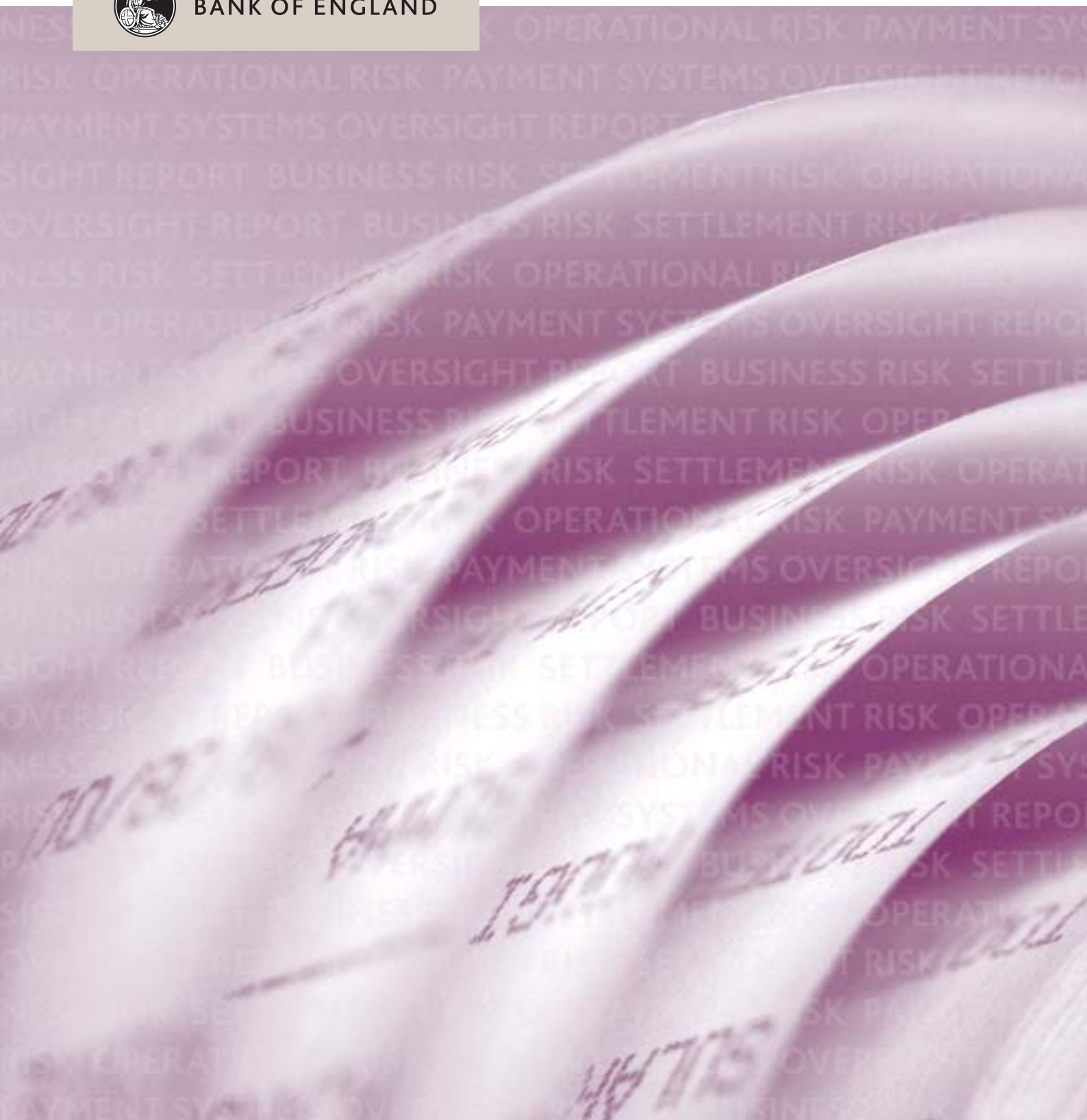
Payment Systems Oversight Report 2008

April 2009 | Issue No. 5



BANK OF ENGLAND

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Executive summary

The main purpose of the *Oversight Report* is to outline developments in the key UK payment systems over the past year and to explain the focus of the Bank's oversight work. It also provides a summary of the most important cross-system issues affecting the UK payment systems and outlines priorities for future work.

The recent period of market turbulence has presented significant challenges which UK payment systems have handled well. Although several large financial institutions have suffered significant and widely reported distress, payment systems did not act as a channel of contagion. This largely reflects the steps taken ten to fifteen years ago to move to real-time gross settlement.

The key UK payment systems remain close to observing the internationally recognised Core Principles for Systemically Important Payment Systems (Core Principles). There has been progress during 2008 and the Bank has upgraded Core Principles assessments for CHAPS, Bacs and the Cheque and Credit Clearings.

The structure of the 2008 *Oversight Report* is as follows: Chapter 1 discusses the Bank's role in the oversight of core UK payment systems. Chapter 2 summarises the key developments in individual payment systems and provides summaries of the Bank's updated Core Principles assessments. Chapter 3 focuses on cross-system thematic issues and priorities over the coming year, and includes a discussion of payment systems' resilience during the market turbulence. Detailed assessments by Bank staff of the individual systems against the Core Principles are contained in a separate document ('Detailed assessments of payment systems') available on the Bank's website (www.bankofengland.co.uk/publications/psor/psorannex2008.pdf).

This is the last *Oversight Report* to be produced in the current format. The Bank will review the appropriate form of reporting following oversight being put on a statutory footing.

Contents

Chapter 1: An introduction to payment systems oversight

The *Payment Systems Oversight Report 2008* is the fifth *Oversight Report* published by the Bank. It concentrates on the key changes in the main UK payment systems, through which around £200 trillion[1] passed during the year (**Table A**), and sets out the Bank's current assessment of those systems.

1.1 System resilience during market turbulence

The recent period of market turbulence has presented significant challenges to the UK payment, clearing and settlement systems (discussed in greater detail in Section 3.1). A sustained period of significant asset price fluctuations and liquidity pressures on many banks, combined with a major international banking crisis, has placed unprecedented demands on payment and settlement systems and emphasised the financial system's dependence on their continued smooth operation. UK payment, clearing and settlement systems have met these challenges well. Although several large financial institutions have suffered significant and widely reported distress, payment systems have continued to provide a robust service.

Without the major improvements to the design of payment and settlement systems that have been implemented over the past fifteen years or so, some markets might have ceased to function effectively. This could have exacerbated liquidity stresses within financial markets and across financial market institutions. These reforms included the introduction of real-time gross settlement (RTGS) for CHAPS in 1996, delivery versus payment for CREST in 2001, and payment versus payment for foreign exchange transactions in CLS in 2002.

The record activity seen over the past year highlights the particular importance of comprehensive planning for and investment in technological capacity for spikes in activity and for handling payment flows in stressed circumstances.

1.2 Reforms in UK payment systems oversight: the Banking Act 2009

To date, the Bank has overseen the United Kingdom's systemically important payment systems on a non-statutory basis.[2] Under the Memorandum of Understanding (MoU) between the Bank, Her Majesty's Treasury (HM Treasury) and the Financial Services Authority (FSA),[3] the Bank has been responsible for providing advice to the Chancellor of the Exchequer on major problems arising in these payment systems, and for contributing to developing and improving the infrastructure to help reduce systemic risk.

The Banking Act 2009 (the Act), which received Royal Assent on 12 February 2009, includes a statutory framework for the oversight of certain payment systems by the Bank.

Provisions regarding the recognition of payment systems are expected to commence in April 2009 with the remaining provisions following in Summer 2009. Further information on the new regime will be published by the Bank ahead of these commencement dates.

Payment systems and other UK public bodies

The Bank is just one of the bodies with an interest in promoting safe and efficient payment systems in the United Kingdom.

The Bank's oversight is concerned with the overall robustness and resilience of the financial system, and the extent to which systems could threaten financial stability through disruption and contagion. It does not extend to consumer protection objectives, which lie with the FSA, the Office of Fair Trading (OFT), the Payments Council and other public bodies. For example, the FSA has a statutory objective under the Financial Services and Markets Act 2000 relating to consumer protection.

The FSA will also be the competent authority for most aspects of the EU Payment Services Directive which will be implemented in the United Kingdom during 2009. This Directive seeks to enhance competition, efficiency and innovation in payments while ensuring appropriate consumer protection, and deals with conduct of business issues such as the rights and obligations of payments providers and users. The OFT will be responsible for implementing the Directive's

(1) This is reduced from a total of £240 trillion in 2007, mainly due to the closure of CHAPS Euro in May 2008.
(2) See page 9 of the 2004 *Oversight Report*, available at www.bankofengland.co.uk/publications/psor/.
(3) www.bankofengland.co.uk/financialstability/mou.pdf.

provisions that relate to competition and access to payment systems, building on its general statutory responsibilities in these areas.(1)

The Payments Council is a self-regulating body, formed in March 2007 to be a strategic governance body for the UK payments industry. Its objectives are to help foster innovation, efficiency and co-operation in the UK payment services, ensure that payment systems are open and accountable, and maintain their integrity.

(1) HM Revenue and Customs and the Financial Services Ombudsman also have roles in the implementation of the Directive.

Table A Volumes, values and main payment types (daily averages)[a]

	Volume	Value (£ millions)[b]	Important payment types	Most likely short-term substitutes
PAYMENT SYSTEMS				
CHAPS			• Settlement of financial market transactions	• CHAPS Sterling bypass mode
Sterling	136,196	283,745	• CLS pay-ins and pay-outs	• Manual procedures for making a small number of bulk transactions
			• House purchases	
Bacs	22,266,734	15,537	• Salary and benefit payments	• Perhaps limited scope for switching to other instruments in the short term — eg cheques or cash
			• Bill payments by Direct Debit	
			• Telephone and internet banking	
Faster Payments Service[c]	939,866	310	• Telephone and internet banking	• Bacs
			• Single immediate payments	• CHAPS
			• Forward-dated payments	• Cheque & Credit Clearing
			• Standing order payments	• Cash
C&CC[d]	4,308,134	4,451	• Payments for goods and services by consumers and businesses	• Bacs • Card networks • Cash
			• Bill payments and small financial transactions (eg payments into savings accounts)	
			• Person-to-person payments	
Visa (credit and debit cards)[e]	14,997,260	836	• Payments for goods and services by consumers and businesses	• Cheques • Other card networks • Cash
MasterCard[f] (credit and debit cards)[e]	10,742,466	593	• Payments for goods and services by consumers and businesses	• Cheques • Other card networks • Cash
LINK	7,797,260	306	• 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	211,559	477,512	• Settlement of gilts, equities and money market instruments (including in respect of OMOs and repo market transactions more generally)	• Increased free-of-payment transfers could be accommodated within CREST but with increased principal risk
US dollar	2,082	2,114		
LCH.Clearnet Ltd (Protected Payments System)[h]				
Sterling	211	1,901	• Settlement in respect of cash margin payments	• If disruption does not prevent calculation of settlement obligations, contingency payment procedures may be invoked • Contingency algorithms can be used to calculate obligations if usual mechanisms are unavailable
US dollar	175	2,416	• Payments for commodity deliveries	
Euro	144	1,763	• Cash settlements	
Other	299	298	• Default fund contributions	
Total LCH	829	6,378		
CLS[i]				
All currencies	262,373	1,071,387	• Settlement of foreign exchange trades	• Correspondent banking arrangements in the relevant countries but with increased principal risk
Sterling[j]	41,031	158,214		

Sources: APACS, Bank of England, CLS Bank International, Euroclear UK & Ireland Ltd, 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) Daily averages for December 2008.
(d) Volumes and values include items drawn on other banks only.
(e) Figures for 2007 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).
(h) Figures for the LCH.Clearnet Ltd Protected Payment System (PPS) refer to the sum of all (net) payments between LCH.Clearnet Ltd and its members through the PPS. Volume figures are for the period 3 February 2009 to 16 February 2009.
(i) Each transaction has two 'sides'. Only one side is counted in the volume and value figures.
(j) Trades in which one leg is denominated in sterling.

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

(a) The LCH.Clearnet Ltd Protected Payments System (PPS) enables settlement of obligations between LCH.Clearnet Ltd and its members in 17 currencies. The assessment shown in **Table B** relates to the three main currencies settled, namely sterling, euro and US dollar.
(b) As the Faster Payments Service only went live in May 2008, this is a preliminary assessment.

Chapter 2: Key developments in the main UK payment systems

The starting point for assessing the performance and resilience of the main UK payment systems is the Bank's assessments against the Core Principles for Systemically Important Payment Systems (Core Principles).(1) This chapter discusses the main developments in individual payment systems during 2008. It draws on updated Core Principles assessments, which are available on the Bank's website.(2) **Table B** summarises the assessments for the core systems which are the main focus of the Bank's oversight activities. This chapter also presents a preliminary assessment of the Faster Payments Service and reviews developments in CLS and SWIFT — two international infrastructures.

The Core Principles establish general benchmarks against which to assess the performance and resilience of payment systems. However, the overall importance of individual systems varies. These differences between systems, and the risks to which their operations give rise, mean that other tools are needed to establish priorities for action for the Bank. Therefore, the Bank has developed an Oversight Risk Framework (the Framework) which was detailed in the 2006 *Oversight Report*.(3)

In broad terms, the Framework involves the estimation of the probability of a given risk occurring in a system and the impact should it crystallise. This facilitates a comparison of the different risks within a system, as well as a comparison of the same risk across different systems. The Framework serves as a useful tool for ensuring a systematic and consistent approach across diverse systems, and for ensuring that the Bank's oversight activities are explicitly risk based.

In 2008, as in previous years, the most significant risks to systems relate to the settlement risk in the event that a member becomes insolvent, and to the operational risk of failure of a system or its supporting network. Overall, the most significant risks identified by the Framework relate to the main wholesale payment systems. This reflects the impact of outages of these systems for economic and financial activity in the United Kingdom. These issues, as they relate to individual systems, are discussed in more detail below.

2.1 CHAPS

CHAPS is the United Kingdom's high-value payment system, providing real-time gross settlement (RTGS) of transfers between members which eliminates credit risk. It now consists of one system, CHAPS Sterling, since CHAPS Euro closed in May 2008 as part of the final phase of the TARGET2 launch. RTGS infrastructure is run by the Bank. The relationship is governed by a Memorandum of Understanding between the Bank and the CHAPS Clearing Company Ltd (CHAPSCo).

There are now fourteen CHAPS Sterling members (excluding the Bank). ABN Amro left CHAPS on 19 September 2008, following the merger with RBS. Danske Bank is scheduled to join CHAPS in 2009, and JPMorgan has also announced its intention to do so. The Bank welcomes new direct members of CHAPS since this helps reduce the risks associated with tiering (discussed in Section 3.1).

CHAPS activity in 2008

The daily value of CHAPS Sterling payments in 2008 averaged around £280 billion, making it one of the largest UK payment systems. This, combined with the critical role played by CHAPS in distributing liquidity in the UK financial system and the fact that RTGS provides final settlement for the other main payment systems in the United Kingdom, means that the Bank attaches particular importance to the mitigation of risks within CHAPS and in the related RTGS infrastructure.

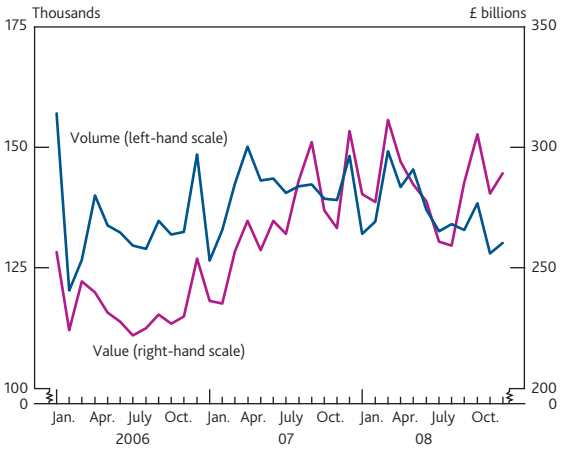
CHAPS volumes fell during 2008, while values remained broadly constant (**Chart 1**). The reduction in volumes could be for two reasons: first, the downturn in economic activity may have caused fewer CHAPS payments to be made, such as those associated with housing transactions; and second, smaller payments could be migrating to the Faster Payments Service (FPS) which was launched in May 2008. Indeed, it is forecast that over 50% of CHAPS volumes will migrate to FPS within five years.(4) There were some signs of this in 2008, with volumes falling more rapidly in the second half of the year.

