failed member without settling them. If a surviving member returned cheques as unpaid, then customers of the failed member might recover the full value of these cheques deposited by another route. If a surviving member settled its obligations to the failed member, customers of the failed member might receive only a proportion of the value, after liquidation of the failed member had taken place. A member, acting in its capacity as paying bank, might face claims from customers of a failed member, if it settled its obligations to the failed member, rather than returning the cheque as unpaid, and the customers did not receive full value. This is known as 'conversion risk'. The C&CCC has not undertaken a legal investigation of conversion risk, hence the existence and extent of the risk is unknown at present. The Bank has encouraged the C&CCC to carry out such a legal investigation.

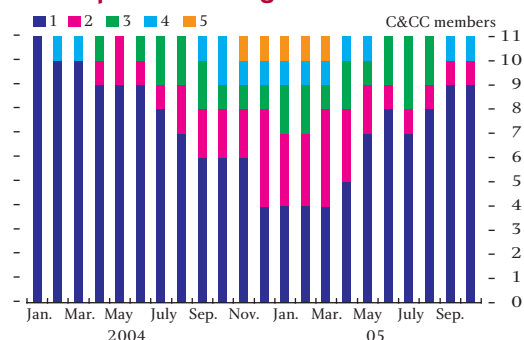
Additional legal assurance of the system's default arrangements could be forthcoming if the C&CC were designated under the UK settlement finality regulations. This could further strengthen observance of Core Principle I. Members plan to consider in 2006 whether to apply for designation.

Operational risk (Core Principle VII)

The Bank analyses a wide set of data on the operational performance of infrastructure providers to the C&CC and members of the scheme. 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 each cheque are sent to members and which is used by the C&CCC to compile multilateral net settlement figures. The IBDE network is currently supplied by Voca. Notwithstanding occasional delays and errors, the overall record of reliability of the IBDE network is high.

Apart from IBDE, there is relatively little central infrastructure. Members are responsible for processing their own cheques, and most have chosen to outsource this function. The C&CCC monitors members' operational performance against a number of Service Level Codes (SLCs), which provide targets for operational performance. Targets are tightened periodically and used by the C&CCC as a tool for continued improvement in operational performance. Members' performance against SLCs declined over the eight-month period to end-January 2005 (Chart 13). This temporary decline can be attributed at least in part to a key piece of work for the C&CC, its members and their third-party suppliers to consolidate the infrastructure used to process cheques and credits. This programme of consolidation was subject to delay and rescheduling. The decline in performance over this period is indicative of the industry's work to consolidate processing infrastructure. However, the deterioration in performance against SLCs posed no risk to the completion of interbank settlement.

Chart 13
Operational performance against Service Level Codes^(a)



Sources: C&CCC and Bank calculations.

(a) Performance is categorised from 1 to 5, with 1 being the best performance.

The C&CCC worked in accordance with its escalation procedures to deal with members' decline in operational performance. The C&CCC has no formal relationship with third-party suppliers of processing services, but sought to open dialogue with suppliers in 2005 to help resolve some of the problems surrounding the programme of infrastructure consolidation. The Bank also discussed operational performance with both the C&CCC and some of the third-party suppliers involved. Operational performance has

improved gradually since March 2005. This issue might, however, have been resolved earlier if the C&CCC had exercised its existing indirect rights to audit members' third-party suppliers. At present, the C&CCC relies on members to self-certify their compliance with the C&CCC's control objectives.

Access and governance (Core Principles IX and X)

The C&CCC has undertaken a number of access and governance changes through its Scheme Governance Steering Committee, which was established to review the system's current access and governance arrangements. In December 2005, members agreed to sign the *Membership Agreement* committing them to abide by the rules and decisions of the Company Board. This strengthens the system's observance of Core Principle I.

The committee is currently reviewing the system rules to address, among other things, any gaps in the membership criteria. The Bank highlighted in the previous *Oversight Report* that one such gap was an absence of any procedure to deal with a settlement member whose credit quality deteriorated to an extent that brought a high level of financial risk to the multilateral settlement. The Bank expects the C&CCC to address this issue as part of its governance review. This would strengthen observance of Core Principle IX. The C&CCC plans to complete the review of the system rules in 2006.

The C&CCC Board has the incentives and tools to pursue the interests of the system and its settlement members. Incentives for the Board to pursue the interests of the public and the wider economy are generally less clear. The Bank believes that there may be a case for the C&CCC to consider the case for independent or further public interest representation on the Board. This would strengthen observance of Core Principle X.

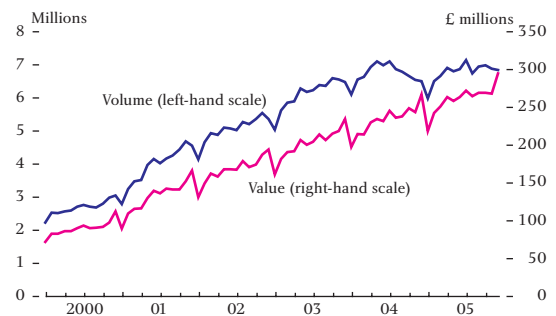
3.8 LINK

The LINK card 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. The LINK Interchange Network Ltd encompasses both the Scheme and its infrastructure provider (the Company). The Company provides transaction

switching for members of the Scheme, by routing transaction information from the ATM used by the customer to the card issuer's own computer network. The LINK Interchange Network is a for-profit, limited company owned by a subset of the members of the Scheme.

In the year to December 2005, the LINK Interchange Network Ltd processed a daily average of 6.7 million transactions (mainly cash withdrawals) with an aggregate value of around £260 million. Chart 14 shows that the number of transactions processed by LINK rose by over 150% between 2000 and 2005. However, growth in transaction volumes has been slowing since 2002.

Chart 14
Average daily volume and value of payments processed in LINK^{(a)(b)}



Sources: LINK Interchange Network Ltd and Bank calculations.

(a) Data for earlier than 2000 are not available.

(b) Volumes include non-cash withdrawal transactions (such as balance enquiries).

In 2005, the Bank carried out its first full assessment of the Scheme against the Core Principles (Annex F). The Bank assesses the Scheme to observe eight of the Core Principles either fully or broadly, but to fall short of this for the two others; Core Principles I and III. These relate to settlement risk.

Settlement risk (Core Principles I, II, III, IV and V)

LINK is a deferred multilateral net settlement system. This means that payments submitted are netted to produce a single obligation to, or claim on, the other participants of the system. Net settlement is carried out across accounts at the Bank of England. Net settlement obligations are around 10% of the value of those in BACS and 30% of the value of those in the C&CC.

Multilateral netting can reduce credit exposures within the system. Under current procedures, in the event of the default of a participant in a multilateral net debit position, the Scheme would unwind the multilateral netting. Credit exposures would be lower if the multilateral netting were retained. Legally robust multilateral netting would need to be coupled with a procedure to share any losses that arose following a participant default. The Bank has encouraged the Scheme to examine current default arrangements and consider ways to reduce credit exposures within the system. Additional assurance of the enforceability of the system's default arrangements might later be obtained if the Scheme were designated under the UK settlement finality regulations.

intraday and impose debit caps on participants' settlement positions. This could be used to impose controls on participants that bring additional settlement risk to the system. The technology is due to be launched in stages over the next two years. Completion of this work should lower settlement risk in the LINK system and thereby boost observance of the associated Core Principles.

Governance (Core Principle X)

Over the past two years the LINK Interchange Network Ltd has sought to increase the degree of separation between the Scheme and the Company, but has chosen not to pursue legal separation of the two entities. Governance arrangements would be more transparent and accountable if reporting lines within the Scheme and the Company were clearer.

To increase the effectiveness of its governance, LINK has appointed independent chairmen to the governing bodies of both the Scheme and the Company. As part of governance reforms, the LINK Interchange Network Ltd is considering the appointment of an additional independent director to the Company Board. There would also be merit in the Scheme considering the appointment of further independent representatives to its governing body, the Network Members Council.

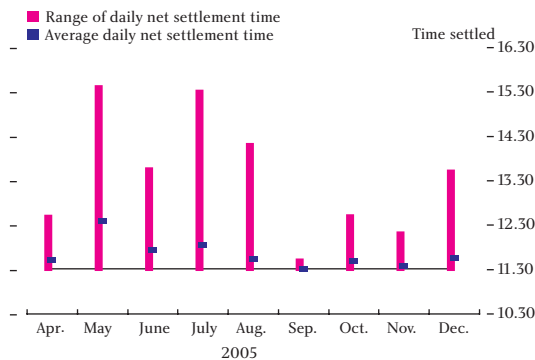
A review of access and governance arrangements in the LINK Interchange Network Ltd is taking place under the aegis of the OFT-led Payment Systems Task Force (Box 2).

3.9 Debit and credit card systems

Visa Europe, MasterCard Europe and S2 Card Services manage the main credit and debit card systems in the United Kingdom. S2 Card Services is the management company for the UK domestic Maestro (formerly Switch) and Solo schemes. Together, the systems process an average of 31 million electronic payments worth around £1.7 billion a working day (Charts 16 and 17).

The Bank has assessed the UK domestic Maestro scheme against the Core Principles. The Bank assesses the UK domestic Maestro scheme to

Chart 15
Time of daily LINK multilateral net settlement^(a)

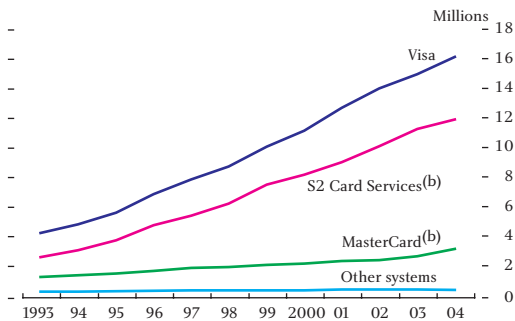


Sources: Bank of England and Bank calculations.
(a) LINK daily settlement should take place by 11.30.

The Bank has also suggested that the Scheme consider ways to improve settlement risk management. In the past, there have been insufficient controls on credit and liquidity risk and little incentive for participants to manage settlement risk effectively. Reforms agreed in 2005 will, however, improve the management of credit and liquidity risk, and strengthen participants' understanding of the financial risk they incur through participation in the system. For example, the Scheme has agreed new rules, which will take effect after a trial period in early 2006 to encourage timely funding of settlement accounts by participants in a net debit position. This should help to address the frequent number of delays to settlement in LINK (Chart 15). The company is developing technology that will enable the Scheme to monitor settlement positions

observe fully or broadly eight of the Core Principles already. There are, however, several areas where the overall level of observance of the Core Principles could be improved. Further information on this can be found in the full assessment in Annex G.

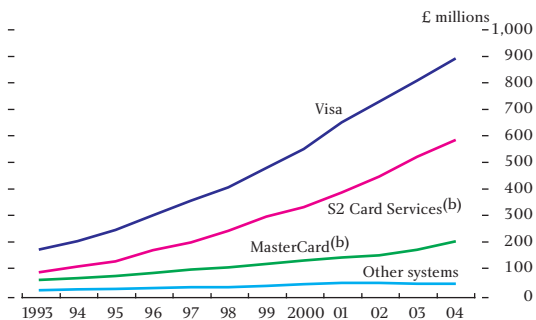
Chart 16
Average daily volume of payments through the debit and credit card systems^(a)



Sources: APACS and Bank calculations.

- (a) Data include 'on-us' transactions (where the merchant and cardholder use the same member/Licensee). 'On-us' transactions are processed internally by the member/Licensee.
- (b) Since 2004 S2 Card Services' transactions have been processed by MasterCard. Average daily volume of transactions processed by MasterCard in 2004: 14.9 million.

Chart 17
Average daily value of payments through the debit and credit card systems^(a)



Sources: APACS and Bank calculations.

- (a) Data include 'on-us' transactions (where the merchant and cardholder use the same member/Licensee). 'On-us' transactions are processed internally by the member/Licensee.
- (b) Since 2004 S2 Card Services' transactions have been processed by MasterCard. Average daily value of transactions processed by MasterCard in 2004: £776 million.

While the Bank has not conducted a full assessment of either the Visa credit and debit or MasterCard credit schemes, it continues to liaise with both to establish that their settlement arrangements for sterling transactions and business continuity arrangements are consistent with the standards set by the Core Principles.