Performance against the Core Principles

The previous *Oversight Report* assessed CHAPS to observe seven of the Core Principles and to broadly observe the remaining two that were relevant. The Bank assessed CHAPS

(1) These are a set of internationally recognised principles published by the Bank for International Settlements' Committee on Payment and Settlement Systems.
(2) *Annexes to Payment Systems Oversight Report 2008*, available at www.bankofengland.co.uk/publications/psor/.
(3) Bank of England (2007), *Payment Systems Oversight Report*, available at www.bankofengland.co.uk/publications/psor/.
(4) CHAPS traffic survey.

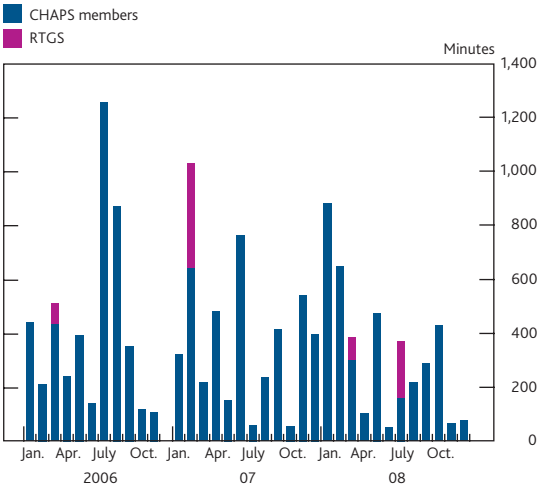
Chart 1 Monthly average of daily value and volume of CHAPS sterling payments(a)



Source: Bank of England.

(a) Average per calendar month.

Chart 2 Monthly downtime of RTGS and CHAPS Sterling members



Sources: Bank of England and CHAPSCo.

to broadly observe Core Principle X (Governance), but stated that it would review this assessment once the CHAPSCo governance arrangements with the Payments Council had bedded down. In May 2008, the Payments Council produced its National Payments Plan which included wholesale payments as part of its strategic assessment of the payments landscape. This, together with the consolidation of the relationship between CHAPSCo and the Payments Council during 2008, has led the Bank to upgrade the assessment against Core Principle X to observed. The Bank's assessments against the other Core Principles are unchanged.

Operational risk (Core Principle VII)

CHAPS remains a robust payment system, commensurate with its systemic importance. Its member banks rely on the RTGS infrastructure to manage their liquidity on a continuous basis. The failure of RTGS is one of the most significant operational risks identified in the Bank's Oversight Risk Framework.

Chart 2 shows the operational performance of members and RTGS over the year. The aggregate duration of member outages per month was almost unchanged from 2007, at around 350 minutes. There were variations in performance between members in the course of 2008, with the best performing member being available 100% of the time and the worst 99.43% of the time. The CHAPSCo Board monitors members' operational performance and takes action where necessary.

One particular member had an outage that lasted most of the day on 3 January 2008, owing to an extremely rare software failure. In this case, the Bank was concerned that the member seemed to have imperfect knowledge of, and ability to, operate contingency procedures to deal with such an incident, including prioritisation and faxing of payments. Communication between members meant that they were able to stop or delay sending payments to the stricken bank, so that it did not become a liquidity sink, although multilateral communication started later in the day than would have been ideal. It was fortunate that on this occasion the affected bank managed to resume operations in time to complete most of its payments.

The CHAPS system is, in general, operationally stable. However, it is important that CHAPSCo and the CHAPS members are fully aware of contingency procedures and can operate them when the need arises. In extreme scenarios, a stricken member can be required, under the Settlement Bank Liquidity Scheme (SBLS),(1) to recycle liquidity back to other CHAPS members so that they are willing to continue making payments to it. Bilateral SBLS limits are currently small in relation to the potential daily flows in CHAPS, although there is a mechanism for members to increase these limits on the day. One of the recommendations to the CHAPSCo Board in the wake of the incident was that members should review their limits in the SBLS. The Bank will continue to pursue these issues with CHAPSCo.

As far as the core RTGS infrastructure is concerned, there were two notable incidents in 2008. First, on 11 March 2008, SWIFT messages at the start of the day were inadvertently suppressed, which delayed the opening of the system. On the same day, a member liquidity test, which was being run first thing in the morning, also impinged on the opening of the system. Overall, these two events led to over an hour's delay in the opening of CHAPS. Operational procedures relating to these incidents have been revised to prevent recurrence of both problems.

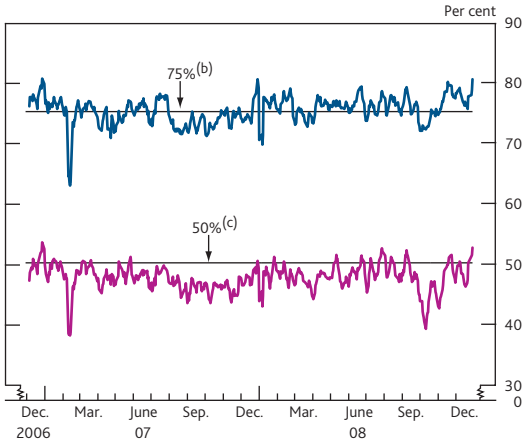
(1) Part of *The Framework for the Bank of England's Operations in the Sterling Money Markets*, available at www.bankofengland.co.uk/markets/money/publications/redbookjan08.pdf.

Second, there was a double failure of the firewalls surrounding the RTGS processor on 7 July 2008. When the main firewall at the secondary site, from where RTGS was running at the time, was unable to start due to a power failure, the backup firewall should have taken over, but it was unable to do so. This was subsequently found to be due to a lack of synchronisation between the two firewalls. On the day, the procedures for 'failing over' RTGS to the primary site, where the firewalls were operating correctly, worked well, but RTGS was unavailable in total for over 200 minutes. RTGS sits within an overall IT environment which consists of many disparate elements, all of which need to be of high resilience for the system to be operationally sound. It is important that these elements, some of which may not be directly associated with RTGS itself, are tested regularly. Steps have been taken to strengthen both the IT support of RTGS as a whole and the regular liaison between the IT and RTGS operational areas of the Bank to ensure that this happens.

These two outages meant that RTGS failed to meet the target of 99.95% availability in two out of twelve months in 2008.

Performance by CHAPS members against the system's throughput guidelines has been variable in 2008, as shown in **Chart 3**. Members are required to send 50% of their payment values by 12:00 and 75% by 14:30. They have on average fallen below the 12:00 threshold, at 48%, but have been above the 75% deadline at 14:30. In particular, during a short period in October 2008, the worst period of the market turbulence, throughput by 12:00 fell to around 40%. Although throughput recovered to normal levels towards the end of 2008, the Bank will continue to monitor these levels closely and seek explanation from CHAPS for any shortfall.

Chart 3 Average percentage of sterling payments sent by CHAPS members by 12:00 and 14:30[a]



Source: Bank of England.

(a) Five-day moving average.
(b) CHAPS throughput guideline at 14:30.
(c) CHAPS throughput guideline at 12:00.

Business continuity planning (Core Principle VII)

The CHAPS system and its members continue to follow a programme of business continuity testing throughout the year. For example, in June 2008, a live test took place of members' ability to operate their payment schedulers from their secondary sites. This was carried out for a full day's CHAPS payments, compared with half a day in 2007, and proceeded smoothly.

CHAPSCo also tests members' ability to identify and process payments after a serious failure of SWIFT operational centres — a 'cold start' test. Tests were scheduled for April 2008 and September 2008. The first had to be abandoned due to problems in the RTGS test environment on the day. However, the September 2008 test ran smoothly.

Members should also be able to use manual processes — mainly faxes — to send in payment instructions to the RTGS system if, for example, the SWIFT network is down during the day. CHAPS members are allowed to fax a maximum of two payments per hour in this circumstance. A test of these procedures was first run in 2007 and was repeated on 9 December 2008. It was judged partially successful since some members still had problems with sending faxes to the correct specification. While these are useful tests of members' operational capacity, they could be extended to test members' ability to identify which of their payments they would class as critical in these situations, perhaps by asking them to use a representative day of historic payment data.

Overall, the Bank encourages CHAPSCo and members to make these tests more realistic and as demanding as possible. Some incidents, particularly the one in January 2008, showed that there is a lack of familiarity with CHAPS business continuity procedures, partly because the general stability of the system means that they are not used very often.

Liquidity and settlement risk (Core Principles III, IV and V)

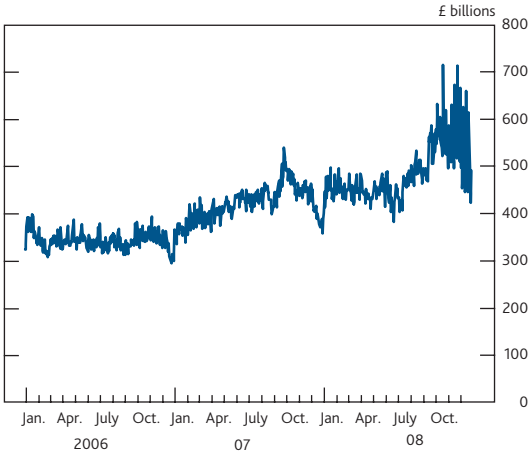
The Bank has been pressing the CHAPS community for a number of years to improve its ability to cope with the loss of RTGS for a day or more, a scenario which would mean that the system would go into 'bypass mode'. This is the only situation in which settlement risk would be present in CHAPS and is one of the highest scoring risks in the Bank's Oversight Risk Framework. CHAPSCo has now agreed to adopt two settlement cycles on a day when RTGS is in bypass, to reduce the level of settlement risk that could build up in the system, and the Bank welcomes this. There was a test of these new arrangements on 5 July 2008, designed to demonstrate that they were technically feasible. Several members encountered difficulties. The Bank expects members and CHAPSCo to repeat this test at the earliest opportunity, as well as to plan tests to target members' ability to reconcile and settle intraday and at end-of-day.

2.2 CREST

CREST is the United Kingdom's securities settlement system, providing a Delivery versus Payment (DvP) settlement service for gilts, equities and money market instruments. The system is operated by Euroclear UK & Ireland Ltd (EUI),(1) a wholly-owned subsidiary of Euroclear SA/NV (ESA). EUI is incorporated in the United Kingdom and subject to supervision by the FSA as a Recognised Clearing House under the Financial Services and Markets Act 2000. The Bank oversees the sterling and US dollar payment arrangements supporting CREST settlement.(2)

CREST provides RTGS in central bank money for transactions in sterling and euro. **Chart 4** shows the daily value of sterling DvP transactions. These averaged over £475 billion in 2008 — an increase of around 14% on the previous year.(3) Values have been more volatile in the latter part of 2008; the Bank will continue to monitor this (see Section 3.1 for a detailed discussion of the impact of market turbulence on infrastructures).

Chart 4 Daily value of sterling DvP transactions in CREST



Source: Euroclear UK & Ireland Ltd.

CREST also provides for transactions to be settled in US dollars. This is supported by bilateral net settlement through correspondents in the United States. In 2008, US dollar settlement values averaged approximately US$4.1 billion per day (£2.1 billion).(4)

Performance against Core Principles

As in the 2007 *Oversight Report*, the Bank assesses CREST's sterling payment arrangements to observe seven of the nine relevant Core Principles and the US dollar payment arrangements to observe three. For sterling and US dollars, CREST payment arrangements are judged to broadly observe Core Principle VII (Operational reliability) and to partly observe Core Principle X (Governance). This reflects the continuation of operational problems in 2008.

Legal basis (Core Principle I)

On 15 September 2008, Lehman Brothers International (Europe) (Lehman Brothers) was placed in administration. In general, the unwinding of Lehman Brothers' transactions was undertaken smoothly. However, the default raised some concerns among CREST users over default arrangements.(5) These issues are discussed in more detail in Section 3.1. The Bank encourages EUI to consider what steps can be taken to assist market participants' understanding of CREST's default arrangements and welcomes EUI's issuance of additional guidance on Rule 13 of the *CREST Rules*, clarifying the steps which EUI is likely to take in the event of the default of a member.

It is also noteworthy that Lehman Brothers' default occurred after some intraday funding via the self-collateralising repo mechanism had been undertaken by settlement banks. This demonstrated the importance of settlement banks ensuring adequate liquidity management planning for a client default. It is also important that settlement banks ensure familiarity with procedures for realising floating charges over client assets and maintain up-to-date documentation. The Bank welcomes EUI's recent initiatives in educating users and settlement banks on floating charge processes.

The Bank will continue to monitor developments in this area. It maintains an assessment of observed and broadly observed for sterling and US dollar settlement respectively against Core Principle I.

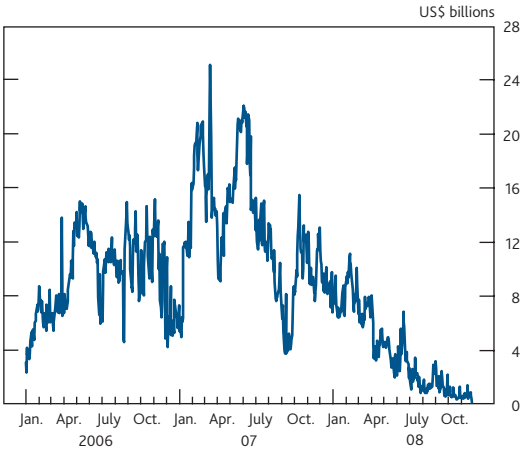
Settlement risk (Core Principles II, III, IV and VI)

The bilateral US end-of-day net settlement of interbank obligations means that payment arrangements supporting US dollars are less robust than those for sterling settlement, creating significant intraday exposures for settlement banks and members. During 2008, exposures have decreased substantially and the average daily value was nearly 70% lower than in 2007 (**Chart 5**). The Bank will continue to monitor US dollar settlement values and associated exposures, and investigate the reasons for recent trends.

The FSA has been consulting with major participants in the CREST US dollar settlement arrangements on intraday risk

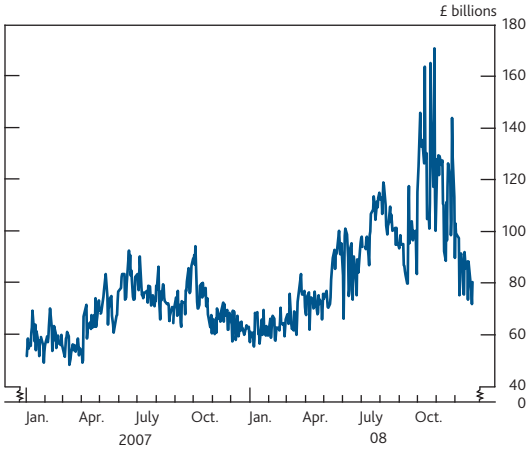
(1) Formerly CRESTCo Ltd.
(2) The Central Bank and Financial Services Authority of Ireland (CBFSAI) took over provision of central bank euro liquidity for the CREST Euro service from April 2008 (following the launch of TARGET2 in which the Bank is not participating as a provider of euro RTGS). The Bank, the FSA and the CBFSAI have entered into a Memorandum of Understanding for co-operation on the regulation of the services provided by EUI relating to the settlement of Irish securities, which account for the bulk of the settlement in euro.
(3) This figure does not include liquidity flows generated by the self-collateralising repo mechanism. This mechanism enables settlement banks to use certain categories of eligible security as collateral for raising additional central bank liquidity on the platform.
(4) Based on 2008 daily spot exchange rates for US dollar/sterling.
(5) The term 'default arrangements' in this context does not refer to default rules enforced by Recognised Clearing Houses which are party to market contracts or by Recognised Investment Exchanges.

Chart 5 Daily value of US dollar DvP transactions in CREST



Source: Euroclear UK & Ireland Ltd.

Chart 6 Value of 'on us' sterling DvP transactions in CREST



Sources: Bank of England and Euroclear UK & Ireland Ltd.

exposures. Its findings to date are that firms are generally aware of exposures and are mitigating risks. The FSA will continue this investigation into 2009 and if its findings indicate weaknesses in firms' management of these risks, authorities may seek further action.

While US dollar settlement values have fallen, the nature of this risk is unchanged. The Bank therefore continues to assess CREST's US dollar settlement arrangements to partly observe Core Principles III, IV and VI.

Tiering and 'on us' settlement

Previous *Oversight Reports* have highlighted the risks arising from the highly tiered structure of the payment arrangements supporting CREST sterling settlement. Cash settlement is now provided by thirteen settlement banks(1) to over 45,000 members.(2) During 2008, the total value of sterling 'on us' transactions, which are transactions between members using the same settlement bank, increased substantially (**Chart 6**). The proportion of total sterling transactions which were 'on us' increased from around 15% at the start of 2008 to a peak of over 25% in October 2008, before decreasing again in November and December 2008. In 2009, the Bank will continue to monitor these trends and will be investigating further the drivers of 'on us' settlement in order to ensure a full understanding of the risks and implications for financial stability.

Delivery by Value transactions

The Delivery by Value (DBV) mechanism allows CREST members to borrow or lend cash overnight against a package of securities. CREST sterling settlement values are dominated by the flows arising from this mechanism. Together, DBVs and the related Delivery by Value Returns typically account for around 70% of CREST values. The size and concentration of DBV transactions in CREST gives rise to significant liquidity and operational risks to the market.

High values currently settling through DBVs arise in part because DBVs are used in CREST as a means of settling both overnight and term transactions. Settling term transactions via DBVs may introduce unnecessary risk since DBVs must be unwound at the start of each day and recreated at the end of each day of the term of the underlying transaction. The Bank has discussed options for addressing this risk with EUI. While EUI currently offers a term repo product, the Bank welcomes the fact that, as part of its Single Platform project, ESA is developing a collateral management service that will replace DBVs with a product that settles both overnight and term collateral management transactions.(3)

Operational risk (Core Principle VII)

While progress has been made this year in developing contingency procedures, the persistence of operational problems in 2008 means that the Bank continues to assess CREST to broadly observe Core Principle VII.

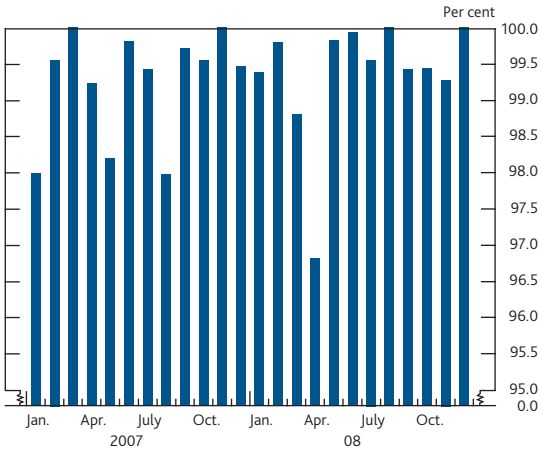
CREST handled exceptional values and a significant number of extensions requested by users as a result of market turbulence during the latter part of 2008. It performed generally well and without incident in the face of these operational challenges. The Bank also welcomes the additional capacity delivered by EUI's recent Itanium upgrade of system hardware.

During 2008, average system availability (99.4%) improved slightly compared with 2007 (99.2%) (**Chart 7**). However, there was a serious outage on 24 April 2008 which resulted from a series of problems with the Single Settlement Engine (SSE).(4) The SSE and its interface with the legacy CREST system were also associated with a number of other outages in

(1) A merger of two settlement banks in 2008 reduced the number of settlement banks from fourteen.
(2) Not all settlement banks provide settlement in both sterling and US dollars.
(3) The Single Platform project intends to bring all Euroclear group (International) Central Securities Depositories ((I)CSDs) onto a common IT platform.
(4) The Single Settlement Engine was launched in 2006 and performs the core functions of settlement (positioning and booking of cash and securities transfers) for Group (I)CSDs.

2008. Problems affecting settlement are highly visible to customers in systems with real-time payment system links such as CREST. The 24 April 2008 incident also raised concerns about communication arrangements which have now been addressed.

Chart 7 CREST system availability for settlement



Source: Euroclear UK & Ireland Ltd.

The 2007 *Oversight Report* outlined the Production Stability Plan (the Plan) drawn up by ESA in response to previous operational incidents with the SSE. During 2008, most of the actions detailed in the Plan have been implemented. However, while these improvements are welcomed, it is a concern that there still appear to be underlying weaknesses in the SSE and its interface with the legacy CREST system, which have given rise to further problems with system availability. System failure at CREST is currently the most significant operational risk identified by the Bank's Oversight Risk Framework. The Bank is keen to see work on outstanding items on the Plan completed in 2009, including further development of incident handling processes and co-ordination of testing procedures.

Business continuity planning

During 2008, EUI and the Bank have implemented a major improvement in contingency capability, which would enable a smooth and managed recovery from operational problems that prevented normal close to the CREST settlement day. The Non-Standard CREST Closure (NSCC) project enables CREST to close without completing settlement, and in particular without DBVs settling and without self-collateralising repos (SCRs) being unwound. The NSCC procedures enable CREST to carry forward all account positions at the point of failure into the next business day (or until the operational outage has been resolved). At a settlement bank level, this will involve overnight recourse to the Bank's operational Standing Facilities. EUI issued a white book on the NSCC in January 2009 and has held a familiarisation clinic for members and settlement banks. The Bank encourages EUI to progress with proposals to run a desktop exercise.

On 7 July 2008, problems with RTGS (see Section 2.1) meant that CREST ran in recycle mode for much of the day. There were no reported problems. This success in part reflects EUI's testing of the recycle mode in November 2007 and demonstrates the importance of regular testing of contingency measures.

The Bank has been talking to settlement banks about contingency network arrangements as part of a review of network resilience. It urges key participants to ensure that they have robust contingency arrangements in place for critical payments.

Governance (Core Principle X)

A Settlement Bank Committee was established by EUI in February 2007 to act as a dedicated forum for discussion of issues relating to the interbank payment arrangements supporting CREST settlement. The forum has proven particularly useful as a means of discussing issues and establishing lessons from recent events such as Lehman Brothers' default. The Bank encourages settlement banks to continue their active engagement in this process and will continue to monitor this.

The 2007 *Oversight Report* also discussed actions designed to address issues highlighted in the SSE Post Implementation Review. A number of these are related to governance: improvements to change, configuration and release management have since been implemented. The Bank particularly welcomes improvements in contingency communications. However, the continuance and nature of operational problems in 2008 highlights the scope for further improvements in governance. Formal arrangements are in place for managing EUI's outsourcing relationship with ESA and the Bank will continue to monitor how these work in practice. In particular, the Bank will want to ensure that decisions over the allocation of resources at ESA take adequate account of the operational impact on EUI. The Bank therefore continues to assess Core Principle X as only partly observed.

2.3 LCH.Clearnet Ltd

LCH.Clearnet Ltd is the main central counterparty (CCP) in the United Kingdom. It is incorporated in the United Kingdom as a private limited company, and is regulated by the FSA as a Recognised Clearing House under the Financial Services and Markets Act 2000. The Bank oversees LCH.Clearnet Ltd's operation of its embedded payment arrangements, the Protected Payments System (PPS).(1)

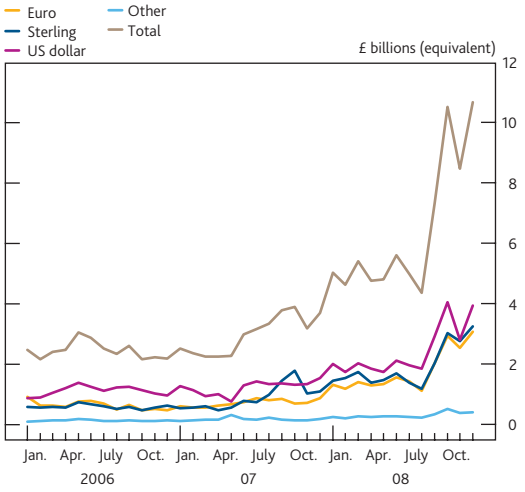
LCH.Clearnet Ltd transfers margin and other cash to and from its members through the PPS. A network of commercial banks,

(1) The PPS consists of two systems: the UK PPS and the US PPS. The US PPS is not covered in this *Oversight Report*, except where explicitly mentioned, as the flows through it are significantly lower than those through the UK PPS.

known as PPS banks, provide accounts to both LCH.Clearnet Ltd and its members in one or more of the currencies in which liabilities are incurred.

Chart 8 shows the average daily value of payments made between LCH.Clearnet Ltd and its members through the thirteen UK PPS banks. While the amounts are small in comparison with those made through some other systems overseen by the Bank, the flows reflect only a small percentage of the underlying value of the contracts that LCH.Clearnet Ltd clears.

Chart 8 Average daily flows over the UK PPS, by currency(a)



Sources: LCH.Clearnet Ltd and Bank calculations.

(a) The data have been adjusted to account for errors and omissions.

As a CCP, LCH.Clearnet Ltd collects initial margin to cover an estimate of potential future losses in managing a default in all but extreme market conditions. In addition, if there are large intraday price movements, LCH.Clearnet Ltd can make additional intraday margin calls to protect itself. So when market volatility increased, as in the second half of 2008, following Lehman Brothers' default, LCH.Clearnet Ltd made more frequent and larger margin calls.

Performance against the Core Principles

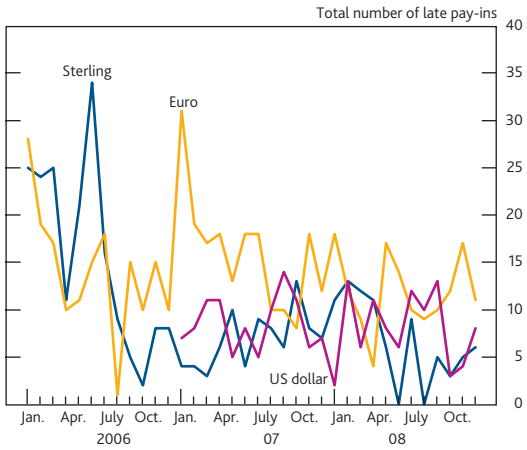
As in the 2007 *Oversight Report*, the Bank assesses the PPS to observe eight of the nine relevant Core Principles for sterling and euro payments and seven of the nine relevant Core Principles for US dollars. For sterling, euro and US dollars, the PPS continues to broadly observe Core Principle III in relation to management of financial risks. For US dollars, the PPS is judged only to partly observe Core Principle VI due to risks posed by the current arrangements for settling US dollars, which use commercial bank money. In 2008, LCH.Clearnet Ltd has made progress in certain areas although, as yet, none of the changes are sufficient to warrant an upgrade against the Core Principles.

Settlement risk (Core Principles III and VI)

At the start of the day, members must pay in any extra margin required to LCH.Clearnet Ltd via the PPS and LCH.Clearnet Ltd pays out any excess margin it holds to its members via the PPS. Under terms set out in the PPS Agreement, PPS banks have two hours to transfer margin collected on behalf of members to the concentration bank whereas LCH.Clearnet Ltd typically makes its pay-outs straight away. If a PPS bank misses the deadline on four or more occasions during one calendar month, LCH.Clearnet Ltd will discuss remedial action with that bank. Prompt movement of margin payments from the PPS banks to the sterling and euro concentration bank reduces LCH.Clearnet Ltd's counterparty credit risk exposure, as these funds are concentrated in central bank money. It also reduces the liquidity risk created when LCH.Clearnet Ltd makes its pay-outs before pay-ins have been received. Delays to pay-ins create risk: as the value of margin payments increases, so does the risk associated with late pay-ins.

Chart 9 shows the number of late pay-ins made by PPS banks per month. The Bank attended LCH.Clearnet Ltd's July 2008 PPS Forum to highlight the importance of such transfers being made in a timely manner. Given that PPS banks made 81% of pay-ins within one hour in 2008, the Bank also suggested that LCH.Clearnet Ltd consider introducing a tighter payment deadline. LCH.Clearnet Ltd cannot instigate such a change without agreement from all the PPS banks and Forum members were concerned about consequences for their internal liquidity management. The Bank recommends that LCH.Clearnet Ltd and the PPS banks should give further thought to the feasibility of a tighter deadline as this would reduce credit and liquidity risk to LCH.Clearnet Ltd and enable PPS banks that are net recipients of funds to be paid in a more timely way.

Chart 9 Number of late sterling, euro and US dollar pay-ins per month(a)



Sources: LCH.Clearnet Ltd and Bank calculations.

(a) Data relate to payments requested before 10:00.

The Bank also considers it important that PPS banks prioritise payments to LCH.Clearnet Ltd in a contingency event. This would help to reduce the liquidity problems that LCH.Clearnet Ltd could experience in such a scenario. The Bank has discussed this issue at the PPS Forum and has followed up by writing to all the PPS banks.

As mentioned in previous *Oversight Reports*, LCH.Clearnet Ltd currently uses a commercial bank as its US dollar concentration bank. This exposes LCH.Clearnet Ltd to another source of credit risk. **Chart 8** shows that despite the launch of ICE Clear Europe Ltd on 3 November 2008 (and the resulting migration of ICE Futures and cleared ICE over-the-counter business), the value of LCH.Clearnet Ltd's US dollar flows remained the highest of any currency collected across the PPS. So LCH.Clearnet Ltd should continue to explore ways in which this risk can be reduced. Ideally, the Bank would like to see concentration of US dollar PPS flows in central bank money, though this has proved difficult given LCH.Clearnet Ltd's current institutional form. The Bank encourages LCH.Clearnet Ltd to continue to seek other ways to reduce its exposure to its commercial concentration bank, Citibank. For example, this could be achieved by more closely matching pay-ins and pay-outs across the concentration account to reduce the duration of exposures.

Governance (Core Principle X)

Two groups have expressed an interest in owning the LCH.Clearnet Group. In conjunction with the FSA and the other Joint Regulatory Authorities,[1] the Bank will assess the implications of any change in governance and, more broadly, any risks that could be created by a change in ownership.

Strategy

As discussed in Section 3.3, the clearing landscape has recently become more competitive, following the implementation of the Markets in Financial Instruments Directive and the European Code of Conduct for Clearing and Settlement. Consequently, LCH.Clearnet Ltd faces competition both from clearing houses acting for new trading venues and from clearing houses co-clearing existing exchanges (when more than one clearing house acts for the same trading platform).

LCH.Clearnet Ltd and NYSE Liffe launched a clearing service for credit default swaps indices in December 2008, which has the potential to increase flows across the PPS. In a separate initiative, NYSE Liffe has announced that it intends to begin self-clearing in 2009, subject to regulatory approval. Under the proposal, while NYSE Liffe will be the CCP to trades, it intends to outsource risk management, margin collection and default management to LCH.Clearnet Ltd.

2.4 CLS

Continuous Linked Settlement (CLS) was introduced to eliminate principal risk in the settlement of foreign exchange transactions. The service has subsequently been extended to single currency payment instructions relating to non-deliverable forward transactions and over-the-counter credit derivative transactions. CLS Bank International (CLS Bank) is the institution that provides the CLS service. The US Federal Reserve authorised the establishment of CLS Bank and is its primary supervisor and lead overseer. Together with the other central banks (including the Bank) participating in the co-operative oversight of CLS, the Federal Reserve formally assesses the system against the Core Principles.