Whereas management of the UK domestic Maestro scheme lies with UK-based S2 Card Services, management of the MasterCard credit and Visa credit and debit schemes is conducted to a greater extent on an international basis. Given this, the Bank is continuing to discuss with other central banks how they can best co-operate to oversee these schemes.

At a European level, in the past year the Bank and ECB have increased co-operation in collecting information relevant to the oversight of Visa Europe, whose European operations are based in the United Kingdom. This co-operation has enabled both parties to gain a better understanding of the recently introduced clearing and settlement arrangements for euro transactions. Visa Europe satisfied the Bank that they have failure-to-settle arrangements for this service, which allow the timely completion of settlement if the participant with the largest net debit is unable to settle, as recommended by Core Principle V.

In September 2005, the migration of authorisation, clearing and settlement processing of UK Maestro and Solo transactions onto MasterCard Europe platforms was completed. As part of this, interbank settlement arrangements for UK domestic Maestro and Solo transactions changed from a series of bilateral net payments through CHAPS, to multilateral net settlement under MasterCard Europe arrangements. In line with Core Principle V, the new arrangements include procedures to complete settlement in the event that a member defaulted. The Bank obtained assurance from MasterCard that MasterCard International's pool of liquid resources and credit lines were sufficient to meet the largest single settlement obligation, consistent with Core Principle V.

3.10 SWIFT

SWIFT provides secure messaging services to financial institutions and market infrastructures covering 7,800 users in over 200 countries. Five market infrastructures of importance to the financial stability of the United Kingdom (CHAPS, CLS, CREST, LCH.Clearnet Ltd and TARGET) all use SWIFT. For this reason, even though SWIFT is

not a payment or settlement system itself, its services are of systemic importance to the United Kingdom.

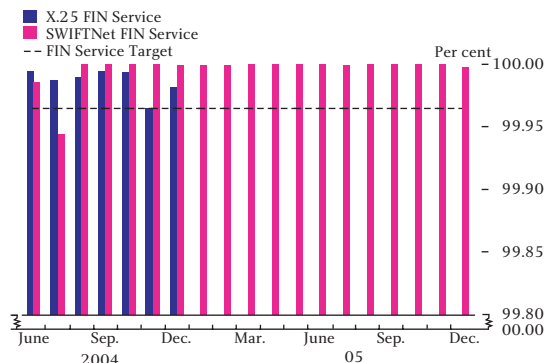
The Bank participates with other G10 central banks in the co-operative oversight of SWIFT, with the National Bank of Belgium as lead overseer (SWIFT's headquarters are in Belgium). The objective of overseers is to seek satisfaction that SWIFT appropriately manages risks to its operations that could otherwise threaten the smooth functioning of the international financial system. Over the past year, further improvements have been made to the arrangements for co-operative oversight. For example, SWIFT's external security auditors had concerns about sharing information with overseers; these concerns have now been addressed and overseers have subsequently met with them to discuss SWIFT's *Statement on Auditing Standards Number 70 (SAS 70)* report. As suggested in the previous *Oversight Report*, collective work by overseers is also now under way to establish a more structured framework for the assessment of SWIFT's operational risk management. While the Core Principles are not designed to be directly applicable to SWIFT, operational risk (Core Principle VII) and governance (Core Principle X) have continued to be a major focus of the Bank's oversight activities.

Operational risk (Core Principle VII)

Since the previous *Oversight Report*, SWIFT has maintained strong availability of its critically important FIN messaging service (Chart 18) despite a period of technological change. The target availability of 99.964%⁽¹⁾ has been achieved for each of the past twelve months. SWIFT has also further enhanced its resilience capabilities.⁽²⁾ The Bank welcomes SWIFT's focus on resilience and believes that further communication on this topic would benefit the SWIFT user community, so that they can plan their own contingency arrangements accordingly. During regular testing of its disaster recovery capability this year, SWIFT uncovered some organisational and operational issues which it is now addressing. This reinforces

the value of such testing and the importance of ensuring the user community is well represented in such testing. More generally it underlines the importance of continuous improvement in the area of resilience and testing, to which SWIFT is committed.

Chart 18
Weighted availability of SWIFT FIN^(a)



Source: SWIFT.
(a) Weighted availability is calculated by SWIFT. It takes into account the percentage of SWIFT users without access to SWIFT services and the length of time they are without this access.

The 'SWIFTNet FIN Phase 1' project was completed at the beginning of 2005. This project migrated FIN customers from X.25, a network technology that is considered out of date (with associated operational risks) to more widely used internet-based network technologies. Active planning for the complete lifecycle of the usage of technology can significantly contribute to the management of operational risks. In this context, the completion of this project is welcomed by the Bank.

In September 2005, SWIFT launched 'SWIFTNet FIN Phase 2', a project to improve the management of security in the FIN service. This is scheduled to complete rollout by the end of 2008. Prior to launch, SWIFT responded positively to consultation on its proposals, introducing additional security measures to address deficiencies that had been identified in those proposals. The Bank believes that the project has benefited considerably from the widespread consultation that SWIFT initiated among its user community. SWIFT should continue to consider

(1) This is a 'weighted availability' target calculated by SWIFT on the basis of the volume of traffic affected. Individual SWIFT users may experience lower availability.
(2) Schrank, L (2005), 'The road to 2010', presentation to the SIBOS conference, available at: www.swift.com/index.cfm?item_id=57798.

the end-to-end security of SWIFT services as well as the security of SWIFT-managed components.

Governance (Core Principle X)

During the past year, SWIFT has continued to enhance its internal audit function, with the appointment of a new head of internal audit, the internal audit charter being revised and the internal audit methodology enhanced.

More broadly, Core Principle X states that effective governance provides incentives for management to pursue objectives in the interest of the system, its participants and the public more generally. In the Bank's view, SWIFT's forward-looking strategy for corporate governance will need to ensure accountability both to its member-shareholders and to those users that are not direct member-shareholders.

SWIFT recognises this challenge and believes that debates on governance should be stimulated within SWIFT.⁽¹⁾ SWIFT believes that the entrance

of corporate users could act as a catalyst to review its membership and participant structure. The Bank believes that there may also be scope for greater input from market infrastructures, which account for a growing — and systemically important — share of SWIFT traffic. SWIFT's ongoing dialogue with G10 central banks is another example of how broader market and public interests can be incorporated into SWIFT's decision-making and governance processes.

SWIFT is keen to enhance further the experience, standing and expertise on the SWIFT Board. One practical development is that SWIFT has reviewed and strengthened Board profiles outlining the expected attributes of Board members. The Bank welcomes this initiative and looks forward to future governance initiatives by SWIFT. For example, the Bank continues to believe that Board members drawn from outside SWIFT's user community — independent directors — could be one effective vehicle for enhancing the experience, standing and expertise of the SWIFT Board.

(1) Kamp, J (2005), 'Transformation and SWIFT', presentation to the SIBOS conference, available at: www.swift.com/index.cfm?item_id=57797.

Chapter 4: Issues and priorities for future work

The previous *Oversight Report* noted that the Core Principles ‘offered only a minimum standard’, and that ‘in some cases, national and international standards of best practice have evolved since the Core Principles were published’, back in 2001.⁽¹⁾ This chapter sets out some of the Bank’s oversight priorities for 2006 and beyond, in some cases arising from the implementation of its new risk-based framework for oversight (Section 1.3 above). In the Bank’s view, the work described in this chapter could usefully inform any future international discussions on updating and extending the Core Principles.

There are areas where the Core Principles have identified an issue, and best practice has since moved on. These include operational risk (specifically, business continuity planning — Section 2.2 above), governance (Section 4.1 below) and transparency (Section 4.2 below). Elsewhere, an extension to the Core Principles might be warranted where they currently do not provide for a means of assessing a risk: for instance, business risk (Section 4.3 below). Nor do the Core Principles capture fully either the systemic risks arising from interlinkages between payment systems (Section 4.4 below), or the increasing overlap in the services provided by systems and banks (Section 4.5 below). While the Core Principles themselves may not be suitable for taking account of these latter two issues, they highlight the importance of supervisors and overseers working collaboratively when using the Core Principles and other international standards to assess risks.

4.1 Corporate governance and financial infrastructures

As set out in Section 1.1, privately operated payment systems may not sufficiently invest to control operational, credit, liquidity and business risk. This can be partly addressed through means

that ensure the inclusion of the public interest in the decisions of payment system operators. Ensuring good governance is, perhaps, the most flexible method of doing so since it keeps public intervention in payment systems’ decision-making to a minimum.⁽²⁾

Core Principle X broadly outlines how good governance can be achieved: ‘Those who make up the governing body of a systemically important payment system should be accountable both to the system’s owners and the wider community of users.... Representation on the governing body is one such means.’

The Core Principle does not lay out the specific means by which such accountability can be achieved. Several options are available. Close contact between operators and central banks is one such option. Other arrangements could integrate public-interest representation directly into a payment system operator’s decision-making.

In the Bank’s view, the most promising arrangement involves the direct representation of external stakeholders on the decision-making bodies. For example, recent recommendations by the Irish Competition Authority on a reform of the Irish payment system are instructive: these propose an arrangement in which management and operation of Irish payment systems are combined into one entity with a single, unified board of directors. This board should primarily deal with strategic issues and include other stakeholders. Committees under the board should deal with specific technical matters requiring specialised skills.⁽³⁾

There may be benefits in ensuring board representation is broader than the ownership of a

(1) Bank of England (2004), *Payment Systems Oversight Report*, page 11, available at: www.bankofengland.co.uk/publications/psor/psor2004.pdf.

(2) The importance of good governance for mitigating principal-agent problems and systemic risk in a framework of self-regulation was briefly discussed in the previous *Oversight Report*, page 51.

(3) The Competition Authority (2005), ‘Competition in the (non-investment) banking sector in Ireland’, available at: www.tca.ie/banking/banking_report_final.pdf.

payment system, particularly where the community of external stakeholders (ie those without an ownership stake) is wide. Additionally, system operators could adopt into their objectives the interests of all stakeholders, including systemic risk considerations. Board representation for external stakeholders could help to ensure that such interests are taken into account by the board. Correctly appointed, such representatives could also bring other benefits to board discussion, such as their specific expertise and broader strategic vision.

Over the coming year, the Bank will continue to explore the implications that different governance arrangements for financial infrastructures have for systemic risk.

4.2 Transparency

Transparency is recognised in the Core Principles as an important tool for promoting financial stability. Two distinct, though related, aspects of transparency are identified: (i) public disclosure by central banks of their roles and responsibilities with respect to payment systems; and (ii) public disclosure by payment system operators of their rules and procedures to allow participants to develop a clear understanding of the potential risks they face. With regard to both aspects, a case can be made that best practice has evolved since the publication of the Core Principles. An extension of the Core Principles to capture recent innovations would therefore be desirable.

Public disclosure by central banks

The CPSS report on the Core Principles⁽¹⁾ sets out four responsibilities that a central bank should meet when applying the Core Principles.

Responsibility A states that a central bank should 'define clearly its payment system objectives and should disclose publicly its role and major policies with respect to systemically important payment systems'. The accompanying text explains that transparency of this kind improves central bank accountability by providing a benchmark by which the public can judge its success in achieving its objectives. It goes on to specify that appropriate

disclosure of major policies should include identifying systems that are systemically important, and might also outline the steps that the central bank would take if it judged that a system did not comply with the Core Principles.

However, the Core Principles stop short of recommending that a central bank should consider disclosing its Core Principles assessment of systemically important payment systems. By publishing in this *Oversight Report* its assessment of payment systems with which it maintains an ongoing oversight relationship, the Bank aims further to enhance its accountability, and to provide greater clarity to payment system operators on areas where opportunities exist to strengthen further their systems and risk controls. In addition, such disclosure promotes awareness and understanding among users, of risks that may arise in payment systems. This could improve discipline imposed on system operators by users, and ultimately has the potential to strengthen public confidence in payment systems. A recommendation that central banks consider publication of their Core Principles assessments could usefully be incorporated into any extension or revision of the Core Principles.

Public disclosure by payment system operators

Core Principle II requires that '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'. This imposes clear requirements on operators of payment systems to disclose key rules relating to financial risks to their users.

The explanatory text, however, does not recommend that a system operator should disclose information on the degree of the system's observance of the Core Principles. In contrast, such a disclosure requirement is included in the CPSS-IOSCO *Recommendations for Central Counterparties*, published in 2004.⁽²⁾ Recommendation 14 on Transparency states that CCPs should disclose their answers to the key

(1) Available at: www.bis.org/publ/cpss43.htm.

(2) Available at: www.bis.org/publ/cpss64.htm.

questions in the report. A similar requirement for CSDs is stated in Recommendation 17 of the CPSS-IOSCO RSSS.⁽¹⁾

Disclosure of a system's self-assessment against the Core Principles is likely to enhance users' understanding of the costs and risks that they are exposed to as a result of participation in the system. This enables users to impose effective discipline on system operators, encouraging them to pursue risk-mitigating objectives that are consistent with those of participants. A recommendation to that effect could give guidance on the level of detail to be included in such an assessment and stipulate a time frame for updating assessments. System operators should avoid disclosing information regarding the positions of individual users when publishing such assessments.

4.3 Business risk

Business risk refers to the risk that the payment system or any of its components — eg an infrastructure provider serving it — cannot be maintained as a going concern in the face of adverse financial shocks. These shocks may arise internally, from business decisions resulting in financial losses, or externally, from changes in the demand for payment services caused, for example, by the introduction of a cheaper system offering a similar service.

The Core Principles do not cover business risk explicitly, perhaps because its importance has become apparent only recently. The Bank's new risk-based framework for oversight (Section 1.3) will include an explicit assessment of business risk. Controlling business risk in payment and settlement systems has also proved a relevant issue outside the United Kingdom. In the United States, for example, there is ongoing work, following the events of 11 September 2001, on determining what mechanisms should be in place to address the

failure of a major infrastructure provider in securities settlement.⁽²⁾

Conditions under which business risk is relevant

In principle, business risk can arise whenever any of the components of the payment system are privately owned, either wholly or partially. Currently in the United Kingdom, this is the case for all schemes and infrastructure providers with the exception of the RTGS infrastructure, which is used by CHAPS (and other systems) and owned by the Bank of England (Table C). Therefore, the possibility of business risk materialising is a current issue for all schemes and the majority of infrastructure providers in the United Kingdom.

In addition, the trend in the evolution of ownership of payment systems implies changes in the nature of business risk. In particular, in line with recommendations aimed at increasing competition and innovation in the payments industry, several payment systems in the United Kingdom have separated the company providing the infrastructure service from the member-owned scheme that is responsible for setting out the rules that determine the way the system operates.⁽³⁾

Alongside the benefits that separation may bring to competition and innovation, it changes the nature of business risk.⁽⁴⁾ Separated companies are more likely to become involved in business not directly related to the payment system, which increases the range of factors that may trigger business risk events. In addition, since their ownership can be broad and include investors that are not major users of the system, they may be less likely to extend funds to support financial losses incurred as a result of adverse business risk events. (The reason for this is that these investors will consider only the direct benefit they obtain from this financial support as owners, and not the benefit to users of the continued availability of the system.)

(1) Available at: www.bis.org/publ/cpss46.htm.

(2) In particular, the Federal Reserve Board formed the Working Group on Government Securities Clearance and Settlement with representatives from the private sector. The report delivered by the Working Group in December 2003 can be found at: www.federalreserve.gov/boarddocs/press/other/2004/20040107/attachment.pdf.

(3) Cruickshank, D (2000), *Competition in UK banking*, available at: www.hm-treasury.gov.uk/documents/financial_services/banking/bankreview/fin_bank_reviewfinal.cfm. Office of Fair Trading (2003), *UK payment systems*, available at: www.oft.gov.uk/NR/rdonlyres/10DB2458-FBD9-4B5C-9EE7-CEB7ACA472BB/0/oft658.pdf.

(4) These benefits are generally expected to be more pronounced when the ownership of infrastructure providers is different to the ownership of the scheme. In practice, this is currently not the case for some of the systems (Table C).

Table C
Ownership of scheme and infrastructures in the main UK payment systems

System	Ownership		System	Ownership	
	Scheme	Infrastructure		Scheme	Infrastructure
BACS	BPSL: Member-owned	Voca: Member-owned	LCH (PPS)	LCH.Clearnet Ltd: Member/exchange-owned	
C&CC	C&CCC: Member-owned	Voca: Member-owned EDS: Publicly traded iPSL: 51% Unisys, 49% banks	LINK	LINK: Member-owned	LINK Interchange Network Ltd: Member-owned (subset of scheme owners)
CHAPS	CHAPSCo: Member-owned	RTGS: Bank of England SWIFT: Member-owned	MasterCard	MasterCard Members' Forum (MMF) UK/ MasterCard Europe (MCE): Member-owned (via MasterCard Incorporated)	MasterCard Europe: Member-owned (via MasterCard Incorporated)
CLS	CLS Group Holdings (including CLS Bank as part of group): Member-owned	IBM: Publicly traded SWIFT: Member-owned CLS Services: Member-owned	UK Maestro	S2 Card Services (convergence of rules with MCE going forward, but separate legal entity): Member-owned	MasterCard Europe: Member-owned (via MasterCard Incorporated)
CREST	Euroclear plc (incl. Euroclear Bank part of group): Member-owned Also uses Bank of England's RTGS and SWIFT		Visa	Visa UK Ltd/ Visa Europe Ltd: Member-owned	Visa Europe: Member-owned

In an extreme case, business risk may lead to the insolvency of an infrastructure provider. Although it is in the interest of the private companies to put controls in place to reduce the possibility of insolvency, these controls may not be sufficiently robust to satisfy the public interest in maintaining continuation of payment services. This implies a role for the overseer to propose controls to secure the continuity of payments.

At the same time, separation of schemes from

infrastructures can bring about risk-reducing benefits. Rendering the provision of infrastructure services open to competition could lead to an expansion of potential suppliers, which in turn would make it easier for schemes to find alternative providers in the event that their existing supplier can no longer provide the service. In addition, involvement of infrastructures in business other than payments diversifies their sources of revenue, which can make them more resilient to adverse shocks.

Controls for business risk

In determining appropriate controls for business risk, two questions need to be answered: (i) should controls be applied to the scheme or the infrastructure provider; and (ii) what are the means to control and minimise the likelihood of business risk events and their impact?

The first question is relevant in the context of separation between schemes and infrastructure providers. The answer will depend on what is the most effective way to fulfil the public policy objectives. On the one hand, there is the public policy objective of securing the continuity of payment services, which would call for controls over both types of agent. On the other hand, there is the public policy objective of ensuring that the provision of infrastructure services is an attractive business for third parties. Moreover, it should be taken into account that there are limitations in the influence that overseers can exert in ensuring that non-financial companies meet appropriate controls. The latter arguments call for controls to be applied to the scheme.

As for the second question, it should be noted that the main public policy objective is to ensure continuity of payment services, rather than in itself avoiding insolvency of the infrastructure provider. This implies that controls should not be directed only towards controlling the risk of insolvency, but also towards securing a smooth transition to a new provider if a business risk event were to materialise.

A standard approach in controlling the likelihood of insolvency of a company is for it to hold capital. Arguably, it is reasonable to use this control in this case too. Capital could also be required to secure continuity of payments in the interim period following the insolvency of an infrastructure provider until a new provider is found and becomes operational.⁽¹⁾ In addition to capital, other controls can be considered, such as ensuring that key assets are held temporarily away from

liquidators in the case of the bankruptcy of an infrastructure provider, and having in place in advance arrangements among scheme participants to cover the financial needs that would arise in that situation.

Over the next year, the Bank plans to analyse these issues further. Current regulations in the United Kingdom contain certain controls for specific systems, in particular RCHs.⁽²⁾ The Bank's work on this topic will review the appropriateness of extending these and other controls to the payment systems with which it maintains an ongoing oversight relationship.

4.4 Interlinkages

Risks from interlinkages between systems are not currently given significant attention in the Core Principles. Interlinkages may arise in a number of ways, including:

- the membership of two systems may overlap, in which case the insolvency of a member may crystallise credit risk in both systems;
- the same infrastructure provider may be used by more than one system, or different infrastructure providers may use a common telecom company. If the common provider or the common telecom company suffers an operational problem, then risks may crystallise in a number of systems simultaneously; and
- the liquidity in one system may depend in part upon another system.

Such interlinkages may have become more important over the past decade.⁽³⁾ Moreover, interlinkages may increase the aggregate level of risk. If a bank is a member of two DNS systems ('overlapping membership') and has a net debit position in both systems, then members of both systems are exposed to it. In these circumstances, credit risk will crystallise in both systems if the bank becomes insolvent with a net debit position

(1) For this control to be effective, funds should be clearly ear-marked to be used for this purpose.

(2) In particular, the FSA has issued guidance requiring that LCH.Clearnet Ltd and CREST should maintain net capital equal to at least six months' worth of operating costs. A similar benchmark has been agreed between the Bank and Voca, the infrastructure provider to BACS, in relation to the company's capital base (Section 3.6).

(3) For example, Richard Pattinson has argued that CLS has led to the development of a large 'risk balloon', by connecting the RTGS (or equivalent) systems of major currencies — referred to in Millard, S and Saporta, V (2005), 'The future of payments', *Bank of England Financial Stability Review*, December, page 59, available at: www.bankofengland.co.uk/publications/fsr/2005/fsr19art5.pdf.

in both (if the exposures are not fully collateralised). This gives rise to a positive correlation between credit risk in the two systems; and if two risks are positively correlated, then the aggregate risk may be greater.

While overlapping membership gives rise to correlations between credit risks, common infrastructure or telecom providers may cause correlations between operational risks. For example, SWIFT provides messaging services for a variety of financial institutions and market infrastructures, including CHAPS, CLS, CREST, LCH.Clearnet Ltd and TARGET. In addition, a number of systems, including those just mentioned, depend to some degree upon the RTGS infrastructure provided by the Bank of England. Another example is the dependency of at least six different TARGET components on a single telecom company: the incident in June 2005 (Section 3.2) highlighted the importance of interlinkages between systems through common telecom dependencies.

The move away from DNS to RTGS systems has heightened the importance of liquidity. This raises the prominence of another type of interlinkage — when a system depends for its liquidity on a second system. For example, payouts from CLS make a significant contribution to liquidity in CHAPS Sterling. Another example is the interlinkage that exists, because of their common liquidity pool, between CHAPS Sterling and CREST sterling.

Over the next year, the Bank intends to assess additional risks arising from interlinkages between systems.

4.5 Infrastructure/institutional distinction

Developments in market structure also pose challenges for the current oversight framework, highlighting the need for the committees responsible for the different parts of the international financial architecture to increase their collaboration to tackle such changes.

The distinction between the services provided by systems such as large-value payment systems, securities settlement systems and central counterparties and those provided by certain banks is less clear than might be supposed. Some banks settle or clear transactions across their own books and several banks account for such a significant proportion of a system that they constitute key points of failure. In parallel, certain systems supply banking services to their customers. The extent of this blurring is more marked in certain sectors and countries than in others. Section 2.1 includes a description of tiering — ie the extent to which banks provide infrastructure services for other banks — in the main UK large-value payment and settlement systems.

These structural issues illustrate the need for standard setters for banks and systems to work together closely on the development of standards in this area. For example, work on standards for securities clearing and settlement by the ESCB and the Committee of European Securities Regulators (CESR) highlighted the need for additional analysis of the relationship between the banking supervisory framework and the proposed ESCB/CESR standards relating to credit risks.⁽¹⁾ If material inconsistencies exist between such frameworks, additions to the existing rules or standards may need to be considered. Any such changes would, of course, require close co-operation between the relevant committees.

The different committees also have to come together to ensure risks highlighted by any one group are tackled in a joined-up manner. Addressing foreign exchange settlement risk has been an important campaign for the CPSS, and while the 2002 launch of CLS was a significant milestone, estimates suggest that a substantial share of global foreign exchange settlement — well over a half — may still be taking place outside CLS. Ensuring that banking supervisors continue to monitor how banks manage settlement risk in such transactions and whether enough has been done to reduce this risk is therefore important.⁽²⁾

(1) Details on this are available at: www.cesr-eu.org.