In line with the requirements for systemically important payment systems set out in the Federal Reserve's *Policy on Payments System Risk*,[2] CLS published a self-assessment against the Core Principles in December 2007. This provides transparency to users regarding CLS's risk management and other features and must be updated whenever there is a material change to the service, at a minimum once every two years. CLS Bank assesses itself to observe all ten Core Principles.

A new protocol for the central bank oversight of CLS was agreed in late 2008 which established a 'CLS Oversight Committee', chaired by the Federal Reserve. It is not expected that this will lead to a material change in overseers' activities, but it does formalise existing arrangements.

Settlement and liquidity risk (Core Principle III)

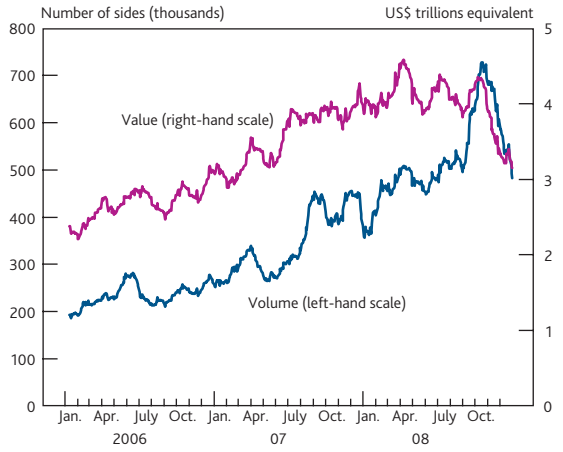
Central bank overseers seek to ensure that CLS Bank's risk management and operational procedures are effective and consistent with the Core Principles.

Chart 10 shows that the volume of trades settled in CLS (and hence for which principal risk is eliminated) continued to grow in 2008, with a spike during the period of exceptional market turbulence. Values settled remained broadly stable until October 2008, after which they declined significantly. Higher volumes are likely to be due to algorithmic trading (which generates high volumes of lower-value transactions) and continued growth in the number of third-party participants (up from 2,195 at the end of 2007 to 4,154 by 24 December 2008).

As noted in previous *Oversight Reports*, CLS's Inside/Outside (I/O) swap mechanism is used by many settlement members to reduce the liquidity pressures generated by their pay-in requirements (it can reduce liquidity requirements by around

(1) The British, French, Dutch, Belgian and Portuguese central banks and financial markets regulators.
(2) Section I.C.3 of the Federal Reserve's *Policy on Payments System Risk*, as amended effective 11 January 2007, available at www.federalreserve.gov/newsevents/press/other/other20070112a1.pdf.

Chart 10 Daily volumes and values settled in CLS (30-day moving average)[a]

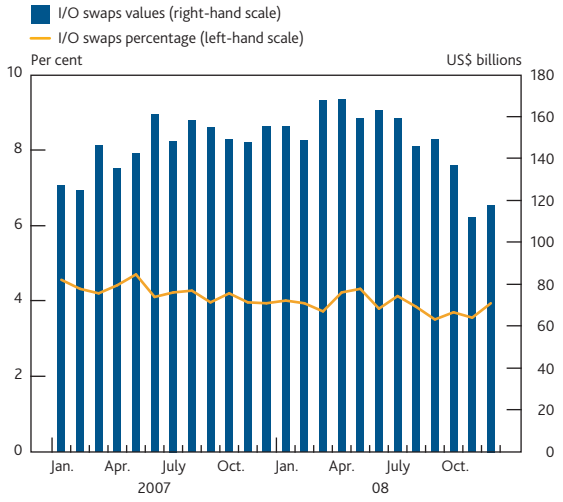


Source: CLS Bank International.

(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.

75%). However, the I/O swap mechanism reintroduces principal risk outside the system.[1] This is the largest settlement risk identified in the Bank's Oversight Risk Framework. The value of I/O swaps is shown in **Chart 11**, along with the percentage of total settlement value that this represents.

Chart 11 Inside/Outside swaps[a]



Source: CLS Bank International.

(a) The chart shows the gross average daily value of Inside/Outside swaps and the percentage of total settlement value that this represents.

An important recent development has been the proposal for a second daily settlement session to allow the 'Outside' leg of I/O swaps to settle within CLS, eliminating all principal risk for currencies where the facility is available.[2] CLS Bank may be able to offer this facility in the near future, although initially this would use manual processes that could generate additional operational risk.

Future developments to the CLS service could include the introduction of additional (earlier or later) settlement sessions to settle same-day foreign exchange trades (in addition to the Outside legs of swaps). Such trades are agreed too late for settlement in the existing main settlement window and therefore cannot currently benefit from the system's reduction in principal risk.

CLS Bank continues to work with members to develop new ways of expanding the scope of the risk reduction and cost-saving benefits that it offers. A service to settle foreign exchange option premiums has been deployed ready for customer use in 2009.

During 2008, four new commercial banks and the Reserve Bank of New Zealand (RBNZ) became settlement members. The RBNZ is the first central bank to become a settlement member. In June 2008, two new currencies were introduced to CLS: the Mexican peso and the Israeli shekel. Overseers welcome the broadening of the range of payments eligible for principal risk-free settlement through CLS, and are working with CLS Bank to satisfy themselves that each new service is introduced without adding undue risks to the system or its members.

Operational risk (Core Principle VII)

Management of operational risk is given a high priority by CLS Bank and its overseers, in particular to minimise the potential cross-border impact of an operational failure affecting any of its settled currencies. In 2008, there were no instances of CLS failing to settle transactions on their intended day. Operational difficulties at CLS Bank, its infrastructure provider and members had little adverse impact on settlement and pay-out target deadlines. During 2008, CLS also extended the coverage of its operational and member support facilities to offer out-of-region resilience around the clock.

Overall, there were no significant impairments to the CLS service resulting from increased volumes and market turbulence. During 2008, CLS broke its record for both the value and volume of trades settled in one day. On 19 March 2008, $10.3 trillion was settled; and on 17 September 2008, over 1.5 million sides were successfully processed, although both of these peaks resulted in short delays to the completion of settlement. On 23 January 2008, high volumes meant that the CLS core system was unavailable for two hours (outside the funding and settlement period) while preventative maintenance was performed. Software upgrades have since been implemented to address this issue. Separately, CLS Bank and its technology partner have completed a project to provide sufficient capacity to cope with continued high growth.

(1) For more information, see 'Continuous Linked Settlement (CLS) and foreign exchange settlement risk', *Bank of England Financial Stability Review*, December 2004, pages 86–92, available at www.bankofengland.co.uk/publications/fsr/2004/. 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.

(2) Asia Pacific currencies will not benefit from this owing to time-zone constraints.

CLS Bank has also experienced a number of delays resulting from individual RTGS infrastructures (rather than its own settlement infrastructure). For example, on 7 July 2008, CHAPS was unavailable for around 200 minutes (see Section 2.1). This delayed completion of CLS settlement by almost two hours and necessitated extensions in two other currencies' RTGS systems. Measures have since been successfully implemented by CHAPSCo to mitigate the impact of CHAPS delays on settlement in future.

CLS Bank is reviewing the lessons learned from the recent market turmoil. No CLS outages or significant delays occurred in the wake of the collapse of The Bear Stearns' Companies Inc. (Bear Stearns) or Lehman Brothers Holdings Inc. filing for Chapter 11 bankruptcy protection, although two issues were identified. The first arose because neither Bear Stearns nor Lehman Brothers Inc. was a direct settlement member of CLS. This meant that there was uncertainty about whether the corresponding settlement member would stand behind the settlement of their trades in CLS on a particular day until very late on the preceding day. Even with direct membership, there would be uncertainty about whether trades would be rescinded, but the decision in that case would lie with the troubled entity or the counterparty settlement member.

The second issue arose because certain settlement members sought to rescind significant volumes of trades with Lehman Brothers Inc. within a short period of time because of cross-default arrangements in their close-out agreements. CLS Bank has improved the processing of these transactions in its software, and members are also being asked to look at their own facilities for submitting rescind instructions in a timely manner.

In the wake of recent market turbulence, consideration has been given to the resources available within banks for the settlement of foreign exchange transactions. CLS provides significant liquidity and operational efficiencies and, as such, it is expected that not all members would have the facilities to settle all their trades through conventional correspondent banking channels. This lends CLS an increased systemic importance, as a failure on its part would create significant uncertainty in members' liquidity positions worldwide.

The benefits provided by CLS's Payment versus Payment service are of particular value to lower-rated counterparties with whom market participants might otherwise be unwilling to trade because of principal risk concerns.

During the period of market stress from September 2008, an increased number of CLS members and nostros were late meeting their pay-in deadlines. This might be due to increased pressures on liquidity in the linked national RTGS systems. However, the number of late pay-ins was still small compared with the total, and by November 2008 had recovered to historical average levels. Late pay-ins can delay settlement and may have an effect on other members' liquidity positions because they receive later pay-outs of credit positions.

Foreign exchange settlement risk

The central banks that oversee CLS also consider risks arising from foreign exchange settlement more broadly, including monitoring the long-term progress of the strategy first set out in the 1996 *Allsopp Report* to reduce foreign exchange settlement risk.(1) In May 2008, the Bank for International Settlements (BIS) published the final version of its report surveying foreign exchange settlement practices.(2) The main findings were unchanged from the consultation paper, which was considered in detail in Box 1 of the 2007 *Oversight Report*. The Bank considers this work to be an important tool for improving understanding of the risks involved in the foreign exchange market, and for motivating action by participants in the market, industry associations and the authorities. One example of an industry-led initiative is that the London Foreign Exchange Joint Standing Committee has been working with market participants on the reduction of settlement risk for spot and forward foreign exchange transactions in the London market.

2.5 SWIFT

SWIFT provides secure messaging services to financial institutions and market infrastructures covering over 8,500 users in more than 200 countries. Four market infrastructures of crucial importance to the financial stability of the United Kingdom (CREST, CHAPS, CLS and LCH.Clearnet Ltd) use SWIFT. So, 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 co-operative oversight process is enhanced by a High Level Expectations (HLEs) framework.(3) The objective of overseers is to seek assurance that SWIFT appropriately manages risks to its operations that could otherwise threaten the smooth functioning of the international financial system.

Operational risk

Distributed Architecture

In 2007, SWIFT announced plans for a Distributed Architecture (DA), intended to increase resilience by adding another operating centre, and at the same time to provide segregation between the European and Trans-Atlantic messaging zones.

(1) BIS (1996), *Settlement risk in foreign exchange transactions*, available at www.bis.org/publ/cpss17.htm.
(2) BIS (2008), *Progress in reducing foreign exchange settlement risk*, available at www.bis.org/publ/cpss83.htm.
(3) The National Bank of Belgium published the HLEs in its 2007 *Financial Stability Review*, available at www.nbb.be.

Phase 1 of the DA, when zoning will be introduced, is scheduled for completion by end-2009.

At the end of Phase 1, each country will be assigned to either the European or Trans-Atlantic messaging zones. The final zone allocation was published to SWIFT users in June 2008. During 2009, market infrastructures and their members will need to ensure they understand the details of the zoned architecture and adjust business continuity plans accordingly.

Oversight of the DA has focused on operational risks to ensure resilience levels remain consistently high, both during and after the project. Overseers have stressed to SWIFT the importance of timely information flows; this will ensure that overseers can assess this systemically important project in a timely fashion. Overseers also require sufficient information to allow them to assess SWIFT initiatives and products to ensure they do not pose a risk to financial stability.

Reliability and resilience

Since the 2007 *Oversight Report*, SWIFT has maintained high availability of the critical FIN messaging service. **Chart 12** shows that the target availability of 99.974% has been exceeded for each of the past 21 months. Aggregated demand for messaging during the market turbulence resulted in four peak SWIFT volume days being recorded between mid-September 2008 and mid-October 2008. During this period, there was no noticeable impact on availability.

Chart 12 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.

Communication with users

SWIFT has continued to engage with its users on business continuity issues. In 2008, two international customer-facing business continuity tests were carried out successfully. These tests provide reassurance to the user community. The Bank encourages individual SWIFT users to ensure the resilience of their connections to SWIFT and to participate in regular SWIFT testing. To further enhance resilience, SWIFT guidelines set out the advantage of using two network providers to connect to SWIFT.

In 2008, SWIFT also ran a business continuity exercise for its crisis co-ordination and communication group. This tested information flows and the decision-making process that would be needed if severe operational problems were to affect SWIFT. Participant feedback showed that the objectives of this exercise were met, but suggested that future exercises could be more challenging.

Information security

Overseers gain assurance that information security risks are managed appropriately by reviewing the annual Statement on Auditing Standards number 70 (SAS70) report commissioned by SWIFT. The 2007 SAS70 report showed no material concerns and that the issues outstanding from previous years were being addressed. Overseers also welcome the fact that SWIFT makes this report available to all its users.

Governance

SWIFT is a not-for-profit co-operative, owned and governed by its members. Overseers attach particular importance to SWIFT's relationships with its external auditors, users and non-executive Board of directors, seeking assurance that broader market and public interests are incorporated into SWIFT's decision-making and governance process.

2.6 Bacs

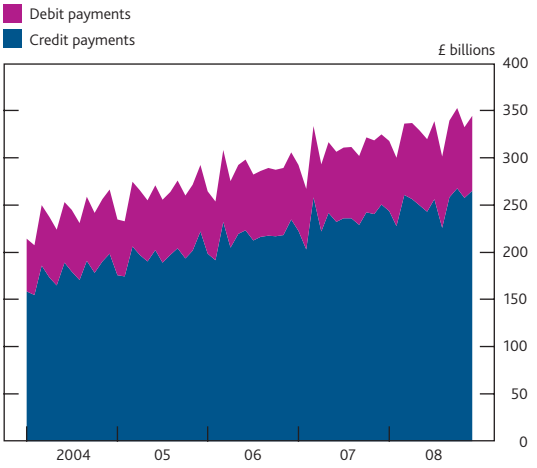
Bacs is the largest retail payment system in the United Kingdom. It is a deferred multilateral net settlement system, with a three-day clearing cycle, settling across accounts at the Bank. In 2008, it processed on average 22.2 million electronic payments a day, with an average total value of £15.5 billion a day. This represented growth in volumes of 1.6% compared with 2007, and growth in values of 6.0% (**Chart 13**).

There are currently thirteen members,(1) 732 Bacs Approved Bureaux(2) and 38 Affiliates.(3) The Bacs Payment Schemes Ltd (Bacs)(4) is responsible for the Bacs Direct Debit, Direct Credit and Standing Order products. The core processing of Bacs transactions is outsourced to a single third party, VocaLink Ltd.

The 2007 *Oversight Report* assessed Bacs as observing four Core Principles and broadly observing a further five. In relation to Core Principle VIII, on user practicality and economic efficiency, the Bank assessed Bacs to be partly observant.

(1) Coutts, NatWest and The Royal Bank of Scotland are part of The Royal Group and are counted as one member.
(2) A Bacs Approved Bureaux is an organisation that submits (or wishes to submit) financial transactions through Bacs on behalf of third parties.
(3) The Bacs Affiliate class was introduced in December 2005. Anyone can apply to become a Bacs Affiliate. Current membership includes: originators of high volumes of Direct Debits and/or Bacs Direct Credit payments; current account providers; providers of financial or telecommunications software; Bacs bureaux service providers; and trade bodies, among others.
(4) Formerly abbreviated 'BPSL', the scheme management company adopted the new abbreviation 'Bacs' during 2008.

Chart 13 Monthly values processed in Bacs by payment instrument



Sources: APACS and VocaLink Ltd calculations.

Overall, the assessment for Bacs in 2008 is a positive one; it has introduced a number of risk-mitigating measures discussed in previous *Oversight Reports*. The Bank has upgraded its assessment of Bacs against Core Principle IX on access criteria from broadly observed to observed. However, there is still further room for improvement against the Core Principles.

NewBacs programme

The final step in the technology renewal for the NewBacs[1] programme was the migration of members from the legacy High Speed Transmission channel to either VocaLink Ltd's IP-based channel, Enhanced Transmission Services, or the SWIFTNet Transmission Services. This was successfully completed in the first quarter of 2008.

Settlement risk (Core Principles III and V)

In the 2007 *Oversight Report*, the Bank assessed Bacs as broadly observing Core Principles III and V. Although progress has been made towards further risk-reducing functionality, this assessment has not changed.

The introduction of the Liquidity Funding and Collateralisation Agreement (LFCA) by Bacs and the Cheque and Credit Clearing Company (C&CCC) in 2005 significantly reduced settlement risk in the respective payment systems. However, since a member's obligations can still exceed the total liquidity committed under the LFCA, some residual settlement risk remains.

In the second half of 2008, Bacs began informally applying soft net debit caps to members' intraday positions. Further, along with VocaLink Ltd, it developed a new referral type to highlight very large payments. These new arrangements, while still informal, help to provide early warning of abnormally large net debit positions, capture any large payment files potentially submitted in error and stop any erroneous files proceeding to the settlement stage.

Functionality delivered as part of the NewBacs programme enables the wholesale removal of a defaulting member's payments from the system on the day of its default, allowing the remaining members to settle; this is known as 'regression'. System exclusion functionality is also available to remove payments from a specific point in time or from the start of the next processing day. Given that Bacs operates a three-day cycle, removing an affected member's payments on the day of default, and before those payments have become irrevocable, would reduce the probability that its settlement obligations would be larger than the aggregate liquidity committed under the LFCA. Bacs has made some progress on introducing regression over the past year, facilitating two member workshops and responding directly to members' concerns.

The formal implementation of the soft net debit caps and new referral type, and the implementation of regression in appropriate circumstances, should help reduce settlement risk in Bacs further and deliver greater observance of Core Principles III and V.

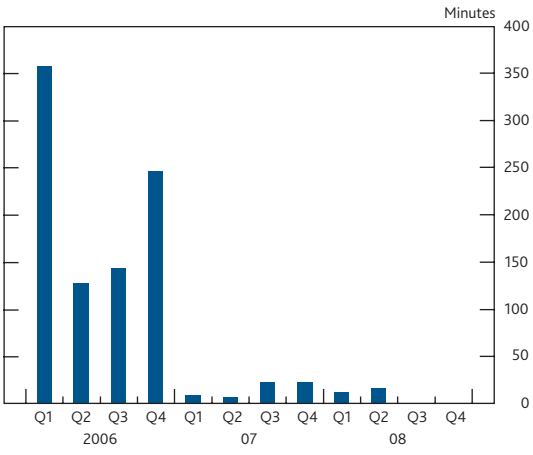
LFCA double default test

Against the backdrop of the ongoing market turbulence, the Bank also supports Bacs' ongoing assessment of the LFCA through the Settlement Risk Users Group. The Bank also considers it imperative that regular tests of the LFCA are carried out involving the members, looking specifically at complex scenarios such as two members defaulting. Tests originally scheduled for late 2008 have been postponed until 2009. The Bank strongly encourages Bacs to ensure these are carried out.

Operational risk (Core Principle VII)

In 2008, cumulative delays to settlement caused by members were marginally lower than in 2007 and significantly lower than in 2006 (**Chart 14**).

Chart 14 Cumulative settlement delays in Bacs



Source: Bank of England.

(1) Phase I of NewBacs went live in July 2006, delivering an updated processing platform. Phase II, the move onto modern architecture, was completed in December 2006.

While there have been some minor operational incidents, mainly at VocaLink Ltd, these did not cause any significant delays to settlement and were managed within the relevant Service Level Agreements (SLAs). However, on one occasion there was a delay to Bacs settlement due to SWIFT gateway problems at VocaLink Ltd, which also affected the Faster Payments Service (FPS), since both Bacs and FPS share part of this infrastructure. Further, there was an incident in September 2008 where some Bacs components were stolen from a BT exchange. This caused delays to Bacs processing and highlighted another single point of failure. The Bank is keen to ensure that schemes identify single points of failure, especially where more than one payment system could be affected.

In 2007, Bacs experienced a slowdown in Bacstel-IP which resulted in around 450,000 payments being applied late to customers' accounts.(1) Bacs and VocaLink Ltd undertook a Post Incident Review (PIR) and most of the recommendations it made have now been implemented. The Bank encourages Bacs and VocaLink Ltd to complete the remaining action, to undertake a series of disaster recovery tests.

During 2008, Bacs and VocaLink Ltd agreed a higher SLA for the availability of the Bacstel-IP channel.(2) Previously, Bacstel-IP was to be available 99.5% of the time, which was below similar SLAs for some other UK payment systems (which have SLAs of 99.95% or higher). While the new Bacs SLA — for Bacstel-IP to be available 99.7% of the time — is also below these levels, the Bank considers that it is broadly appropriate for Bacs given the relative risk profile of Bacs compared with other payment systems.

Overall, the Bank assesses Bacs to have broadly observed Core Principle VII. It will reconsider this assessment once all recommendations from the PIR have been implemented and changes have had time to bed down.

Business continuity planning (Core Principles V and VII)

During 2008, Bacs developed an extensive disaster recovery framework which involved investigating how quickly Bacs, VocaLink Ltd and members could process payments in order to catch up following a delay. The framework outlines communication plans and how settlement cycles would be run in particular scenarios. The Bank has asked Bacs to conduct a formal test of the framework in 2009.

Access and governance (Core Principles IX and X)

The previous *Oversight Report* assessed Bacs as broadly observing Core Principles IX and X. This year, the Bank has upgraded its assessment of Bacs against Core Principle IX, on access criteria, from broadly observed to observed.

For a number of years, Bacs and the C&CCC have been considering the implications for their schemes of a member with a deteriorating credit rating, or of a prospective member with a low credit rating. Both of these could bring heightened financial risk to multilateral net settlement. In 2008, Bacs formally introduced minimum credit ratings as objective, risk-based membership criteria.(3) This marks significant progress for the management of financial and operational risks in Bacs. It reduces these risks for existing members and improves the resilience of the system.

Impact of Faster Payments Service

The majority of standing order payments (currently processed by Bacs) are expected to migrate to FPS; Bacs estimates that approximately 9% of its total transaction volumes will migrate to FPS by 2010. This is because FPS alleviates float by settling three times a day.(4) In addition, given the shorter settlement timescale, settlement risk for standing orders processed by FPS will be lower than in Bacs.

The implementation of FPS has, however, increased system interdependencies since Bacs, FPS and LINK now share some of the central VocaLink Ltd infrastructure. CHAPSCo (the FPS scheme management company), Bacs and LINK will need to ensure that they understand fully the specific contingencies of any resultant system interdependencies, and take appropriate steps to mitigate the potential impact and spillover effects of a member-specific problem or a failure of VocaLink Ltd's central infrastructure.

2.7 Faster Payments Service

In May 2008, the Faster Payments Service (FPS) became the first new payment system to be introduced into the United Kingdom for some time.(5) It is an automated clearing system for electronic retail credit transactions, operating as a deferred multilateral net settlement system, and crediting and debiting customer accounts in near real time.

The FPS scheme is managed by CHAPSCo, which provides clearing services to FPS members and their customers. It has, in theory, a decentralised infrastructure: members purchase processing services from infrastructure providers approved by CHAPSCo. In practice, however, there is currently only one approved supplier, VocaLink Ltd.

FPS was introduced in response to concerns raised in the *Cruickshank Report* (2000)(6) and in the Office of Fair Trading

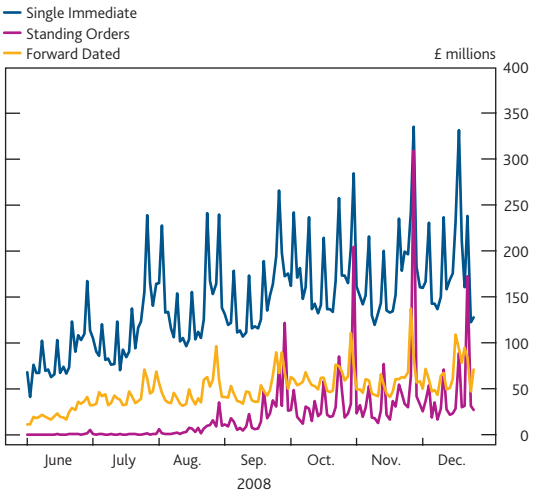
(1) A detailed description and discussion of this incident is contained in last year's *Oversight Report*, available at www.bankofengland.co.uk/publications/psor/.
(2) Bacstel-IP is a channel through which Bacs users submit payment files directly to Bacs.
(3) The minimum credit ratings have been specified as a minimum prime short-term rating (ie A-3 from S&P, P-3 from Moody's, F-3 from Fitch) and an investment-grade long-term rating (ie BBB- from S&P and Fitch, Baa3 from Moody's).
(4) Float is the balances that are left with the members during the settlement window.
(5) FPS currently has thirteen members: Abbey, Alliance & Leicester, Barclays, Citibank, Clydesdale Bank, Co-operative, Danske, HBOS, HSBC, Lloyds TSB, Nationwide, Northern Rock and Royal Bank of Scotland.
(6) Published in March 2000, available at www.hm-treasury.gov.uk/d/2YRCshank-251104.pdf.

Payment Systems Review (2003)[1] about the efficiency of retail payment provision in the United Kingdom. The primary concern was that most retail payments in the United Kingdom, using Bacs or the Cheque and Credit Clearings, settled only on a three-day basis. FPS, by contrast, is a near real-time system. For the customers of those member banks which currently offer the service, the central infrastructure, operated by VocaLink Ltd, transfers value between customers' accounts in near real time, 24 hours a day, seven days a week. Settlement between member banks takes place across accounts at the Bank three times a day.[2]

Implementation of FPS has been split into two phases. Phase I, which went live on 27 May 2008, allowed customers of participating members to send Single Immediate Payments (SIPs, one-off electronic and telephone payments), some Standing Order Payments (SOPs) and Forward Dated Payments (FDPs, one-off payments which are entered into the system in advance of the date at which they are due to be made). All members undertook a phased implementation of the FPS payment types, and are still increasing their volumes: only a small proportion of standing orders have been processed through FPS so far.

Since the implementation of Phase I, volumes and values have increased steadily. In December 2008, the average daily value of payments was approximately £300 million (**Chart 15**) and the average daily volume of payments was approximately 900,000 (**Chart 16**). Going forward, volumes are expected to continue to grow and will include payments which were previously sent through CHAPS and Bacs.

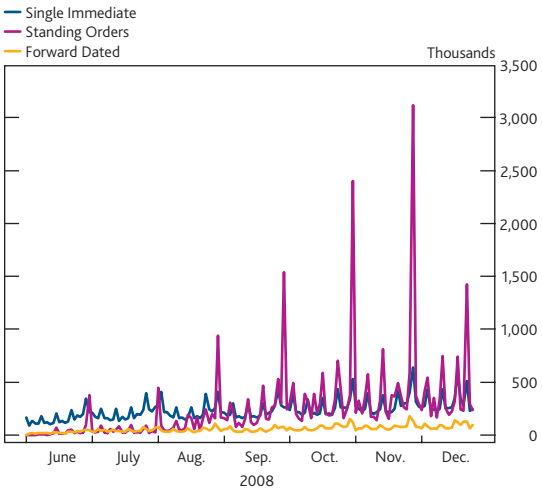
Chart 15 Disaggregated accepted daily values in FPS



Source: APACS.

Phase II, implemented in the first quarter of 2009, involves the introduction of Direct Corporate and Bureaux Access, Directly Connected Agency Banks and Third Party Beneficiaries in FPS. Payments Originating Overseas will be introduced into the system around the second or third quarter of 2009.[3]

Chart 16 Disaggregated accepted daily volumes in FPS



Source: APACS.

Performance against Core Principles

Since its launch in May 2008, the core infrastructure of FPS has performed well, but at levels of activity which are low relative to its design specification and longer-term expected volumes. This is partly because the launch and build-up of the system have been phased. It is also because member capabilities vary and their ability to offer a full range of services — even within the constraints of the phasing — is not developing as quickly as had originally been anticipated. The ability of FPS to handle full service and traffic levels therefore remains unproven. Against this background, the Bank's assessment of FPS against the Core Principles can only be preliminary.

Liquidity and settlement risk (Core Principles III, V and IX)

FPS is designed to improve the speed with which retail payments can be made and the Bank welcomes this improvement in efficiency in UK payment systems. However, the ability of customers to move money faster by remote electronic means could accelerate financial instability. For example, if customers lose confidence in an institution with which they have deposits, there is, in theory, the potential for large exposures to build up rapidly in the system before settlement has taken place.

FPS has several features which are designed to mitigate these settlement risks. First, maximum transaction values have been set by the scheme at £10,000 for SIPs and FDPs and £100,000 for SOPs, with individual members maintaining the authority to set lower limits. If a customer

(1) Published in May 2003, available at www.oft.gov.uk/news/press/2003/pn_66-03.
(2) Settlement times are 07:15, 13:00 and 15:45. However, settlement does not take place on weekends, hence the first settlement on Monday is usually the largest of the week.
(3) A sterling payment initiated by a sender which is outside the United Kingdom.

attempts to make a payment that exceeds any of the respective limits, the payment is blocked by the member.(1)

Second, Net Sender Caps (NSCs) apply to each member of FPS. These are designed to limit the amount of settlement risk members can bring to the system by limiting the maximum net debit position members can accrue.

Finally, the Liquidity and Loss Sharing Agreement (LLSA) is designed to compensate members for any irrecoverable exposures to a defaulting member. The members commit collectively to provide liquidity to the value of the highest NSC in the system; commitments are in proportion to their individual NSCs. These contributions will be in the form of collateral deposited with the Bank. While the LLSA significantly reduces settlement risk, it has not eliminated it completely because the settlement risk position of a defaulting member could still exceed the amount of liquidity committed by other members.

Operational risk (Core Principle VII)

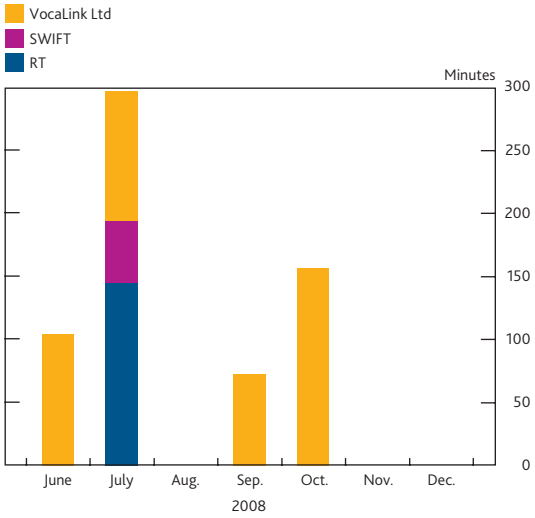
FPS has been generally resilient since going live, with some notable exceptions. The main operational incident occurred on 20 and 21 August 2008, when several members started to have problems accessing the central infrastructure due to a problem with a security certificate authentication server maintained by BT. The initial fix exacerbated the problem, which was resolved on 21 August 2008. The LINK system experienced similar problems, as it shares the secure communications network with FPS. VocaLink Ltd has implemented a detailed Service Improvement Plan with BT, including a more resilient security mechanism.

The Bank has concerns about the system interdependencies that this incident has revealed. If these are unavoidable, it is even more critical that adequate resilience is built in and that effective contingency arrangements are made.

On a number of occasions, the notification of the settlement positions from the FPS central infrastructure to the Bank has been received late because VocaLink Ltd has had problems sending the relevant SWIFT message. In these circumstances, a manual workaround has been deployed, causing only minor delays. While this has not affected the system directly, it is important that FPS settlement is carried out in a timely fashion (**Chart 17**).

FPS is a continuously live service, which is a major operational change for most members. Members themselves require some system downtime in order to carry out internal upgrades or 'housekeeping' tasks but, at the same time, must meet customer obligations without breaching their agreements. The FPS core infrastructure also has to be maintained while the system is running live. The Bank recognises that it will take some time for FPS and its members to adjust to the continuously operating nature of the system. It will, however, look for continual improvement and proof of sustainability of the members' Service Level Agreements under the FPS Procedures.