(2) Sawyer, D (2004), 'Continuous Linked Settlement (CLS) and foreign exchange settlement risk', *Bank of England Financial Stability Review*, December, pages 86–92, available at: www.bankofengland.co.uk/publications/fsr/2004/fsr17art5.pdf.

Annexes: Detailed assessments of payment systems

The CPSS *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.

As explained in Section 1.2, the Bank expects payment systems' degree of observance of the Core Principles to be proportionate to the systemic importance of the system in question. The expected degree of observance for a system may differ as between different Core Principles. For the most systemically important systems, the Bank may expect standards that go beyond those that would qualify for full observance of the Core Principles; for some other systems, full observance of all the Core Principles may not be deemed necessary.

The following seven annexes cover:

- CHAPS (Annex A);
- the payment arrangements supporting CREST (Annex B);
- the Protected Payments System operated by LCH.Clearnet Ltd (Annex C);
- BACS (Annex D);
- the Cheque and Credit Clearings (Annex E);
- LINK (Annex F); and
- UK Maestro (Annex G).

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.

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)*, which implemented the EU *Settlement Finality Directive* in the United Kingdom (the 'UK settlement finality regulations'). 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.

CHAPS members' relationship with the Bank of England, as provider of settlement accounts, is governed by contracts (the *RTGS Mandate* 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. However, the decisions to introduce such contracts for BACS and the C&CC suggest that the situation for CHAPS should also be reviewed.

During 2005, CHAPSCo largely completed legal work to confirm 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 interfere with the member's ability to fulfil its obligations. This legal work complements the Bank of England'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.⁽¹⁾ The Bank has also asked CHAPSCo to introduce requirements and processes to ensure that the Company is made aware of changes to the legal status of UK or foreign CHAPS members, or to the legal framework of relevant local jurisdictions. This should help eliminate the risk that the legal soundness of the system diminishes in the future as a result of changes in legal status occurring without CHAPSCo's knowledge.

Pending the outcome of work on legal capacity and contracts, **the Bank assesses CHAPS broadly to observe Core Principle I.** With satisfactory legal advice, it would upgrade that assessment to full observance. This assessment is unchanged from last year.

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 scheme governance organisation, and the members, are set out in a Memorandum of Understanding (MoU).

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

All of the risk management features in CHAPS (with the exception of bypass mode procedures in the event of an operational disruption at the Bank — see Core Principle V) 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. 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 CHAPS Board. The Board has delegated responsibility to the CHAPS 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.

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 it were not distributed sufficiently well) to permit a regular flow of payments, then 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. For CHAPS Euro, this credit is further limited to approximately €3 billion in aggregate each day. However, members are able to raise additional liquidity within the euro area and transfer this through TARGET to CHAPS Euro. 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 controls. 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. In extreme scenarios, the Sterling Liquidity Contingency Regime can be invoked if there is a risk that liquidity might get drained from the system because a member is unable to send payments (though it can still receive).

In 2005, the Bank introduced an additional liquidity-saving feature. Members are now allowed 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.

Evidence suggests that the procedures currently in place are effective for controlling liquidity risk. Bank analysis shows that system participants have ample liquidity to cope with temporary operational difficulties affecting even the largest members. Since the change to allow the queuing of CHAPS Sterling payments, there has been no evidence of members significantly changing their payments behaviour.

There is some evidence that member throughput has deteriorated in 2005, with a few CHAPS members consistently breaching throughput requirements. This could be interpreted as a sign of growing liquidity pressures. However, investigations suggest that the deterioration in throughput performance mainly reflects changes in the distribution of payments' submission times, rather than member liquidity constraints. Nevertheless, this is a development that CHAPSCo should look to monitor carefully.

The Bank has encouraged CHAPSCo to explore practical and efficient ways of reducing potential settlement risk that can arise in RTGS bypass mode (Core Principle V).

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

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.

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 and redundancy proved inadequate and bypass mode were 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) or £1 billion (if this information is not available).

The Bank believes that greater protection in bypass mode could be achieved through the introduction of arrangements to allocate any multilateral net shortfall between members with net credit positions *vis-à-vis* the defaulting member, so that new settlement positions can be calculated and settlement completed. There may also be scope to reduce settlement risk through modifying the operational arrangements in bypass mode. The Bank has asked CHAPSCo to undertake work in this area and would like any new arrangements to be introduced by end-2006.

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.

In the previous *Oversight Report*, the Bank noted that only settlement members of CHAPS enjoy the risk-reduction benefits of settlement in central bank money. The decisions by Abbey to join CHAPS Sterling in 2005 and UBS AG to join CHAPS Sterling in 2007 are therefore welcome. Other indirect member banks are also encouraged to consider joining CHAPS Sterling, especially if their payment values are large.

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. 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 CHAPS 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 ten of the twelve months in 2005.

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 expediently. 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 service to the expected level.

The International Monetary Fund (IMF) Financial Sector Stability Assessment highlighted the need to monitor the level of extensions with a view to implementing more stringent disciplinary processes than peer pressure if problems persisted. Since the assessment was carried out, the evidence has been mixed. The number of extensions increased sharply in 2003, but in 2005 fell back to 2002 levels. Some further consideration of whether this level of extensions is acceptable would be worthwhile.

CHAPS' business continuity resilience and recovery procedures are extensive, and 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. The Bank has also encouraged CHAPSCo to put in place arrangements that will help to minimise the amount of time that CHAPS

Sterling would need to operate in bypass mode following a major event.

The Bank assesses CHAPS to observe Core Principle VII, and welcomes the efforts that CHAPS is making to reinforce further its contingency arrangements.

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). Recent changes to allow the queuing of CHAPS Sterling payments in RTGS (Core Principle III) may introduce further liquidity efficiencies.

Going forward, developments such as the introduction of a new faster payments service may lead to falls in CHAPS Sterling volumes, potentially increasing per-unit costs of making RTGS payments.⁽¹⁾ However, the value of payments using the system should be largely unaffected by these changes, and CHAPS should remain a practical way for making systemically important time-critical payments.

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

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. These 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 Guideline*.

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.⁽²⁾ Following the reforms of the Bank's operations in the sterling money markets, settlement account banks will automatically become part of the Bank's reserve scheme, and have access to standing facilities.

In June 2005, the CHAPS entry fee for new members was reduced from £100,000 to £70,000 (prior to 2001, the fee was £1 million) following an annual review by CHAPS. New members are now no longer required to make a contribution to the development costs of 'NewCHAPS' in 2001, which had been paid for by existing members. Given depreciation, there was no case for continuing to recover these development costs from new members — the change was therefore appropriate.

The remaining £70,000 fee is justified by CHAPS as a contribution to the technical costs for CHAPSCo and existing members of adding new members to the system. The Bank has questioned the appropriateness of this approach because it:

(1) Bank of England (2005), *Bank of England Financial Stability Review*, December, pages 47–50, available at: www.bankofengland.co.uk/publications/fsr/2005/fsr19art4.pdf.

(2) Bank of England (2002), *Bank of England Settlement Accounts*, available at: www.bankofengland.co.uk/financialstability/paymentsettlementsystems/pdf/boesettleaccs021128.pdf.

assumes that new members are only a cost burden on existing members and bring no benefits; does not reflect the wider settlement risk benefits of increasing the proportion of large-value sterling payments made across the books of the Bank; could be perceived as being anti-competitive; puts a relatively large burden on lower volume institutions; and does not take into account the economies of scale of taking on multiple members at one time. The Bank has therefore encouraged CHAPSCo to review again the basis on which it sets its fees.

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

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 stakeholders more generally are less clear, though the Bank of England provides one of the Board directors. However, there may be alternative, preferable ways of getting external stakeholder or public interest representation on the CHAPS Board, which might be usefully explored. Given the systemic importance of CHAPS, there may also be a case for CHAPSCo adopting systemic risk considerations, alongside those of other stakeholders, into its objectives. The Bank has therefore encouraged CHAPSCo to review its governance arrangements in the context of wider sector developments. **The Bank assesses CHAPS broadly to observe Core Principle X.** This assessment is unchanged from last year.

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.⁽¹⁾ As noted earlier, 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 CRESTCo is responsible; and the overall payment arrangements supporting securities settlement, which are a collaboration between CRESTCo, the Bank of England (for sterling and euro settlement) and the CREST settlement bank community.

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

There are no material changes to report in respect of this Core Principle compared to last year's assessment. CREST is designated under the *Financial Markets and Insolvency (Settlement Finality) Regulations (1999)* (the 'UK settlement finality regulations'), which implemented 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 CRESTCo, 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, CRESTCo 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 banks' 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 CRESTCo'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.**

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.

There are no material changes to report in respect of this Core Principle compared to last year's assessment. The payment arrangements do not have their own separate rules and procedures;

(1) While the assessment focuses on the payment arrangements between the 15 CREST settlement banks, these settlement bank arrangements are underlain by payments between over 42,000 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.

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 regularly updated. The US dollar CREST settlement banks are investigating with CRESTCo the possibility of improving that payment mechanism to reduce the size and duration of the interbank exposures that the mechanism generates and to remove the potential for uncertainty about when finality is achieved (as set out in the commentary to Core Principles III and IV). **The Bank assesses CREST's payment arrangements to observe Core Principle II.**

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.

There are no material changes to report in respect of this Core Principle compared to last year's assessment. Because 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. CRESTCo 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, with responsibility falling 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 the 600-plus CREST settlement cycles each day. The rules on generating and transferring liquidity are set out in the *RTGS Reference Manual*.

It is normally the case that 99% by value of CREST transactions settle on their intended settlement date and there is no indication that liquidity shortages are the cause of the failure to settle the remainder. 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 current interbank settlement arrangements supporting CREST US dollar settlement are deficient in a number of respects as regards this Core Principle. The settlement banks take on their CREST customers' gross bilateral payment obligations during the CREST settlement day, and these gross interbank exposures are converted into bilateral net obligations only at the end of the day. These net exposures are not extinguished until the settlement banks' US dollar correspondents have made the necessary payments on their behalf in the United States. To the extent that settlement banks pre-fund their accounts at their US dollar correspondent, they are also 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 three

years, increasing from a daily average value of around US\$500 million in 2003 to approximately US\$1.5 billion during 2004 and into 2005. There was a further step change with effect from June 2005 to around US\$2.25 billion. With CRESTCo and the Bank, the US dollar settlement banks are now investigating a formal multilateral net settlement procedure, supplemented by measures to ensure settlement can complete. **The Bank assesses the current US dollar payment arrangements partly to observe Core Principle III.** The level of observance should improve as work on the US dollar interbank settlement arrangement progresses, although full observance for a multilateral net settlement arrangement would require measures to ensure the completion of settlement if a net payer failed to settle.

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. Average cycle duration is between 50 seconds and one minute. At certain times in the day there are a small number of longer cycles.

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. The level of observance should improve once the planned changes to US dollar settlement are implemented. **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.**

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 currently employs multilateral netting, so this Core Principle is not relevant to CREST arrangements. As mentioned under Core Principle III, CRESTCo and the settlement banks are currently exploring the possibility of moving from bilateral to multilateral netting for the US dollar payment arrangements. The Bank considers it important that the multilateral arrangement chosen should observe this Core Principle.

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.

There are no material changes to report in respect of this Core Principle compared to last year's assessment. 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.**

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

There are no material changes to report in respect of this Core Principle compared to last year's assessment. CREST achieved an average 99.9% settlement availability in 2005. This performance

was supported by the high resilience of the payment arrangements, including the Bank-CREST DvP link on which the day-to-day operation of the sterling and euro payment arrangements rely. 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.

The Bank assesses CREST's payment arrangements to observe Core Principle VII.

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 42,000 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, 99% of trades by value (around 91% by volume) settle 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.