Chart 17 Cumulative delays for the three daily settlement cycles in FPS



Source: Bank of England.

Finally, the introduction of Phase II in 2009 will mean that upgrades and enhancements will be made to the system while it is in live running. As Phase II becomes established, the Bank will closely monitor operational risk in FPS.

Business continuity planning

FPS has designed contingency procedures for use during operational disruptions. These were used in the incident on 20 and 21 August 2008. In addition, an exercise was organised in the run-up to FPS going live which tested the ability of the scheme managers and the members to cope with operational problems.

At present, FPS and its members are using resources for the introduction of Phase II and so are less able to carry out tests. However, a schedule of proposed tests has been devised and agreed with the members, and FPS will draw up a timetable for the tests for 2009 and onwards. FPS is potentially a very important part of the payments landscape in the United Kingdom and, now that Phase II is implemented, the Bank expects to see a regime of testing put into place.

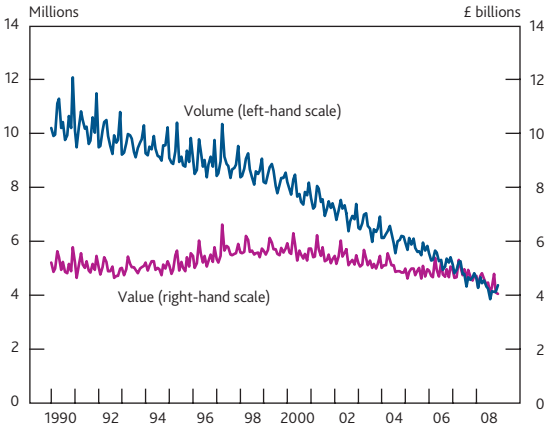
2.8 The Cheque and Credit Clearings

The Cheque and Credit Clearings (C&CC) enable instructions given in cheques and paper credits to be processed, exchanged and settled between banks. The C&CC are managed by the

(1) It is expected that, once the system is shown to be resilient, member transaction value limits will be raised.

Cheque and Credit Clearing Company (C&CCC). During 2008, an average of 4.3 million payments were processed each day in the C&CC, with a total daily value of £4.5 billion. The number of payments processed in the C&CC has been falling steadily for many years. The aggregate value of payments has also declined in recent years, but at a slower rate (**Chart 18**). This decline in usage of cheques has led to the proposal in the Payments Council's National Payments Plan to manage the decline in cheques proactively, once suitable substitutes are in place and are being used.(1)

Chart 18 Average daily volume and value of payments processed in the C&CC(a)



Sources: APACS and Bank calculations.

(a) Volumes and values include items drawn on other banks only.

In the 2007 *Oversight Report*, the Bank assessed the C&CC to observe three of the Core Principles, broadly observe a further six and partly observe Core Principle I. In this *Oversight Report*, the Bank has upgraded its assessment of the C&CC so that it now observes Core Principles I and IX. The other assessments are unchanged, although progress has been made to strengthen observance of a number of Core Principles.

Legal risk (Core Principle I) and settlement risk (Core Principle IV)

In September 2008, the Cheque Clearing System and the Credit Clearing System were designated under the Financial Markets and Insolvency (Settlement Finality) Regulations 1999 (FMIRs), which implement the EU Settlement Finality Directive (SFD) in the United Kingdom.(2) Consequently, the Bank now assesses Core Principle I as observed. Observance of Core Principle IV has also been strengthened. Designation under the SFD provides additional assurance of the enforceability of the system's default arrangements: specifically, it provides that a system's rules shall take precedence over the general provisions of insolvency law. Once entered into a designated payment system, payments continue to be subject to the rules of that system even when the participant that has made them becomes insolvent.

In making its decision on designation, the Bank's Designation Committee suggested that greater legal certainty would be provided by the C&CCC formalising the arrangements for calculating settlement obligations in the event of multiple defaults. They also suggested that the C&CCC further consider the processing arrangements for payments past the point of irrevocability in the event of a member insolvency.

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

The introduction of the LFCA in 2005 significantly reduced settlement risk in the C&CC (and Bacs). However, it is still possible for an insolvent member's obligations to the system to exceed the total liquidity committed by other members under the LFCA. Consequently, the Bank has been encouraging the C&CCC, Bacs and their members to consider how residual settlement risk should be allocated and to formalise arrangements. For the C&CC, this would strengthen observance of Core Principles II, III, IV and V.

In 2008, the euro debit Settlement Agreement was amended, introducing an automatic 24-hour delay to exclusion of a member for a failure to fund in the euro clearing. Such a situation now triggers a non-settlement day in euro. This change aims to avoid a situation where operational difficulties preventing a member from funding its position in the euro clearing causes that member to be excluded from all of the clearings. It is a sensible amendment, although it remains important for members to continue to aim for high levels of operational reliability. Non payment in the sterling clearings or failure to pay in the euro clearings on two consecutive days would still constitute an exclusion event.

The C&CCC is planning to move to a more automated, SWIFT-based settlement process in 2009. Reducing the probability of human error in the settlement process will strengthen observance of Core Principle IV.

Access and settlement risk (Core Principles III and IX)

As discussed in Section 2.6, Bacs and the C&CCC have introduced a minimum credit rating criteria into their membership requirements in 2008, as well as detailed procedures for removing a participant from the system whose credit rating drops below the specified minimum.(3) The introduction of objective and transparent risk-based membership criteria means the Bank now assesses Core Principle IX to be observed. Observance of Core Principle III has also strengthened for the same reason.

(1) The National Payments Plan can be found at www.paymentscouncil.org.uk/national_payments_plan.
(2) Designation was not sought for the Euro Debit Clearings, given the relatively small volume and value of payments processed, exchanged and settled in this clearing.
(3) The minimum credit ratings have been specified as a minimum prime short-term rating (ie A-3 from S&P, P-3 from Moody's, F-3 from Fitch) and an investment-grade long-term rating (ie BBB- from S&P and Fitch, Baa3 from Moody's).

Operational risk (Core Principle VII) and governance (Core Principle X)

The key infrastructures used by the C&CC have continued to exhibit generally high levels of operational robustness in 2008. Availability of the Interbank Data Exchange network, for example, was above 99.9% in all months. However, operational performance by members against Service Level Codes (SLCs) deteriorated in Summer 2008 (**Chart 19**). For two members, this was due to problems encountered while making significant changes to their processing infrastructure. In addition, iPSL underreported some SLCs for five of the members who outsource their processing to it.(1) Although underlying performance had not changed, the true performance against the SLCs was weaker than had been previously reported. The true performance was reported from July 2008, and meant that four members failed to meet at least one SLC. Performance improved again towards the end of 2008, and iPSL appears to have responded quickly and appropriately following the discovery of this underreporting. The SLCs are an important operational performance measure for the C&CC, so it is important that the data are reliable. SLC reporting has now been reviewed by an external auditor, and more systematic checking is being considered. It is important that the C&CC continues to work with members to ensure operational performance on this measure returns to the high levels reported in 2007.

Chart 19 Operational performance against Service Level Codes(a)

Sources: C&CCC and Bank calculations.

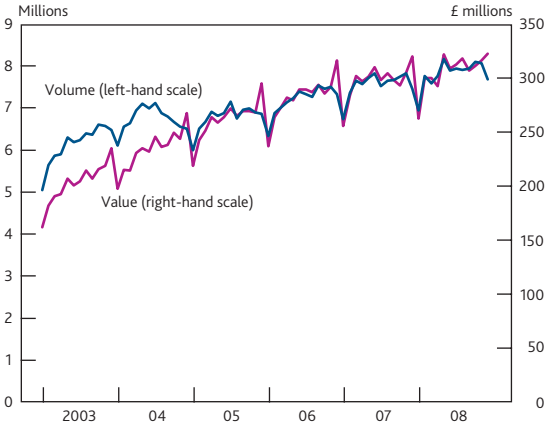
(a) There are eleven SLCs which have specific target levels. Performance is graded from one to five, with one meaning that the member has achieved the target levels for all of the SLCs and five meaning that the member is below the targets for four or more SLCs.

Underreporting of SLCs by iPSL has highlighted the complexities of a highly decentralised system like the C&CC, where members are individually responsible for processing their paper. Most members have chosen to outsource this function to third-party processors. Observance of Core Principles VII and X would be strengthened if there was a clearly defined direct relationship between the C&CCC and third-party processors. In the absence of this, the C&CCC should ensure it receives adequate assurances in respect of the risks posed by multiple member/supplier relationships, and assurance from third-party suppliers of their compliance with the system's requirements. In 2008, the C&CCC continued to try to improve communication with third-party suppliers, and the Bank would like to see this continue.

2.9 LINK

LINK is the United Kingdom's automated teller machine (ATM) network, that enables its members' customers to withdraw cash from almost all of the United Kingdom's ATMs, irrespective of the bank at which they hold their account. LINK ATM Scheme processing is outsourced to VocaLink Ltd. In 2008, LINK ATM Scheme transactions averaged 7.8 million a day (mainly cash withdrawals and balance enquiries), with a total average value of around £300 million a day (**Chart 20**).

Chart 20 Average daily volume and value of payments processed in LINK(a)



Source: LINK.

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

In the 2007 *Oversight Report*, the Bank assessed the LINK ATM Scheme to observe or broadly observe the Core Principles. This assessment has not changed, although progress has been made to strengthen LINK's observance of Core Principles III and IV in particular.

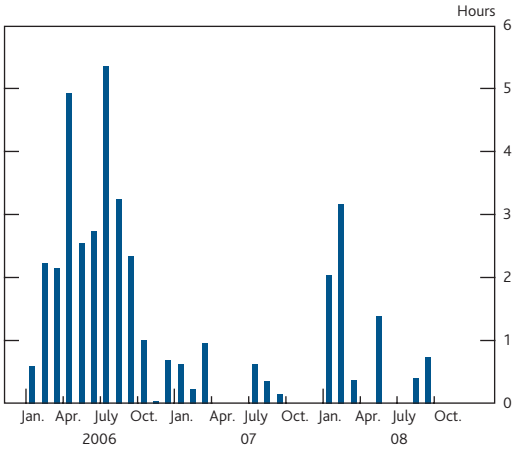
Settlement risk (Core Principles III and IV)

The frequency and duration of delays to settlement increased slightly in 2008 (**Chart 21**). However, performance remains considerably better than in 2006, primarily due to the Funds Transfer Sharing (FTS) group's improved performance continuing in 2008, and most card-issuing members having completed their migration to settlement in RTGS.

Previous *Oversight Reports* have noted that a significant proportion of settlement delays have been caused by the FTS

(1) iPSL is a third party to which a number of members outsource their C&CC processing.

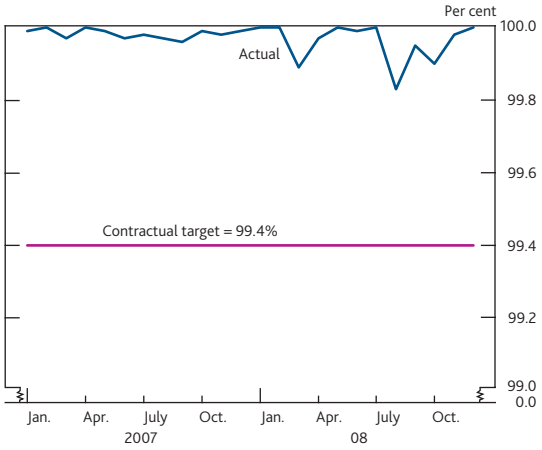
Chart 21 Settlement delays in LINK[a][b]



Source: Bank of England.

(a) LINK daily settlement should take place by 11:30.
(b) Excludes 19 July 2006 and 12 February 2007 data where delays were caused by RTGS.

Chart 22 Operational performance in LINK[a]



Source: LINK.

(a) Shows average availability to the central switch for all LINK members.

group, who settled among themselves before settling in LINK as a group. However, FTS members decided to disband and, since January 2009, individual FTS members have settled in LINK directly. This should help to reduce delays to settlement, further strengthening observance of Core Principle IV.

In 2008, LINK continued to encourage card-issuing members using Bank of England customer accounts for settlement to migrate to Bank of England reserve accounts in RTGS. This reduces the likelihood of a delay to settlement as a result of insufficient balances on accounts, strengthening observance of Core Principle IV. Card-issuing members who were previously part of the FTS group will need to settle through reserve accounts in RTGS for this strengthening of observance of Core Principle IV to be maintained.

In 2008, VocaLink Ltd introduced a new settlement system capable of monitoring participants' settlement positions intraday. The LINK ATM Scheme is using this to provide early warning of any unusual build-up of debit positions. This increased monitoring of debit positions and hence settlement risk has strengthened observance of Core Principle III. While there are already certain provisions in the rules, the Bank has encouraged LINK to consider more formally with its members what actions the LINK ATM Scheme could take in the event of a member acquiring a particularly large debit position. This could further strengthen observance of this Core Principle.

Operational risk (Core Principle VII)

Operational performance in LINK has declined slightly in 2008 (**Chart 22**). Particularly notable were two outages affecting the communications network. BT is primarily responsible for this network, outsourced to it by VocaLink Ltd. The causes of the incidents have been identified and fully addressed. The interruption to operations in 2008 has not been sufficient to reduce observance of Core Principle VII.

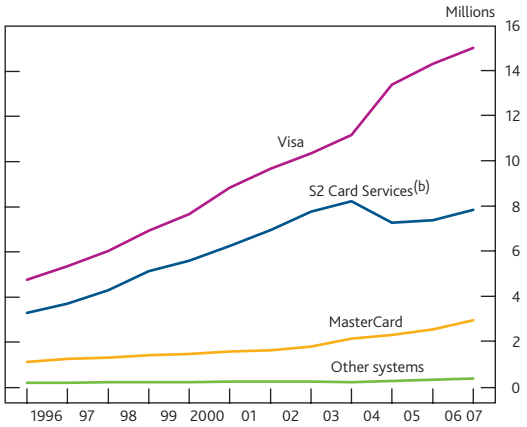
The Bank has been encouraged that the LINK ATM Scheme is discussing with VocaLink Ltd the possibility of making the SLAs more wide-ranging and robust. Tighter operational controls would help to maintain full observance of Core Principle VII.

2.10 Debit and credit cards

The main debit and credit card systems in the United Kingdom are operated by Visa Europe and MasterCard Europe (MCE). In 2007, these systems processed an average of 25.7 million electronic payments a day, worth around £1.43 billion a day (**Charts 23** and **24**).

The Bank has not assessed the Visa credit, Visa debit or MasterCard credit schemes against the Core Principles, but continues to liaise with both Visa Europe and MCE over their

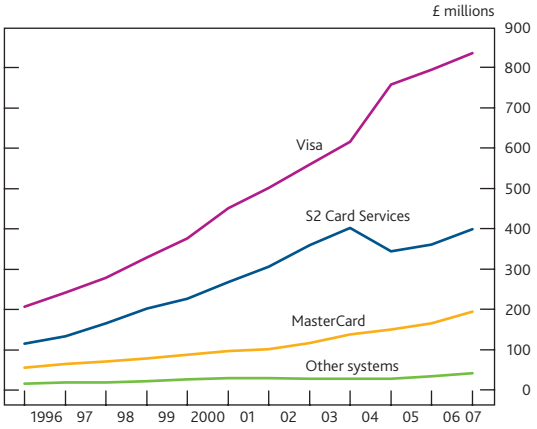
Chart 23 Average daily volume of payments through the debit and credit card systems[a]



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, MasterCard Europe has been responsible for the authorisation, clearing and processing of S2 Card Services' transactions. S2 Card Services owns the Switch and Solo debit card brands. In 2004, the Switch scheme was rebranded to MasterCard's Maestro debit brand.

Chart 24 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.

sterling settlement arrangements, operational performance and business continuity planning.

Management of the MasterCard credit and Visa credit and debit schemes is conducted on an international basis, and the Bank discusses with other central banks how they can best co-operate to oversee these schemes. In particular, the Bank involves the ECB in the oversight of Visa Europe since, although located in London, Visa Europe is a significant operator in the euro-area credit card market. Additionally, the Bank continues to participate in the ECB Oversight Framework for Card Payment Schemes.[1]

UK Maestro

UK Maestro is Mastercard's debit card brand in the United Kingdom. In the 2007 *Oversight Report*, the Bank assessed the UK Maestro debit card scheme to observe three of the Core Principles, and to broadly observe a further five. The level of compliance did not change in 2008.

The main area where improvement would be desirable continues to be the definition of the point of final settlement. In the absence of a clearly defined point of final settlement, there is a risk that some UK Maestro payments, as well as the system's default arrangements, could be subject to a legal challenge in the event of a participant default. The point after which the key financial risk has transferred from a MCE guarantee to a deposit at the settlement agent may not be legally robust. This weakness means the scheme only partly observes Core Principle I.

During 2008, multilateral net settlement migrated from accounts held at HSBC to Deutsche Bank. This entails greater risk than settling across accounts held at a central bank, however, the Bank sees little benefit from a risk-reduction perspective in UK Maestro seeking to strengthen observance of Core Principle VI, which is currently broadly observed.

(1) The ECB has outlined the principles and standards of this Framework in the document available at www.ecb.int/press/pr/date/2008/html/pr080111.en.html.

Chapter 3: Issues and priorities for future work

This chapter presents a more thematic approach to UK payment systems issues and outlines the areas which are expected to form the basis of oversight work in the year ahead, and which will be reviewed in the 2009 *Oversight Report*.

3.1 Infrastructure resilience and member responses to market turbulence

UK payment, clearing and settlement systems have coped well with the challenges presented by recent market turbulence. A sustained period of significant asset price fluctuations and liquidity pressures on many banks, combined with a major international banking crisis (including the default or rescue of several large financial institutions), has placed unprecedented demands on UK payment and settlement systems and has emphasised the financial system's dependence on their continued smooth operation.

Indeed, without the major improvements to the design of payment and settlement systems that have been implemented over the past fifteen years, some markets might have ceased to function completely in the face of counterparty credit concerns. CHAPS was introduced in the mid-1980s as an end-of-day net settlement system, but by the early 1990s its member banks had identified that their intraday exposures to each other were surprisingly large and difficult to monitor or control. It was reported at that time that if one of the large banks in the system had failed, payment system losses alone could have wiped out the entire capital base of several other CHAPS banks.(1) Such fears, if combined with the type of credit concerns experienced recently, might have paralysed the high-value payment systems. And the inability to rely on payments received, until end-of-day settlement had been completed, might have made banks even more reluctant to lend to each other.

RTGS was introduced for CHAPS in 1996. The chief benefit was that CHAPS member banks gained certainty about the payments received and could therefore make payments to other members, or credit customer accounts, without any risk that funds would not arrive. Shortly after RTGS was inaugurated, the then Governor of the Bank articulated two further ways in which risks in the payment and settlement environment could be mitigated: Delivery versus Payment (DvP) for securities settlement, and Payment versus Payment (PvP) to eliminate settlement risk in foreign exchange transactions.(2) Both of these improvements have been delivered — via CREST DvP and CLS Bank International respectively — in each case, largely eliminating principal risks between settlement banks in those markets. This has meant that during the period of market turbulence, there was no evidence of settlement risk concerns generating significant disruption, even before government support for certain banks was announced.

Nevertheless, as mentioned later in this section, significant exposures can still exist between direct members of these systems and the customers for whom they settle. Some gaps also still remain: for instance, interbank settlement risks still exist in CREST settlement against US dollars; not all foreign exchange transactions are eligible for settlement in CLS; and a significant proportion of high-value payments are made within the books of single settlement banks rather than passing through CHAPS.

The pressures experienced during the crisis have so far shown the infrastructure to be resilient. Although there has been a higher-than-normal incidence of extensions to normal operating hours in wholesale systems, these are an in-built safety valve and have provided valuable flexibility to deal with higher volumes and consequent operational difficulties. There have been no serious delays to payment or settlement, or major service outages, and defaults have on the whole been dealt with effectively under systems' existing procedures.

But there are still lessons to be learned from the behaviour of the payment systems under stressed circumstances. In particular, there are indications of behavioural changes in response to these events which may require careful attention in the longer term. Provided that there is willingness to fund and implement improvements, at both system and member bank levels, the increased awareness of risks which these events have fostered should result in enhanced resilience for the future.

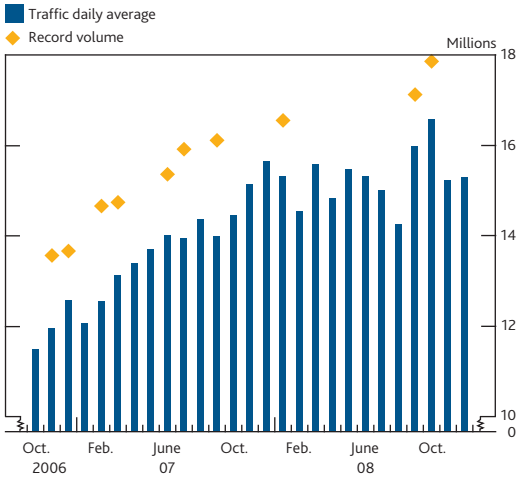
Heightened activity and liquidity pressures

Higher trading volumes in many markets have led to new records for message volumes and transactions throughout payment and settlement systems (**Charts 25** and **26**). On

(1) Quinn, B (1993), 'The UK approach to controlling risk in large-value payment systems', *Bank of England Quarterly Bulletin*, November, pages 530–34.
(2) George, E (1996), 'Risk reduction in payment and settlement systems', *Bank of England Quarterly Bulletin*, November, pages 481–86, available at www.bankofengland.co.uk/publications/quarterlybulletin/1996.htm.

separate occasions during September and October 2008, CLS broke its previous record daily volume by over 35%; CREST saw a 33% increase in the highest value settled before September 2008; and SWIFT saw new record volume days on four occasions. The values passing through LCH.Clearnet Ltd's PPS systems have been roughly double 2007 levels, due to the combination of higher trading volumes and larger margin calls.

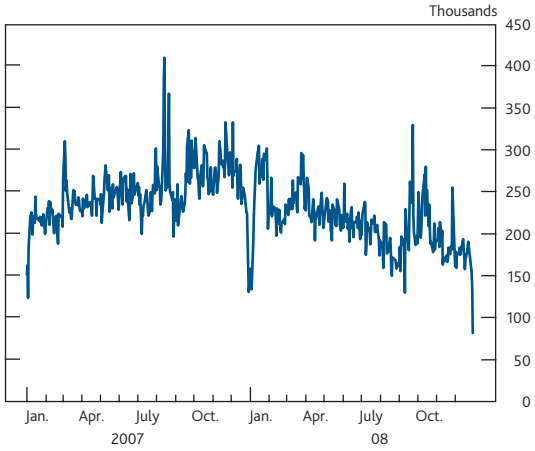
Chart 25 Daily average traffic and record volumes in SWIFT(a)



Source: SWIFT.

(a) There were two new SWIFT peak volumes in both September and October 2008, only the highest is displayed for each month.

Chart 26 Daily sterling DvP volumes in CREST(a)

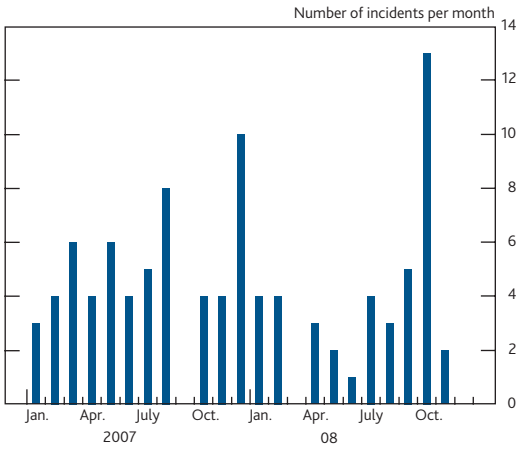


Source: Euroclear UK & Ireland Ltd.

(a) Sterling DvP transactions excluding self-collateralising repos.

While operational capacity was a factor in some incidents during 2008, its impact was minor. There has, however, been increased incidence of missed deadlines by members and requests to extend system opening hours (**Chart 27**). For example, CHAPS sets guidelines for the proportion of payments that should be made by certain times. During the exceptional market stresses in early October 2008, the proportion of CHAPS payments made before midday fell significantly below the required level (**Chart 3** in Section 2.1). But this shortfall did not persist and throughput quickly recovered to normal levels.

Chart 27 CHAPS extensions



Source: CHAPSCo.

It is possible that this temporary fall in CHAPS throughput was due to rationing of liquidity by members and caution over taking non-essential intraday counterparty credit risk. It is likely, for example, that members monitor receipts from other members before releasing large payments themselves. Under stressed circumstances, this could result in payments being made later in the day than usual, leading to banks' systems being unable to complete payments by system deadlines and necessitating extensions.

CLS settled 100% of trades successfully this year, and although the number of late pay-ins was significantly higher than normal in the six weeks from mid-September 2008, it was still small compared with total pay-ins. This too may be indicative of liquidity pressures on members and nostros.

Handling bank distress and default

Heightened awareness of counterparty risk can amplify the effects of a member operational issue, as this may be misinterpreted as, or even trigger, concern about creditworthiness. It is therefore notable that, although several large financial institutions have suffered significant and widely reported distress, payment systems have continued to provide a robust service. On no occasion have operational issues at payment systems materially aggravated members' distress.

The major event of actual default was Lehman Brothers International (Europe) (Lehman Brothers) being placed in administration in the United Kingdom on 15 September 2008. Overall, the incident was dealt with effectively by systems' existing procedures, demonstrating that the UK payment and settlement infrastructure is able to efficiently handle the

default of a major counterparty. However, some areas for improvement have come to light.

When Lehman Brothers defaulted, over 90% of the transactions it had pending settlement in CREST were subject to default and close-out procedures under the rules of the relevant exchange or central counterparty (CCP).(1) However, other transactions due to be settled in CREST had been agreed in the over-the-counter markets without such procedures, and there was some uncertainty among market participants about how these transactions interacted with CREST default arrangements (see Section 2.2). After consultation with the FSA, administrators and relevant counterparties, EUI directed that these trades be deleted from CREST and resolved bilaterally between the counterparties.

Issues were also identified in relation to settlement in CLS after Bear Stearns' collapse and Lehman Brothers Holdings Inc.'s filing for Chapter 11 bankruptcy protection. These related to uncertainty about the status of transactions awaiting approval by the designated settlement member and the time taken to rescind instructions unilaterally (see Section 2.4). There was also uncertainty among a few market participants as to the role of CLS. Some thought that the system provided a guarantee of settlement (like a CCP clearing arrangement), whereas it in fact eliminates principal risk by ensuring that either both legs of a transaction settle with finality, or neither leg settles.

LCH.Clearnet Ltd successfully closed out or transferred Lehman Brothers' positions using available margin, and the embedded payment system performed well during and after the default. However, LCH.Clearnet Ltd had some difficulties in establishing communication with the administrators and in obtaining accurate client position data during the immediate aftermath of the Lehman Brothers' bankruptcy. The Bank and the FSA are currently working with clearing houses and insolvency practitioners to develop a protocol which would set out agreed procedures between the signatories to facilitate improved communication in an insolvency.

These events highlighted the importance of market participants having a clear understanding of the application of systems' default arrangements to all types of transaction and exposures that they are involved in, including an understanding of the relevant legal protections, such as Part VII of the Companies Act 1989 and the UK Financial Market and Insolvency (Settlement) Finality Regulations 1999.(2) The Bank and the FSA are working together to ensure improved understanding of these issues by market participants.

The ability of market infrastructure to reduce risks for market participants has also been demonstrated. For example, the reduction in principal risk provided by CLS was important in maintaining liquidity in foreign exchange markets under stressed conditions.

Issues for the future

The record activity seen over the past year highlights the importance of comprehensive planning for and investment in operational capacity for spikes in activity and for handling payment flows in stressed circumstances. It is important that systems plan for and test their capacity against ambitious targets, and invest accordingly.

Another potential source of disruption is system members' own back office capacity. Limitations in members' processing capacity, systems and gateways can cause delays at system level. Increasingly, contingency arrangements that rely on manual processes may also be less able to cope. For example, rapid growth in the foreign exchange market since the introduction of CLS means that many members might not be able to rely on conventional correspondent banking channels to settle all the trades that currently go through CLS.

It is important that customers and settlement banks are able to identify the most critical payments so that they can be given priority if there is limited capacity in a contingency situation. An example is in CHAPS where, in the event of network problems, settlement banks can send faxed payment instructions to the Bank. However, the number of payments that can be made in this way is considerably lower than in normal running, so prioritisation is important.

In situations of market stress, problems in one infrastructure are also more easily transmitted into interlinked systems: they may effect individual members' liquidity positions, with consequent market spillovers. For example, there are significant sterling intraday liquidity dependencies between CHAPS, CREST and CLS such that delays in one system can cause disruption to, and delay the closing of, other systems. In addition, disruption to CLS settlement can have knock-on effects on liquidity in other currencies' local large-value payment systems, or mean that those systems have to extend their opening hours. Although the CHAPS incident on 7 July 2008 did necessitate extensions in two other currencies' payment systems, as discussed in Section 2.1, there was no incidence of such problems during the period of market turbulence.

Recent events have also prompted direct members of payment systems to pay closer attention to the risks generated by their

(1) CCPs, of which LCH.Clearnet Ltd is the largest in the United Kingdom, in effect guarantee trades. A trade that is agreed between two market participants is 'novated' to become two trades, one for each participant between it and the CCP. This means that only the CCP is exposed to replacement cost risk on those trades, and it takes margin to insure itself against this risk.

(2) Part VII of the Companies Act 1989 and the Financial Markets and Insolvency (Settlement Finality) Regulations 1999 modify general insolvency law to provide certain protections that mitigate systemic risk for central counterparty clearing arrangements and transfer orders in payment and settlement systems respectively.

participation, the settlement risks associated with participation in the foreign exchange market and those resulting from correspondent banking activity.

One indication of the latter is that the counterparty credit limits set by participants in the CLS Inside/Outside (I/O) swap system (a liquidity-saving mechanism) saw some alterations during the height of the market stresses in October 2008, suggesting that participants were consciously reflecting on the settlement risk generated by the 'outside' leg of these swaps.(1) But changes to these limits represent a trade-off between credit and liquidity risks: if the I/O swap market were to close completely, the liquidity required to meet CLS pay-ins would increase roughly fourfold. These considerations strengthen the case for settling 'outside' legs within CLS (as discussed in Section 2.4).

A more fundamental issue is tiering, and the intraday exposures which it creates between settlement and agency banks. Most UK payment systems have a tiered structure. A re-evaluation of the risks and costs involved in membership of payment systems in the light of recent market turbulence may prompt significant changes to the current model.

For smaller institutions and some overseas banks, it is typically seen as more cost-effective to become an indirect member or 'agency' bank, with one of the settlement banks acting as a sponsor. But this is a cost-risk balance, and recent market events have affected perceptions of the risks involved. Faced with increased liquidity costs and more stringent regulatory requirements,(2) it is possible that some settlement banks will seek to impose higher charges or tighter limits on agency banks, or withdraw from the provision of such services altogether. Recent bank failures have also emphasised the rare but potentially large risk to settlement banks' own balance sheets resulting from (often uncollateralised) credit exposures to their agency banks. The cost of liquidity and charges for provision of settlement services can be an issue for both parties. Agency banks may consider becoming direct settlement banks themselves;(3) but where that is not practicable, they have the option of changing settlement bank, or opening arrangements with multiple settlement banks. The latter provides redundancy for both technical service provision and liquidity availability, and so could be an important enhancement of their own resilience.