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 CRESTCo'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 CRESTCo, 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 payment arrangements without also being a member of CHAPS. There are, however, no participation criteria publicly disclosed by the CREST settlement bank community. While CRESTCo's criteria for participation are objective and publicly disclosed, the Bank does not see any justification for existing settlement members having a theoretical veto over other banks' seeking to become CREST sterling or CREST euro settlement banks. (Given that the US dollar payment arrangements still generate intraday exposures, there are objective reasons to have credit quality requirements for banks wishing to be admitted as US dollar settlement banks. However, these should be publicly disclosed.) **The Bank assesses CREST's payment arrangements partly to observe Core Principle IX.**

CRESTCo has prepared a draft rule which is designed to ensure that all the participation criteria which apply to CREST settlement banks are publicly disclosed. This will be discussed with the Bank, the Financial Services Authority (FSA) and existing CREST settlement banks. It is hoped that the rule, and accompanying criteria agreed by existing CREST settlement banks, will be published early in 2006.

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

There are no material changes to report in respect of this Core Principle compared to last year's assessment. As mentioned under Core Principle I, the provision of sterling and euro payment services is governed by a variety of contracts between CRESTCo, 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 SAS 70 reporting. There are a variety of fora at which the interests of the various parties to these contracts, and of the wider 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, CRESTCo and the Bank also have meetings co-ordinated by the Association for Payment Clearing Services (APACS) to discuss operational and business issues related to the payment systems. While these various arrangements appear effective individually, the collaborative nature of the payment arrangements supporting CREST settlement means that there is no over-arching governance framework in place. Consequently, **the Bank assesses CREST's payment arrangements partly to observe Core Principle X.** To increase the effectiveness of the governance structure for the interbank payment arrangements, the Bank and CRESTCo are discussing how a suitable governance framework could be established. It is hoped that this will be put in place during 2006.

Notwithstanding the current assessment, 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 to maintain the accountability of the CRESTCo executive and ensure that wider public interest objectives are considered.

C. LCH.CLEARNET LTD

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.⁽¹⁾ 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 credit 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 the flows in the US PPS are small (average daily flows are less than 1% of the average daily flows in the UK PPS), the risks present within the arrangements are much smaller than in the UK PPS. The US PPS is therefore not covered in this assessment, except where explicitly mentioned.

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), which implemented 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.**

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. In the past year, LCH.Clearnet Ltd has introduced a new *PPS Agreement* for

(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.

UK PPS banks. This more fully explains the financial risks that PPS banks incur during the transfer process, particularly with regard to sending payment confirmations, and improves transparency of financial risks for the PPS banks. The US *PPS Agreement* also explains financial risks to a similar level. As a result of these changes, **the Bank assesses the PPS to observe Core Principle II.**

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 (CCP), 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 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 new *PPS Agreement* between LCH.Clearnet Ltd and the UK PPS banks, introduced in the past year, 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 CCP does not have to use intraday credit lines at the concentration bank in order to meet its obligations.

The new *PPS Agreement* also includes procedures for PPS banks which fail to meet the two-hour deadline on a consistent basis. The procedures do not include financial penalties, but do ultimately provide for LCH.Clearnet Ltd to terminate a bank's participation in the PPS if the bank is unable to resolve its inadequate performance. Initial data show that transfers are now being made earlier in the day, but that a few PPS banks continue to make payments beyond the deadline. However, there is not yet a sufficient run of data to determine whether the procedures provide the appropriate degree of incentive for PPS banks to make timely payments over a sustained period of time. If the arrangements and procedures for non-compliance do prove effective over the coming year, the Bank would deem the PPS to observe Core Principle III. However, until it is clear that these arrangements are effective, **the Bank assesses the PPS broadly to observe Core Principle III.**

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 some currencies this will not take place until the following day, which will be the next value date for that currency.

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 latter 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, which is the US RTGS system, so these 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, Japanese yen, Norwegian krone, New Zealand dollar and Swedish krona transactions, the *nostro* arrangements in place allow for final settlement only 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 5% (£89 million on average a 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.**

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.

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 credit lines with its PPS bank sufficient 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. So the concentration bank plays a key role in the PPS arrangements.

Since late September 2005, the Bank of England has performed 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 Real-Time Gross Settlement (RTGS) system, and then being held in the form of central bank account balances free of credit risk.

Following the successful transfer of the role of sterling and euro concentration bank to the Bank of England, LCH.Clearnet Ltd is investigating potential ways to reduce US dollar settlement asset risk. If it proves impossible or impractical for LCH.Clearnet Ltd to hold US dollar funds in the form of central bank balances, LCH.Clearnet Ltd should then investigate whether steps could be taken to reduce further the risk of using a commercial bank settlement asset.

In light of the Bank of England taking over the role of sterling and euro concentration bank, **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.

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. During the events of 7 July, when LCH.Clearnet Ltd was required to evacuate its head office, key staff were able to transfer to the secondary operations site well within the established recovery time. The primary data centre, located away from the head office, was unaffected.

In the event of a SWIFT outage, LCH.Clearnet Ltd would communicate with the PPS banks by fax. SWIFT and CHAPS have taken measures to ensure continuity of core services, as noted elsewhere in this *Oversight Report*. In addition, LCH.Clearnet Ltd can make calls in the PPS system in the United States, which uses the Fedwire system. 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.**

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 eleven 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.**

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.

In the past year, LCH.Clearnet Ltd has produced a publicly available set of criteria for participation in the PPS. This details the minimum financial and operational requirements important to the continued smooth operation of the PPS, which the PPS banks must maintain. It also details orderly exit procedures for PPS banks if they either fall below the minimum financial and operational requirements, or choose to resign their membership. This set of criteria is published on the LCH.Clearnet Ltd website.⁽¹⁾ The website also advises interested parties how to obtain further information on participation in the PPS. Given that LCH.Clearnet Ltd now publishes these criteria, and these criteria are based on aspects important to the continued smooth functioning of the PPS, **the Bank assesses the PPS to observe Core Principle IX.**

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 non-executive directors (both on the Board of LCH.Clearnet Ltd and its parent), as well as User Consultative Committees 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 assesses the PPS to observe Core Principle X.**

(1) Available at: www.lch.com/risk_and_margining/pps_bank_requirements.asp.

D. BACS

The BACS payment system provides processing of bulk electronic automated payments. Its principal products are the Direct Debit, Direct Credit, 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 Voca Limited, a third-party company that provides the central infrastructure for BACS.

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

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

In December 2005 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. Chapter 3 described how designation removes uncertainties that the finality of BACS payments would survive legal challenge in the event of insolvency of a member, reducing the likelihood that a legal challenge would be mounted. 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 is robust.

The Bank assesses BACS to observe Core Principle I.

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 *Settlement Agreement* governs settlement of obligations between members, whereas the *Liquidity Funding and Collateralisation Agreement (LFCA)*, implemented in May 2005 provides a greater degree of clarity as to surviving members' obligations in the event of another member's failure to pay.

Both agreements, as well as the clear, 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.

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 *Settlement Agreement* between members makes that obligation enforceable.

Introduction of the LFCA (as detailed in Core Principle V) has 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 those risks. Despite the LFCA, the obligations of a defaulting member to the system could still exceed liquidity committed and collateral pledged, 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 if such a situation were to arise.

Completion of work on debit caps and regression (the removal of payment instructions involving a failed member input on the day of its default) could contribute to managing such risks. Debit caps determined in relation to the amount of risk each participant typically brings to the system would place hard limits on exposures among participants, although these caps would need to be carefully calibrated to avoid impeding the efficiency of the system. Introduction of regression would further reduce exposures between participants in the event of a member default and also reduce the likelihood of any such default resulting in a shortfall of liquidity greater than that provided for by the LFCA. The functionality necessary to implement both debit

caps and regression will be delivered by the NewBACS infrastructure renewal project.

The Bank assesses BACS broadly to observe Core Principle III. Implementation of further innovations described above would strengthen observance.

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, 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 3 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 3 of the interbank clearing cycle. But for the LFCA not to ensure prompt final settlement would require an historically large net debit position on the part of the affected member, something which the Bank considers to be well outside normal circumstances.

The Bank assesses BACS to observe Core Principle IV.

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 agreement was described in the previous *Oversight Report* as well as the June 2005 *Financial Stability Review*.⁽¹⁾ It is designed so that, in the event of a member being unable to meet its obligations, other members are obliged collectively to provide liquidity to fund the affected member's position, up to a limit determined by reference to net debit positions of members across both clearings during the previous twelve months. That limit is currently a little over £2 billion. Collateral pledged by the defaulter under the terms of the LFCA is used to reimburse survivors either in full or in part. Members commit liquidity and pledge collateral in proportion to the degree of risk they bring to the system, as measured by their historical net debit settlement positions and the volatility of those positions. The practicalities and timings of dealing with a failure to pay means that funds are made available by calling liquidity rather than by liquidating collateral. Liquidation of collateral can occur some time after liquidity is committed, to avoid sale at distressed prices. The eventual loss to each survivor is measured by the value of liquidity it contributed to fund the affected member's multilateral net debit settlement position, less any recoveries from that member, including the latter's collateral. Any residual loss constitutes a direct claim on the affected member or its liquidator, not the payment system.

As noted under Core Principle III, net debit positions could still exceed the committed liquidity of surviving members. Debit caps in BACS would not, however, eliminate the potential for losses to survivors because the LFCA covers both BACS and the C&CC and debit caps cannot be practicably enforced in the latter. A member of both systems could therefore default in a net debit position in excess of the liquidity committed under the LFCA. The probability of such exposures arising is very low so any arrangement to meet those losses and ensure settlement can complete would need to be pragmatic, practicable and low-cost.

In the absence of such arrangements, **the Bank assesses BACS broadly to observe Core**

(1) Bank of England (2005), *Bank of England Financial Stability Review*, June, pages 83–86, available at: www.bankofengland.co.uk/publications/fsr/2005/fsr18art4.pdf.

Principle V. Establishing a procedure for allocating residual liquidity shortfalls between survivors would help strengthen observance.

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.

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. Similarly, Voca has established operational risk controls relating to processing of BACS payments. Operational performance against agreed standards is monitored by the BPSL Operations and Development Committee. An external SAS 70 review process covering both the payment scheme and infrastructure provides further independent assessment of the performance of controls against control objectives. Although members and users generally adhere to scheme rules, 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 Voca Ltd for the provision of core processing services. Voca's processing performance is measured against target levels defined in the service level agreement (SLA) with BPSL members. Monthly reporting of Voca's performance against these targets provides transparency for BPSL and its members. Much like 2004, Voca's overall operational performance was strong during 2005. Delivery of processed output

to members was completed to schedule in every month and availability of payment file submission channels was typically in excess of SLA-defined minimum levels. In support of its operations, Voca has developed extensive business continuity arrangements which are tested regularly, including switching of payment processing from primary to secondary sites.

For members, it remains unclear what processes — if any — have been established for handling a backlog of payments, in the event that delivery of output from Voca is delayed for more than 24 hours. In such instances, members would be required to process two or more days' output in a single day. BPSL has only recently begun to investigate the robustness of members' existing processes. Establishment of agreed procedures would provide greater certainty of operational robustness.

Successful delivery of the NewBACS infrastructure renewal programme is essential to ensure that forecast BACS volumes can be processed reliably and securely. Independent assessment of Voca's project management arrangements and design of the underlying technology has helped provide BPSL and the Bank with some assurance regarding project delivery. However, such reviews are no guarantee of operational robustness. Ongoing monitoring of project progress has been achieved through the BPSL Member Programme Steering Committee (MPSC) and, increasingly, the BPSL Board. It is important that the MPSC continues to scrutinise Voca's management of the project and seek assurances from independent parties where appropriate (eg through independent audit of progress in NewBACS).

Equally, it is important that the MPSC acts to ensure that an appropriate degree of engagement between members and Voca is achieved as the project nears completion, not least because of the testing of and changes to members' own systems. Recent efforts by BPSL to ensure more detailed reporting of progress by members and Voca to the MPSC should help achieve such engagement. The recent agreement by members, Voca and BPSL to a revised *NewBACS Project Agreement* has also helped to ensure that parties remain committed to the project timescale through to completion.

Failure to ensure that members move forward in a co-ordinated fashion could result in unnecessary delay to NewBACS. To mitigate the impact of such a delay, BPSL and Voca have worked to secure contingency arrangements for the existing core processing platform, providing assurances that payment processing could continue on a secure, reliable basis in the event of NewBACS being delivered later than currently expected.

The Bank assesses BACS broadly to observe Core Principle VII. Clear confirmation that NewBACS is at least as robust as existing technology, alongside confirmation that member banks have in place processes to handle a backlog of payments, would strengthen observance.