These factors could lead to significant changes in market structure, both in the types of membership offered by system providers and the distribution of members within these. The Bank will continue to monitor and assess risks arising from any such developments, working closely with the FSA, which has direct supervisory relationships with the member banks involved.

3.2 Co-operation with the Payments Council

The Payments Council (PC) was formed in March 2007 to be a strategic governance body for the UK payments industry. The PC's objective relating to the integrity of payment systems focuses mostly on issues that are pertinent to more than one scheme or those that would affect the overall reputation of the UK payments industry. It covers a wide range of risks, above all settlement and operational risks. Its role is pre-emptive in researching potential future integrity issues, as well as reflective in reviewing and mitigating existing issues.

The Bank attaches particular importance to the PC's integrity role, which complements its own responsibilities for payment system oversight and financial stability. The Bank considers that the profile of integrity issues in the PC's work should be raised.

Progress on integrity in 2008

A Scheme Co-ordination Committee (SCC) was established in October 2008 to take forward work on the PC's integrity responsibilities. In particular, it is envisaged that this will provide a forum to discuss common problems, and identify and resolve cross-system integrity issues.

One action highlighted in the PC's National Payments Plan was for a survey of the contingency arrangements for each of the main payment systems to be undertaken during 2008.(4) The objective was to identify cross-system risks and assess the scope for practical contingency measures in the event of an outage of one of the systems. The SCC is in the lead on this action, which has been delayed to 2009. The Bank considers this work to be an important step towards strengthening the resilience (including, for example, the business continuity arrangements) of the United Kingdom's payment systems. It urges the PC to give due priority to the survey so that further slippage is avoided and any follow-up actions identified can then be addressed promptly. Other business continuity initiatives are discussed in Box 1.

Contingency arrangements and re-routing of payments

It is the Bank's view that effective, pre-planned co-ordination between systems, orchestrated by the PC, could significantly reduce the impact of a major outage which a system's own arrangements are not fully able to mitigate.

(1) The 'out' leg of I/O swaps are currently settled via conventional correspondent banking, and hence expose participants to principal risk.
(2) The FSA is currently consulting on the inclusion of payment system members' intraday liquidity usage in their liquidity requirements; this may also impact settlement banks' analysis of the benefits of providing the service.
(3) As mentioned in Section 2.1, two more banks plan to join CHAPS as direct members in 2009.
(4) The National Payments Plan was published in May 2008. It is available at www.paymentscouncil.org.uk/files/National%20Payments%20Plan%20May%202008.pdf.

Box 1 Business continuity

Regular testing of infrastructure helps to ensure that the likelihood of operational risk events is low and to familiarise systems and their users with the likely impact should the event occur. Good business continuity planning is even more important in the current market conditions, where resources are strained, markets are more volatile, and where an operational disruption could easily be confused with a solvency problem at an individual institution.

Resilience Benchmarking Project

The first Resilience Benchmarking Project was undertaken in 2005. Its objectives were to establish: the resilience of the UK financial system to a major operational disruption; how quickly it could recover; and the areas in which resilience could be improved. The follow-up 2008 Resilience Benchmarking Project aimed to assess the progress made since 2005. In total, 58 firms, including payment and settlement system infrastructure providers, completed the online questionnaire.

A discussion paper on the 2008 Project was published in June 2008.(1) The findings indicate that resilience in the UK financial sector to major operational disruptions has improved since 2005. Participating payment and settlement system infrastructures performed strongly against industry benchmarks. However, scope remains for further improvements. In particular, as outlined in the discussion paper, 'It is important that firms do not lose sight of the threat of major operational disruption (terrorism and pandemic continue to be assessed as significant risks to the United Kingdom) and that senior management continue to give strong support to the work of their business continuity teams. This is not simply a question of providing adequate financial resources; it also means promoting a corporate culture and policies that support business continuity and crisis management objectives'.

Market-wide exercises

Work continues following the 2006 pandemic influenza exercise and a progress report was published in June 2008.(2) The tripartite authorities planned for a further UK Market-wide exercise, based on a new scenario, to take place in November 2008. In light of global market conditions at that time, and feedback from the industry, the exercise was postponed and has been rescheduled for November 2009.

Sectoral and international co-ordination

In 2008, the Cross Market Business Continuity Group (CMBCG) progressed its workstream on co-ordinated contingency planning and crisis co-ordination between the London Stock Exchange, LCH.Clearnet Ltd, NYSE Liffe and Euroclear UK & Ireland Ltd.

SWIFT also ran a business continuity exercise for its crisis co-ordination and communication group in 2008. This tested information flows and the decision-making process that would be needed if severe operational problems were to affect SWIFT. Participant feedback showed that the objectives of this exercise were met, but suggested that future exercises could be made more challenging.

Many major international large and complex financial institutions (LCFIs) and banks operate in the United Kingdom. Some major UK LCFIs and banks also have significant operations outside the United Kingdom, and some foreign banks have significant retail operations within it. The tripartite authorities need to be ready to deal with an operational disruption affecting one or more of these firms and the impact this would have on financial infrastructures. These actions must be co-ordinated with relevant foreign authorities as necessary.

Next steps

It is important that systems and their members continue to take part in business continuity testing of infrastructures to ensure their resilience to operational disruption and to mitigate the impact of such an event. During 2009, the Bank will be placing particular emphasis on the adequacy of payment systems' contingency arrangements and the tests that they and their members undertake to prove these arrangements, and to maintain awareness of and familiarity with them.

(1) www.fsc.gov.uk/section_file.asp?objectid=0&object=linkfile&docid=2188.
(2) www.fsc.gov.uk/section_file.asp?objectid=0&object=linkfile&docid=2194.

An example of such a solution would be re-routing of payments to an alternative system. There are, however, a number of challenges to doing so on a scale sufficient to mitigate the disruptive impact of a prolonged unavailability of one or more systems. More work is needed to establish what could be achieved and to what timescale. Exploring the scope for promoting convergence of messaging standards appears to be one possible route to such interoperability. It is important that any progress on this is joined up with the SCC's work on integrity.

A useful way of exploring the risks and options might be for the PC, together with member banks and schemes, to conduct a desktop exercise, exploring how banks would deal with a major outage of a system spanning a number of days. The PC might also plan and co-ordinate a series of cross-scheme tests of contingency arrangements.

3.3 Market structure of clearing

Through its payment systems oversight role, the Bank oversees systemically important payment systems embedded within clearing houses. To date, this has involved overseeing the embedded payment arrangements within LCH.Clearnet Ltd, the United Kingdom's main central counterparty (CCP) clearing house. However, the market structure of clearing is changing, in particular as a result of the entry of additional providers of clearing infrastructure. These new CCPs may become systemically important, and could therefore fall within the ambit of the Bank's oversight role.

Prior to 2008, there were three CCPs providing clearing services for UK markets: LCH.Clearnet Ltd, SIX x-clear AG and the European Multilateral Clearing Facility NV (EMCF). LCH.Clearnet Ltd is the United Kingdom's oldest CCP and has been in operation, under differing guises, since it was established in 1888 to clear commodities markets in London. It now clears for a broad range of markets including equities traded on the London Stock Exchange (LSE), commodities traded on the London Metal Exchange (LME), exchange-traded derivatives on NYSE Liffe, and bonds, repos and interest rate swaps in over-the-counter markets.

In the United Kingdom, SIX x-clear AG and EMCF currently limit their clearing services to equity markets. SIX x-clear AG has been active in the United Kingdom since May 2003, providing clearing to the pan-European trading platform SWX Europe Ltd (formerly virt-x). It also began co-clearing the LSE alongside LCH.Clearnet Ltd in December 2008. Such interoperable relationships are facilitated by the Code of Conduct for Clearing and Settlement. EMCF is a relatively new CCP, set up in March 2007, and provides clearing services for some of the newly emerged Multilateral Trading Facilities (MTFs) including Chi-X Europe Ltd, BATS Trading Europe and Nasdaq OMX Europe. These new MTFs were established as a result of the Markets in Financial Instruments Directive (MiFID) European regulation which is helping to facilitate more competition in European equity markets.

A further two CCPs began clearing for UK domiciled exchanges in 2008: European Central Counterparty Ltd (EuroCCP) and ICE Clear Europe Ltd. EuroCCP has taken advantage of the competition in equity trading, facilitated by MiFID, to provide clearing for the new MTF Turquoise, which began operating in August 2008. ICE Clear Europe Ltd clears energy derivative contracts on the ICE Futures and over-the-counter markets. It became active in November 2008, assuming the clearing function for these markets previously provided by LCH.Clearnet Ltd.

With the entry of new CCPs to the market, the risk that any one CCP acts as a single point of failure — where the failure of a CCP would lead to the failure of an exchange or a market — may be reduced. This could lead to a dilution in the systemic importance of any one CCP as substitute CCPs become available. However, it is unclear to what extent, in practice, participants could easily substitute between CCPs.

While the presence of several CCPs may reduce the single point of failure risk, there is a potential concern that the risk of contagion — where problems arising at one CCP could be transmitted to other parts of the financial system, including to other CCPs — could increase. Where CCPs have interoperable relationships to co-clear similar markets, there is a possibility that problems at one CCP could spread to another CCP to which it connects. The interrelationships that may develop between CCPs could create more channels for contagion risk between CCPs.

At the same time, with more CCPs in one market, there is scope for increased competition. While in some senses desirable, this could lead to unwanted competition in risk management. As a member of the Joint Regulatory Authorities for the LCH.Clearnet Group, the Bank has been participating in work to consider the potential implications for risk management and resilience of interoperability between CCPs. The Bank has also contributed to the drafting of the European System of Central Banks/Committee of European Securities Regulators recommendations for Securities Settlement Systems and CCPs (see Section 3.4 below) which are designed to reflect recent market developments.

In addition to its oversight function, the Bank is also interested in developments taking place within the clearing landscape more generally, as part of its wider financial stability role. The entry of new CCPs may change the profile of risks faced by CCPs, with new market structures potentially giving rise to a different set of risks for financial stability. The Bank will be undertaking work on this in 2009.

3.4 International standards and policy

International standards

Since the Committee on Payment and Settlement Systems (CPSS) published its Core Principles for Systemically Important Payment Systems in 2001, they have been widely adopted by central banks around the world. Together with the *Recommendations for Securities Settlement Systems*,(1) they form the set of standards used by the joint International Monetary Fund (IMF) and World Bank Financial Sector Assessment Program (FSAP) to assess member countries' payment and settlement systems.

In 2006, 59 countries assessed their systemically important payment systems against the Core Principles. Some central banks publish these assessments or require systems to publish self-assessments. The Bank considers that publishing its assessments against the Core Principles is beneficial, allowing straightforward comparison of the compliance of each of its overseen systems against an international benchmark.

The changing environment under which payment, settlement and clearing systems are operating and the identification of new best practices — for example, in relation to business continuity planning — may create scope for revisiting or expanding the existing CPSS and CPSS-IOSCO standards in due course. The Bank will co-operate in any such work which is relevant to its own responsibilities.

In a separate initiative, the European Union's Economic and Financial Affairs Council (ECOFIN) recognised a need for revised standards for clearing and settlement to be agreed and implemented by the European System of Central Banks (ESCB) and the Committee of European Securities Regulators (CESR). The original aim of this work was to tailor the content of the existing CPSS-IOSCO recommendations to European markets; this was later expanded to include the application of the recommendations to the clearing of over-the-counter derivatives. The result of the work will be a set of ESCB/CESR recommendations addressed to public authorities.

Other international initiatives

In addition to the publication of the final version of the CPSS report on foreign exchange settlement risk (see Section 2.4), the Bank for International Settlements published a report on the interdependencies of payment and settlement systems.(2)

The report identifies that interdependencies can arise because of direct links between systems, common membership of systems; or use of a common service provider by multiple systems. It concludes that interdependencies have important implications for the safety and efficiency of the global payment and settlement infrastructure. While linkages can reduce risks in payment and settlement, they can also increase the potential for disruptions to propagate across multiple systems.

In its oversight work, the Bank already monitors interdependencies arising from the use of common service providers. For example, it has sought reassurances in relation to the incident described in Section 2.7, where a failure at a service provider affected both LINK and the Faster Payments Service. The Bank also pays close attention to interdependencies arising from direct links between payment systems and will continue to analyse these risks in 2009.

(1) Recommendations published by the CPSS and International Organization of Securities Commissions (IOSCO) in 2001 (see www.bis.org/publ/cpss46.htm).
(2) *The interdependencies of payment and settlement systems*, June 2008, available at www.bis.org/publ/cpss84.htm.

Glossary of terms

Business risk
The risk that the payment system or any of its components — for example, 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 Core Principles for Systemically Important Payment Systems, published by the BIS's CPSS, 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) fails to meet its financial obligations.

Financial Markets and Insolvency (Settlement Finality) Regulations 1999
These Regulations — (SI 1999/2979) (FMIRs) — implement the EU Settlement Finality Directive into UK law.

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 managing 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 and possible losses.

Liquidity risk
The risk that a participant in a payment system has insufficient funds to settle an obligation for full value when due.

Nostro
A correspondent bank through which an institution settles foreign currency transactions.

Operational risk
The risk that a system operator or core infrastructure provider to the system is operationally unable to process or settle payments as intended.

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.

RTGS
Real-time gross settlement (RTGS) is the continuous (real-time) settlement of funds or securities transfers on an order-by-order basis (without netting).

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 those obligations — such as the settlement agent — becomes insolvent.

Abbreviations

AAL – APACS Administration Ltd
APACS – Association for Payment Clearing Services
ATM – Automated teller machine
BIS – Bank for International Settlements
BMC – Business Management Committee
BT – British Telecommunications plc
CBFSAI – Central Bank and Financial Services Authority of Ireland
C&CC – Cheque and Credit Clearings
C&CCC – 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 Accounts
CMBCG – Cross Market Business Continuity Group
CPSS – Committee on Payment and Settlement Systems
CRESTCo – CREST Company Ltd
CWG – Cheque Working Group
DA – Distributed Architecture
DBV – Delivery by Value
DvP – Delivery versus Payment
EMCF – European Multilateral Clearing Facility
ESA – Euroclear SA/NV
ESCB – European System of Central Banks
EUI – Euroclear UK & Ireland Ltd
FDP – Forward-Dated Payment
FMIR – Financial Markets and Insolvency Regulations
FPS – Faster Payments Service
FTS – Funds Transfer Sharing
HLE – High-Level Expectation
IBDE – Interbank Data Exchange
IMF – International Monetary Fund
IOSCO – International Organization of Securities Commissions
I/O swap – Inside/Outside swap
IP – Internet Protocol
LCFI – Large and Complex Financial Institution
LFCA – Liquidity Funding and Collateralisation Agreement
LLSA – Liquidity and Loss Share Agreement
LME – London Metal Exchange
LSE – London Stock Exchange
MCE – MasterCard Europe
MiFID – Markets in Financial Instruments Directive
MoU – Memorandum/memoranda of Understanding
MTF – Multilateral Trading Facility
NMC – Network Members Council
NPP – National Payments Plan
NSC – Net Sender Cap
NSCC – Non-Standard CREST Closure
OFT – Office of Fair Trading
OTC – Over-the-counter
PC – Payments Council
PGC – Payment Guarantee Charge
PIN – Personal identification number
PIR – Post-Incident Review
PPS – Protected Payments System
PSTF – Payments Systems task Force
RTGS – Real-time gross settlement
SAS70 – Statement on Auditing Standards number 70
SBLS – Settlement Bank Liquidity Scheme
SCC – Scheme Co-ordination Committee
SCR – Self-Collateralising Repo
SFD – Settlement Finality Directive
SIP – Single Immediate Payment
SLA – Service Level Agreement
SLC – Service Level Code
SOP – Standing Order Payment
SSE – Single Settlement Engine
SWIFT – Society for Worldwide Interbank Financial Telecommunication
TARGET – Trans-European Automated Real-Time Gross Settlement Express Transfer
USM – Unsolicited Message

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