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. More recently, growth has been driven by the use of Direct Credits for an increasing number of state benefit payments. This suggests that BACS payment instruments offer members a practical and efficient means of making customer payments. BACS' operational performance also suggests a high degree of operational efficiency.

It is more difficult to assess the pricing efficiency of BACS payment instruments. While payments by BACS instruments are provided free of charge to in-credit individual retail users, corporate access through a sponsoring BACS member attracts a charge. However, corporate users benefit from a competitive market for the provision of BACS payment services and there is no evidence that charges for this access adversely affect incentives to use BACS payment instruments.

BACS was not assessed against Core Principle VIII in the previous *Oversight Report*, pending conclusion of research by the OFT Payment Systems Task Force into clearing times of electronic retail payments (Box 3). This work identified demand for faster telephone and internet banking payments, with associated net benefits to the UK

economy. These benefits include those accruing to users as well as those accruing to member banks through reduced settlement risk.

In response to the Payment Systems Task Force's recommendation that a faster electronic retail payments service be introduced, the banking industry has formed an Implementation Group to take forward the delivery of a new faster payments service. 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. These benefits, weighed against the cost of necessary changes to members' systems, could be usefully considered by BPSL in greater detail.

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.

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. Given the importance of BACS to the wider economy, this is an important control.

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 in terms of 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. Equally, arrangements could be established to determine the amount of additional collateral pledged by a member experiencing a rapid deterioration in its credit rating.

The Payment Systems Task Force considered BPSL's access arrangements and noted the competitive nature of the market for access via agency banks. Payment Systems Task Force research also found appetite for so-called Affiliate membership of BACS, under which a wide range of interested BACS user groups (eg corporate users, consumer groups) could contribute views to the BPSL Board on certain issues. To meet this demand, in December BPSL introduced the new membership class and also established an Affiliate Interest Group. 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 credit-worthiness would strengthen observance.

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 Voca is specified through a number of contractual arrangements. BPSL has recently reviewed those arrangements and found Voca to be acting in accordance with key contractual requirements. Equally, the quality of relationship between BPSL

and Voca appears sound, the former monitoring the latter's operational performance and broader financial position as a control against risks to payment processing. Progress in NewBACS has been monitored effectively by BPSL through the MPSC and, increasingly, by the BPSL Board.

During 2005 BPSL has been proactive in progressing work to strengthen BACS' observance of the Core Principles in a number of areas, as evidenced by the assessment in this *Oversight Report*. This approach, which the Bank views positively, is a reflection of the quality of BPSL's governance arrangements.

While providing appropriate incentives to act in the interest of system members, it is less clear whether BPSL's governance arrangements provide appropriate incentives for management of the system to be accountable to the wider community of users and the public more generally. Largely, this is because BPSL is a member-operated company whose Board has no independent representation, in contrast to best practice in corporate governance for listed companies.⁽¹⁾ In view of BACS' importance to the smooth running of the UK economy, the Bank considers the company to have a clear public role and that best practice in corporate governance is relevant to BPSL. To that end, board representation of external stakeholders could help to ensure the interests of such groups are included in BPSL's decision-making process. Careful appointment of individuals to such a role could also complement BPSL's recently adopted company objective to promote efficiency and innovation in payments while responding to the needs of BACS users on a cost-effective basis.

The Bank assesses BACS broadly to observe Core Principle X. Extending board representation to external stakeholders, or more wide-ranging changes to governance structures which can provide accountability and transparency to BACS stakeholders, would strengthen observance.

(1) The *Combined Code on Corporate Governance* (2003), recommends that the board of a listed company include independent, non-executive directors. It is available at: www.fsa.gov.uk/pubs/ukla/lr_comcode2003.pdf.

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 the other payment instruments) they are part of a single payment scheme. Most members of the C&CC have chosen to outsource their processing operations. The following assessment covers all three clearings.

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

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. In December 2005 members also agreed to sign formal contracts, the *Membership Agreement*, committing them to abide by the rules and decisions of the Company Board. This defines more clearly the obligations of members.

The C&CC are a three-day deferred multilateral net settlement system.⁽¹⁾ Payments submitted are netted to produce a single obligation to, or claim on, other members. The settlement of inter-member obligations within the C&CC, which takes place on day 3 of the clearing cycle, is governed by the *Settlement Agreement*, a formal contract between members which seeks to remove legal uncertainties about whether these inter-member obligations would be upheld following the insolvency of a member. The Bank noted in the previous *Oversight Report* that additional assurance of the enforceability of the system's default arrangements could be obtained if the C&CC were designated under the UK settlement finality regulations. Members plan to consider in 2006 whether to apply for designation.

Notwithstanding the *Settlement Agreement*, there is currently a possibility that a liquidator could seek to return via the unpaids process all cheques drawn on a failed member and its customers. This could cause operational difficulties for members in handling a large volume of unpaid cheques, and crystallise credit exposures on surviving members in respect of dishonoured cheques already credited to their customers' accounts. Members are currently working to agree a *Cheque and Debit Recall Agreement* (the *Recall Agreement*) that would aim to prevent this.

In the event of a member default, a surviving member has two possible courses of action for dealing with cheques drawn on itself and already exchanged with the failed member but not yet settled: honour those cheques exchanged with the failed member and settle its obligation in respect of those cheques by way of the interbank settlement; or return the cheques as unpaid to the failed member without settling them. If a surviving member returned cheques as unpaid, customers of the failed member might recover the full value of these cheques deposited by another route. If a surviving member settled its obligations to the failed member, customers of the failed member might receive only a proportion of the value, after liquidation of the failed member had taken place. A member, acting in its capacity as paying bank, might face claims from customers of a failed member, if it settled its obligations to the failed member, rather than returning the cheque as unpaid, and the customers did not receive full value. This is known as 'conversion risk'. The Cheque and Credit Clearing Company (C&CCC) has not undertaken a legal investigation of conversion risk, hence the existence and extent of the risk is unknown at present. The Bank has encouraged the C&CCC to carry out a legal investigation of conversion risk.

The Bank assesses the C&CC partly to observe Core Principle I. Completion of work already under way on the *Recall Agreement*, work to investigate conversion risk, and a successful application for designation under the UK

(1) Day 1 being the day of deposit.

settlement finality regulations would strengthen observance of the Core Principle.

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.

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. The C&CCC has also identified the potential increase in settlement risk that could arise as a result of significant errors in settlement figures, and sought to mitigate this risk with the forthcoming high-value adjustment process. Work on the *Recall Agreement* has also identified and sought to mitigate further the financial risk that members incur through participation in the system. Work on conversion risk would further improve this understanding.

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

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* should make those obligations enforceable.

The *Liquidity Funding and Collateralisation Agreement* (LFCA) covering BACS and the C&CC defines procedures for managing credit and liquidity exposures that would crystallise in the event of a member insolvency and subsequent failure to settle. Annex D contains further explanation of the LFCA. The LFCA substantially reduces, but does not remove, credit and liquidity risk from the system. As with BACS, a residual risk remains that a member could default on a larger amount than the liquidity that surviving members would be committed to provide. The C&CCC has not defined procedures to manage this residual risk.

The C&CCC has yet to implement a process to deal with the possibility of significant errors in settlement figures. Such errors increase settlement risk within the system: a member's net debit settlement position could be greater than the amount of liquidity available to it. Members have agreed upon a high-value adjustment process to address this risk. The Bank considers this process, which is due to be implemented in 2006, to be a necessary control against settlement risk. Implementation would strengthen observance of Core Principle III. Completion of the *Recall Agreement* and an investigation of the existence and extent of conversion risk would further strengthen observance.

The Bank assesses the C&CC broadly to observe Core Principle III. Implementation of further innovations described above would strengthen observance.

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 3 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 3 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.

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

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 establishes a procedure to ensure timely completion of settlement if a settlement member fails in a net debit settlement position. 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 avoided if BACS and the C&CC had the ability to cap exposures at the level of liquidity committed. While this will be possible in BACS, the Bank recognises that there may be significant practical obstacles to placing debit caps 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 the Core Principle.

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 C&CC to observe Core Principle VI.

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 SAS 70 review of performance against control objectives. Contingency arrangements appear extensive, with the exception of one potential shortcoming, which the C&CCC has identified and is seeking to address.

A core piece of infrastructure for the sterling cheque clearings — 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 each cheque are sent to members and which is used by the C&CCC to compile multilateral net settlement figures. The IBDE network is currently supplied by Voca. Notwithstanding occasional delays and errors, the overall record of reliability of the IBDE network is high.

IBDE apart, 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 one of three suppliers. 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 C&CCC has, however, sought to open dialogue with third-party infrastructure suppliers where their operations affect the performance of the C&CC as a whole against its control objectives. It is still unclear whether the C&CCC can receive adequate assurance of compliance with the various controls that govern cheque processing via such informal channels.

One possible source of operational risk, identified in the previous *Oversight Report*, is the high volume of changes to members' outsourced processing arrangements. Members have been working to consolidate the infrastructure used to process

cheques and credits. This consolidation impacted on members' performance against Service Level Codes — which provide targets for operational performance — over the eight-month period to end-January 2005. The issue, however, posed no risk to the completion of interbank settlement. The temporary deterioration in operational performance might have been resolved earlier if the C&CCC had exercised its existing indirect rights to audit members' third-party infrastructure suppliers (Core Principle X).

Increased outsourcing has resulted in a decline in operational expertise among members. Experienced staff have transferred to third-party infrastructure suppliers, and members are no longer involved in day-to-day processing operations. There is a risk that members might in the future lack the requisite expertise to assess adequately members' compliance with the requirements and objectives of the scheme. Third-party suppliers are now represented on some scheme committees, which the Bank views to be a positive step forward given the decline in operational expertise among members. The C&CCC has also taken steps to include the views of third-party suppliers in major projects such as 'certainty of fate' (Core Principle VIII). The C&CCC also attempted to increase strategic discussion between the scheme and third-party suppliers in 2004 with the establishment of an Infrastructure Advisory Forum, which was designed to provide a forum for discussion between the C&CCC, members and third-party suppliers. However, suppliers were unwilling to enter into open discussion with their competitors, and the Forum was disbanded in 2005.

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

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

Cheque volumes in the United Kingdom have declined steadily since 1990. The cheque remains a popular payment instrument in the United Kingdom at present, but volumes are predicted to decline by almost 50% by 2014. Unit processing costs are relatively high in comparison

to other retail payment instruments, and will rise further as cheque volumes decline. Members have chosen not to price explicitly personal cheques.

Unlike in other developed countries where cheques have traditionally been a common payment instrument, the C&CCC and its members have not chosen to seek the potential product enhancements and potential cost savings that could be derived from replacing the current exchange of physical cheques with electronic data (for example, electronic images of cheques). They have, however, sought to achieve cost efficiencies through increased consolidation of the infrastructure used to process cheques.

A system that takes undue time to clear and settle payments might cause end-users to incur significant, real resource costs. 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 may be particularly powerful for the less automated parts of the clearings, where volumes and values are considerably lower than for sterling cheques.

It may be easier to accelerate the sterling cheque clearing, which is already relatively highly automated. Data on cheque settlement positions are available almost a day in advance of settlement. Interbank settlement for sterling cheques could be moved from day 3 to day 2 of the cheque clearing cycle. This would yield a small but significant settlement risk benefit. The Bank understands that this would involve little infrastructure change, and has encouraged the C&CCC to weigh the costs and benefits of bringing forward interbank settlement. Bringing forward interbank settlement would not, however, impact upon end-users if members chose not to give earlier value to cheque recipients. Giving earlier value to customers might involve investment in members' accounting systems.

At present customers do not receive value without recourse ('certainty of fate') on cheques, as no

point is defined after which a cheque cannot be returned as fraudulent. Members have been working on a project which aims to guarantee certainty of fate on cheques. If implemented, the project, which would involve investment in the existing infrastructure to improve the process for returning unpaid cheques, should bring benefits for end-users. Members have yet to commit to the certainty of fate project, and are likely to await the outcome of the OFT Cheque Working Group (Box 2) before making such a commitment.

The OFT is examining the costs and benefits of, and demand for, change to the current system as part of its Payment Systems Task Force (Box 2). The Bank will consider the outcome of work in the Task Force and by C&CC members. Pending completion of that work, **there is insufficient evidence for the Bank to assess whether the C&CC observes Core Principle VIII.**

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 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. One current gap in the membership criteria identified in the previous *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&CC Scheme Governance Steering Committee plans to complete a review of the system rules in 2006. This will include consideration of a means of dealing with a member whose credit quality deteriorated to a level that brought additional financial risk to the system.

The Bank is not aware of any significant demand for membership of the C&CC from institutions

that are not already members. Financial institutions that are not members can access the system via bilateral agency relationships with settlement members. The OFT found in 2003 that there was a competitive market for agency services and that agency banks could compete on a reasonably level playing field with direct members.⁽¹⁾

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

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 Core Principles state that effective governance entails proper incentives for management to pursue objectives in the interests of the system, its participants, and the public and wider economy more generally. The C&CCC Board is composed entirely of settlement member banks (the Company Manager and the CEO of APACS also attend but do not have a vote). The Board has both the incentives and tools to pursue the interests 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 independent or further 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 now invited to attend some operationally orientated committees. Members of the C&CC do, however, enter into bilateral contracts with their

(1) OFT (2003), *UK Payment Systems*, available at: www.offt.gov.uk/NR/rdonlyres/10DB2458-FBD9-4B5C-9EE7-CEB7ACA472BB/0/oft658.pdf.

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.

The Bank places a high weight on good governance, which it recognises as a key principle of well-functioning financial infrastructures that provides a sound basis for observance of the other nine Core Principles. In the case of the C&CC, several strands of work were completed in 2005, which improved the scheme's observance of the Core Principles. Work is also in hand to improve observance of the other Core Principles. But work has typically taken a significant amount of time to reach a satisfactory conclusion.

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

F. LINK

The LINK card 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 encompasses both the Scheme and its infrastructure provider (the Company). The Company provides transaction switching for members of the Scheme, by routing transaction information from the ATM used by the customer to the card issuer's own computer network. The LINK Interchange Network is a for-profit, limited company owned by a subset of the members of the Scheme.

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, but default procedures are not adequately defined in the main body of the rules. These procedures might therefore be subject to legal challenge in the event of a member insolvency. It is also unclear from the rules whether, in the event of a member insolvency, surviving members would face a potential credit exposure equal to their bilateral gross or bilateral net settlement position *vis-à-vis* the insolvent member. The Scheme plans to amend its rules to clarify members' net settlement obligations.

The system's legal basis would be more robust if the system's rules clearly defined the obligations of members in all circumstances. Once this had been achieved, 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 partly to observe Core Principle I. In the first instance, clearer definition of the rules and procedures of the system, and the obligations of members, would strengthen observance.

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.**

System participants incur both credit and liquidity risk through participation in the Scheme. Rules and procedures exist to manage credit and liquidity risk within the system under 'normal' circumstances. The rules of the system clearly outline normal settlement procedures. Parties to the multilateral net settlement are also required to have the tools to manage adequately liquidity and credit risk within the system. For example, card issuer members, who can accrue multilateral net debit positions, are required to monitor their settlement positions.

Procedures apply to 'abnormal' circumstances — circumstances that might prevent the completion of the multilateral net settlement — such as a participant insolvency. However, these procedures are not adequately defined in the main body of the system's rules. Furthermore, the system rules do not define clearly the bilateral net nature of surviving participants' credit exposures to the insolvent participant.

Given the current rules and procedures of the system, participants are likely to have an incomplete understanding of the risks incurred through participation in the system. The Scheme has, however, identified settlement risk management as an area for review, and has prompted discussion of this issue within the governing body of the Scheme, the Network Members Council (NMC). The Bank continues to encourage the Scheme executive to address settlement risk-related issues in collaboration with Scheme participants.

The Bank assesses the Scheme broadly to observe Core Principle II. Clearer definition of the rules of the system and the obligations of system participants, and further work to examine, clarify and reduce settlement risk within the system, would strengthen observance of the Core Principle.

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

Participants' basic obligations within the system under 'normal' circumstances are clearly defined. The system also has procedures in place in the event of a participant insolvency, and an allocation of responsibility to cover credit losses that could arise as a result of insolvency is laid out in these procedures. However, participants' obligations within the system might not be clear, because the system's default procedures are not adequately defined in the main body of the system's rules. Under the system's default procedures, multilateral netting would be unwound and recast excluding the insolvent participant. Survivors' credit exposures should equal bilateral net amounts owed to them by the insolvent participant, although this obligation is not clearly defined within the rules. Potential credit losses within the system would be reduced if bilateral netting were made more robust. Losses would be further reduced if the system retained its multilateral netting, coupled with an agreed allocation of responsibility to cover any losses that could result within the system following a participant default.

The system places few restrictions on access (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 Scheme has imposed some controls to manage credit and liquidity risk within the system. Credit risk could be reduced further if settlement positions that accumulated over weekends and bank holidays were netted and settled as part of a

single aggregate settlement file. The Scheme is examining the feasibility of netting over weekends, which will be possible once the Scheme has introduced new settlement software that will allow settlement figures to be broken down easily by product and by participant.⁽¹⁾ The Company is also developing a new settlement system capable of monitoring intraday participants' settlement positions. This would enable the system to impose debit caps. Going forward, these initiatives should equip the Scheme with the tools to manage more effectively credit and liquidity risk within the system. The Scheme has yet, however, to consider fully what additional controls should be placed upon participants who are non-financial institutions accruing multilateral net debit settlement positions, in order to mitigate the increased financial risk that these participants might bring to the system.

The Bank assesses the Scheme partly to observe Core Principle III, but successful completion of work already under way to control credit and liquidity risk within the system would strengthen observance of the Core Principle.

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 system has not in the past provided participants with sufficient incentives for timely funding of settlement accounts. As a result, participants owing net balances have not always funded their positions promptly, which has led to delays to settlement. Settlement has never been

(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.

delayed beyond the day of value. The NMC is informed of delays to settlement. The NMC has recently agreed new rules that discourage late pay-ins, and these will be introduced after a trial period in early 2006. If effective, this initiative would strengthen the system's observance of the Core Principle.

For historical reasons a small group of Scheme participants are also members of an organisation known as FTS. FTS members connect to LINK via a third party. FTS members 'sub-settle' among themselves and submit a single multilateral net settlement amount to the main LINK settlement. Hence the main LINK settlement cannot complete until FTS members have settled among themselves. This arrangement complicates the system's settlement procedures and can lead to settlement delays. Delays to settlement might be less frequent if FTS members took part directly in the main settlement, or made bilateral arrangements through another participant that was part of the main settlement. The Bank has encouraged the Scheme to review the current settlement arrangements for FTS.

Settlement would also be delayed in the event of a participant 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 assesses the Scheme broadly to observe Core Principle IV. Successful implementation of measures to ensure prompt pay-ins by members in a net debit position would strengthen observance.

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 that 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 not considered to be 'timely' relative to other systems that settle on a multilateral net basis. However, full observance of this Core Principle would not necessarily be expected given the relatively small settlement values involved.

The system's default procedures could be subject to challenge from surviving participants, who do not commit to them as part of the system's rules. Challenge would be most likely if the recalculation of settlement figures minus the insolvent participant resulted in an increase in the multilateral net debit settlement position of a surviving participant. While unlikely to be successful, the possibility of challenge adds legal uncertainty, and could delay settlement further. There would be merit in the Scheme considering ways to strengthen legal certainty of the enforceability of existing default arrangements.

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

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.

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 LINK Interchange Network Ltd encompasses both the Scheme and the Company, which provides processing services to the Scheme. The system's record of operational availability is good; over the past three years (to end-2005) the Company has maintained 100% availability of the switch for routing transactions. The Company maintains bilateral service obligations to members of the Scheme through the Scheme's membership agreement and operating rules. In 2006, the

Company plans to contractualise its service obligations to the Scheme in separate SLAs between the Company and members of the Scheme.

The LINK risk control framework provides a structured process through which risks are identified by function. It was designed by the LINK Interchange Network Ltd, and the Scheme is considered as one 'function' within this framework. The risk control process is reviewed independently of day-to-day operations by the LINK Interchange Network Ltd senior management, and the overall framework is subject to independent external audit. The Company Board has responsibility for determining the overall risk appetite. While it is logical for the Company to identify and manage those operational risks related to Company processes, there would be merit in the Scheme developing more formally its own risk framework to manage Scheme-specific operational risks. The NMC has identified risk as an area for review.

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 — which cover, among other things, encryption, authentication and availability. Participants self-certify their compliance with the required standards. Business continuity arrangements are tested regularly and appear to be extensive.

The Bank assesses the Scheme to observe Core Principle VII.

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 the LINK Interchange Network Ltd rose by over 150% between 2000 and 2005. However, transaction growth, particularly growth in transaction volumes, has been decelerating since 2002.

The lack of separation between the Scheme and the Company does not appear to have prevented Company innovation; the Company has

introduced a number of new products. The large size of the NMC might hinder the effectiveness of the Scheme's decision-making and thus the level of Scheme-wide innovation, although the Scheme has attempted to improve the decision-making process with the introduction of a NMC sub-committee, the Review Group (Core Principle X). The Scheme's rules also allow participants a degree of autonomy to innovate, subject to certain required system standards.

Card issuers pay a switching and settlement fee to the LINK Interchange Network Ltd for the cost of routing transaction information from the ATM used by the customer to the card issuer's own computer network. 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. Both the switching and settlement fee and the membership fee are unlikely to constitute a significant barrier to entry.

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 fixed fraction of the multilateral interchange fee is applicable to non-cash withdrawal transactions, such as account balance enquiries. It is not clear that the centrally set interchange fee reflects the cost of service provision in all cases, particularly for ATMs handling lower transaction volumes, which typically incur higher unit operating costs. However, the rules of the system allow participants to forgo the interchange fee and instead impose a surcharge on users of their ATMs. The system currently has a Competition Act exemption for its centrally set interchange fee. This exemption expires in 2006. In making its exemption decision, the OFT found that, while a centrally set fee was anti-competitive because it restricted the freedom of members to set their own pricing policy, the countervailing benefits of a centrally set fee were great enough to allow this to persist.

Participants may also impose charges on their customers. Customer charging is outside of the Scheme rules — 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.**

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.

As the criteria impose few restrictions on membership, the Bank has encouraged the Scheme to consider what changes could be made to its settlement risk controls to ensure that participants do not bring an unacceptable level of credit or liquidity risk to the system. This was reflected in the Bank's assessment of the Scheme against Core Principle III.

The Bank assesses the Scheme to observe Core Principle IX.

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

Although there is no legal separation of the Scheme and the Company, there are, however, separate governing bodies with clearly defined functions. Ultimate responsibility for management of the Scheme rests with the Scheme's governing body, the NMC. The large size of the NMC might reduce the effectiveness of its decision-making. The Scheme has attempted to improve the quality of debate within the NMC with the creation of a NMC sub-committee, the Review Group, which advises the NMC on various strategic and process matters facing the Scheme. While the objectives of both the NMC and the Company Board are clearly defined, reporting lines are somewhat blurred under the current governance model. This might impact upon the transparency and accountability of governance arrangements. The LINK

Interchange Network Ltd could achieve some of the benefits of legal separation, such as transparency and accountability, within its existing governance structure. For example, the accountability of the executive to the NMC could be strengthened if the Scheme management reported to the NMC rather than the Company CEO for Scheme-related issues.

The NMC is chaired by an independent non-executive and is composed of one representative appointed from each of the Scheme members. The LINK Scheme Director and the CEO of the LINK Company also attend the NMC, although neither has the right to vote. The NMC has the tools and incentives to pursue the interests of both the Scheme and its members. A sound working relationship between the Scheme and Company is important in protecting those interests, but incentives to pursue the interests of the Scheme and its members could be clearer if a Company representative did not attend the NMC for discussion of issues that might present a conflict of interest between the Scheme and the Company. There might, however, be merit in Company attendance at the NMC if the issue was of mutual interest. The independent Chairman of the NMC provides a tool to pursue the interests of the system's wider community of users, and address the conflict of interest that can be created in a mutual governance model. The Bank believes that there may be merit in the appointment of further independent representatives on the NMC in due course. In 2006 the Scheme plans to introduce a Consumer Standing Committee, chaired by the independent Chairman of the NMC, to represent the public interest and advise the NMC on consumer-related issues. While the Committee will be purely advisory, the NMC will have to respond to its recommendations and questions.

Governance arrangements of the LINK Interchange Network Ltd are being considered as part of the OFT-led Payment Systems Task Force LINK Access and Governance Working Group, which the Bank attends as an observer.

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

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.

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 Mark 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.⁽¹⁾ 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 Principal Licensee default, 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 UK Maestro partly to observe Core Principle I. UK Maestro could improve its observance by defining the point of final settlement in its rules.

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.⁽²⁾ Principal Licensees (Licensees who do not access the scheme through another Licensee) of UK Maestro are not exposed to financial risks from other

(1) 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.

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 responsible for meeting. However, the Rules do not define a point of final settlement (the commentary at 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 UK Maestro broadly to observe Core Principle II. UK Maestro could improve its observance by defining the point of final settlement in its rules.

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 assesses UK Maestro broadly to observe Core Principle III.

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.

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 2005) 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 were 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 \$2.25 billion agreed credit facility in order to complete settlement.

The Bank assesses UK Maestro to observe Core Principle V.

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.

Following the change in arrangements in September 2005 from bilateral payments over CHAPS, settlement is now performed on a multilateral net basis over accounts held at HSBC. While this is not a central bank asset, HSBC is a highly creditworthy 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. Indeed, as stated in the Bank's settlement accounts policy,⁽¹⁾ the Bank would not seek to become settlement agent for systems such as UK Maestro.

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, and so does not encourage this.

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.

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 2004, there were approximately 5.8 billion debit card transactions, including 2.6 billion using the Switch and Maestro schemes. Switch and Maestro volumes have recorded consistent significant growth over the past decade. Where on-line authorisation of a payment is conducted, the response time of the MCE

(1) Bank of England (2002), *Bank of England Settlement Accounts*, available at: www.bankofengland.co.uk/financialstability/paymentssettlementsystems/pdf/boesettleaccs021128.pdf.

authorisation system⁽¹⁾ 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, has so far proceeded smoothly. Maestro cards can also be used for payments abroad, although for these transactions, the rules of MCE apply rather than 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. The OFT will look further into efficiency issues affecting the UK Maestro scheme through the S2 Access and Governance Working Group, one of the OFT's Payment Systems Task Force's working groups. This working group is due to meet in the second half of 2006.

Initial membership fees for UK Maestro begin at €10,000 for new Licensees with small expected volumes. This is significantly lower than the initial set-up cost of the previous Switch scheme that UK Maestro replaced. Following the reduction in membership costs and completion of transfer to MCE platforms, a number of smaller banks and building societies are in the process of joining the scheme.

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.**

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 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.

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

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.

(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.

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.

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.⁽¹⁾ It is able to determine Rules independently from MCE, although with a proviso that the new rules do not discriminate against international Maestro cardholders, damage the Maestro mark, or undermine the international Maestro rules.⁽²⁾ 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 that governance arrangements are effective, accountable and transparent. However, this voting rights structure, and 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 that it would review the governance arrangements if it were felt that with a change in membership structure the larger members had excessive control in the scheme.

Governance arrangements of UK Maestro will be considered as part of the OFT Payment Systems Task Force UK Maestro Access and Governance Working Group in the second half of 2006.

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 does not itself count as 'undermining'.

Glossary of terms

Term	Description
Business risk	Business risk is the risk that the payment system or any of its components — eg an infrastructure provider serving it — cannot be maintained as a going concern in the face of adverse financial shocks.
Central counterparty	An entity that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer.
Core Principles	The ten <i>Core Principles for Systemically Important Payment Systems</i> provide a set of minimum standards for risk management in systemically important payment systems.
Deferred net settlement	Under deferred net settlement, a payment system releases details of payments to the receiving bank prior to interbank settlement.
Designation	Designation under the SFD/FMIRs provides additional assurance of the enforceability of a system's default arrangements.
Exposure	The maximum loss that might be incurred if assets or off-balance sheet positions are realised, or if a counterparty (or group of connected counterparties) fail to meet their financial obligations.
Financial Markets and Insolvency (Settlement Finality) Regulations	These Regulations — 1999 (SI 1999/2979) (FMIRs) — implemented into UK law the EU <i>Settlement Finality Directive</i> .
Governance	Corporate governance is the method by which an organisation is directed, administered or controlled. The corporate governance structure specifies the distribution of rights and responsibilities of the board, managers, any shareholders and other stakeholders, and spells out the rules and procedures for making decisions on organisational affairs.
Legal risk	The risk that unexpected interpretation of the law, or legal uncertainty, leaves payment system participants and users with unforeseen financial exposures.
Operational risk	The risk of loss resulting from inadequate or failed internal processes or systems, people or external events.
Principal risk	The risk that one party loses (up to) the full value of the trade if it satisfies its obligation but the other party does not.
Settlement Finality Directive	The EU Directive on Settlement Finality in Payment and Securities Settlement Systems (Directive 98/26/EC); implemented into UK law by the FMIRs.
Settlement risk	The risk that a participant in a system cannot or does not meet its financial obligations when, under the rules of the system, they fall due, or that another institution that facilitates the settlement of this obligation — such as the settlement agent — becomes insolvent.

Abbreviations

APACS	Association for Payment Clearing Services
ATM	automated teller machine
BIS	Bank for International Settlements
BPSL	BACS Payment Schemes Ltd
C&CC	The Cheque and Credit Clearings
C&CCC	The Cheque and Credit Clearing Company Ltd
CCP	central counterparty
CESR	Committee of European Securities Regulators
CHAPS	Clearing House Automated Payment System
CHAPSCo	CHAPS Clearing Company Ltd
CLS	Continuous Linked Settlement
CMA	Cash Memorandum Account
CMBCG	Cross Market Business Continuity Group
CPSS	Committee on Payment and Settlement Systems
CRESTCo	CREST Company Ltd
CSD	centralised securities depository
DNS	deferred net settlement
DvP	Delivery versus Payment
ECB	European Central Bank
ESA	Euroclear SA/NV
ESCB	European System of Central Banks
FMIRs	Financial Markets and Insolvency (Settlement Finality) Regulations
FSA	Financial Services Authority
GDP	gross domestic product
IOSCO	International Organization of Securities Commissions
I/O swap	Inside/Outside swap
MMLG	Money Markets Liaison Group
MoU	memorandum/memoranda of Understanding
OFT	Office of Fair Trading
OMO	open market operation
PPS	Protected Payments System
RCH	Recognised Clearing House
RSSS	Recommendations for Securities Settlement Systems
RTGS	Real-Time Gross Settlement
SAS 70	Statement on Auditing Standards Number 70
SFD	Settlement Finality Directive
SLA	service level agreement
SSE	Single Settlement Engine
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer

Other Bank of England publications

The Bank of England publishes information on all aspects of its work in many formats. Listed below are some of the main Bank of England publications. For a full list, please refer to our website www.bankofengland.co.uk/publications/index.htm.

Financial Stability Review

The *Financial Stability Review* is published twice a year, in June and December. Its purpose is to encourage informed debate on financial stability; survey potential risks to financial stability; and analyse ways to promote and maintain a stable financial system. The Bank intends this publication to be read by those who are responsible for, or have interest in, maintaining and promoting financial stability at a national or international level. It is of special interest to policymakers in the United Kingdom and abroad; international financial institutions; academics; journalists; market infrastructure providers; and financial market participants. It is available from SRAD, HO-3, Bank of England, Threadneedle Street, London, EC2R 8AH and on the Bank's website at www.bankofengland.co.uk/publications/fsr/index.htm.

Quarterly Bulletin

The *Quarterly Bulletin* provides regular commentary on market developments and UK monetary policy operations. It also contains research and analysis and reports on a wide range of topical economic and financial issues, both domestic and international.

Summary pages of the *Bulletin* from February 1994, giving a brief description of each of the articles, are available on the Bank's website at www.bankofengland.co.uk/publications/quarterlybulletin/index.htm.

Inflation Report

The Bank's quarterly *Inflation Report* sets out the detailed economic analysis and inflation projections on which the Bank's Monetary Policy Committee bases its interest rate decisions, and

presents an assessment of the prospects for UK inflation over the following two years.

The *Report* starts with an overview of economic developments; this is followed by five sections:

- analysis of money and asset prices;
- analysis of demand;
- analysis of output and supply;
- analysis of costs and prices; and
- assessment of the medium-term inflation prospects and risks.

The *Minutes* of the Monetary Policy Committee meetings are available on the Bank's website at www.bankofengland.co.uk/publications/minutes/mpc.

Publication dates

Financial Stability Review publication dates for 2006 are 28 June and 15 December. Copies are available from SRAD, HO-3, Bank of England, Threadneedle Street, London, EC2R 8AH; telephone 020 7601 3009; fax 020 7601 3804; email fsr_enquiries@bankofengland.co.uk.

Copies of the *Quarterly Bulletin* and *Inflation Report* can be bought separately, or as a combined package for a discounted rate. Publication dates for 2006 are:

Quarterly Bulletin

Spring	13 March
Summer	19 June
Autumn	25 September
Winter	11 December

Inflation Report

February	15 February
May	10 May
August	9 August
November	15 November

These two publications are available from Publications Group, Bank of England, Threadneedle Street, London, EC2R 8AH; telephone 020 7601 4030; fax 020 7601 3298; email mapublications@bankofengland.co.uk.

Working papers

Working papers are free of charge; a complete list is maintained on the Bank of England's website at www.bankofengland.co.uk/publications/workingpapers/index.htm, where abstracts of all papers may be found. Papers published since January 1997 are available in full, in portable document format (PDF).

External MPC Unit discussion papers

The MPC Unit discussion paper series reports on research carried out by, or under supervision of, the external members of the Monetary Policy Committee. Papers are available from the Bank's website at www.bankofengland.co.uk/publications/other/externalmpcpapers/extmpcpaper0000n.pdf (where **n** refers to the paper number).

Monetary and Financial Statistics

Monetary and Financial Statistics (Bankstats) contains detailed information on money and lending, monetary and financial institutions' balance sheets, banks' income and expenditure, analyses of bank deposits and lending, external business of banks, public sector debt, money markets, issues of securities, financial derivatives, interest and exchange rates, explanatory notes to tables and occasional related articles.

Bankstats will continue to be published monthly on the internet but paper copies will be available on a twice-yearly basis. Paper copies will be published for the January and July editions published on hard copy on Wednesday 1 February 2006 and Tuesday 1 August 2006 respectively, the price per annum in the United Kingdom will be £40, or £20 per copy. It is available on a monthly basis free of charge from the Bank's website at www.bankofengland.co.uk/statistics/statistics.htm.

All these data and more are available on the Bank's Statistical Interactive Database at www.bankofengland.co.uk/mfsd/iadb/NewIntermed.asp. The Statistical Interactive Database provides the latest and long runs of statistical data. The site has comprehensive search options and the ability to download the data in a variety of formats, and covers the series found in this publication and some additional data eg daily exchange rates.

Economic models at the Bank of England

The *Economic models at the Bank of England* book, published in April 1999, contains details of the economic modelling tools that help the Monetary Policy Committee in its work. The price of the book is £10. An update was published in September 2000 and is available free of charge.

The Bank of England Quarterly Model

The *Bank of England Quarterly Model*, published in January 2005, contains details of the new macroeconomic model developed for use in preparing the Monetary Policy Committee's quarterly economic projections, together with a commentary on the motivation for the new model and the economic modelling approaches underlying it. The price of the book is £10.

Practical issues arising from the euro

This is a series of booklets providing a London perspective on the development of euro-denominated financial markets and the supporting financial infrastructure, and describing the planning and preparation for possible future UK entry. Copies are available from Public Information and Enquiries Group, Bank of England, Threadneedle Street, London, EC2R 8AH and at the Bank's website at www.bankofengland.co.uk/publications/practicalissues/index.htm.

General enquiries about the Bank of England should be made to 020 7601 4444.

The Bank of England's website is at: www.bankofengland.co.uk.

