BANK OF ENGLAND

Speech

New Markets and New Demands: Challenges for Central Banks in the Wholesale Market Infrastructure

Speech given by

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1. Introduction

1 Central banks sit at the heart of the monetary economy providing the ultimate settlement asset and typically operating the large-value payment systems that underpin financial activity. The modern central bank's twin objectives of monetary and financial stability emerged from their early role in settling claims between banks.

2 But this traditional payments function is subject to the same forces for change that are transforming the rest of the economy. In particular, developments in technology, the financial innovation they allow, and the globalisation of finance are reshaping the landscape, exposing new sources of risk and posing fresh challenges for regulators and central banks.

3 As markets become more interconnected and international, national authorities have to work more closely together, cooperating in their oversight and operational activities and coordinating their risk assessments. As new products and players emerge in the commercial sector, they may also need to adapt the scope of their oversight and regulatory response.

4 I would like to take some time this afternoon to explore some of these issues, many of which will resurface over the course of this two-day conference.

2. Early demands: the historical context

5 First some history. How did central banks come to assume their 'central' role in the financial infrastructure?

6 Internationally, Venice claims a key role in the story, but I will start later with the activities of goldsmiths in 17th century London. Starting from their custody business, goldsmiths began to settle transactions between merchants, across their books or via the transfer of deposit receipts – the early bank notes. Merchants were thereby

able to settle obligations with one another without having to carry, count out and value coins: a welcome development, considering that a £100 sterling bag of silver coins – a commonly used value for notes – weighed over 30 pounds (14kg for those in the audience baffled by imperial measures)!

7 Over time, so as to accommodate transfers between customers of different 'banks', the banks started accepting claims on each other and, once they found ways to settle these claims, established the first British interbank payment systems.

8 So what were these early settlement mechanisms? At first, banks started settling interbank claims using gold and silver coins. But these were in short supply and, again, costly to transport and exchange.

9 Banks thus eventually innovated by switching to settlement in assets convertible into gold and silver. For example, by the 1770s, London bankers had begun to settle in notes issued by the Bank of England, a highly-regarded, but at that time, private bank.

10 A low-risk settlement asset was particularly important in the unregulated world of the goldsmiths, in which credit risk was acute and liquidity shocks – like the one we have experienced of late − were common and dangerous. In a sorry letter to an associate[1], one goldsmith wrote to another in the 1660s: "*I have beene by many accidents much postpon'd…ye money due to mee is soe farre off that I can not make it useful to mee. All Credit in London is much Shortened of late*."

11 Showing all the optimism which continues to characterise bankers today, he added: *" I am attempting a way to enlarge my owne (credit) and doubt not to effect it to his Maties.[Majesties] advantage as well as my owne, if I am (like ye lame dogg) but helpt over this style."*

[1] Quoted in Quinn (1997), "Goldsmith-Banking: Mutual Acceptance and Interbanker Clearing in Restoration London", Explorations in Economic History 34, pp411-432

12 Further efficiency gains were then obtained by settling interbank obligations over the accounts of a single institution. This innovation was sometimes put in place by the public authorities; in other cases it developed naturally, such as when the London bankers adopted Bank of England deposits as the ultimate settlement asset in 1854.

3. Payments and monetary and financial stability

13 To ensure that its liabilities continue to be perceived of higher quality than those of any other issuer, the institution at the apex of the payment system – typically the central bank – has an incentive to exercise close control over the terms on which they are made available to the banking system.

14 That translates into the traditional monetary stability objective: preservation of the role of the ultimate settlement asset as a store of value and unit of account. It also gives the central bank a strong interest in the stability of the financial system. And within that a reliable and resilient infrastructure for distributing the ultimate settlement asset is a key condition of stability (and of implementing monetary policy effectively).

15 In an advanced monetary economy, of course, bank deposits constitute by far the largest component of 'money'; in the UK they make up some 96% of the broad monetary aggregate, M4. Agents rely on interbank payment systems to facilitate the direct transfer of deposits between banks and thereby also preserve their role as a medium of exchange. And as the sophistication of securities and other markets has grown, the core payment systems have become intertwined with the settlement and clearing systems for the key markets. Together they have become a critical part of the infrastructure not just for the financial system but for the economy more widely. And in the wake of 9/11, all central banks have been giving more attention to the physical and financial resilience of these systems. For example, in our regular *Financial Stability*

Report, the Bank of England has included the risk of infrastructure disruption in the list of the top six vulnerabilities facing the financial system over the last two years.

16 As Alan Greenspan notes in his memoirs: "We'd always thought that if you wanted to cripple the US economy, you'd take out the payment systems. Banks would be forced to fall back on inefficient physical transfers of money. Businesses would resort to barter and IOUs; the level of economic activity across the country could drop like a rock."

17 In a paper to be presented at this conference tomorrow, Andrea Gerali and Franco Passacantando consider this in the context of the Great Depression. As confidence in the banking system evaporated, bank deposits ceased to function as a medium of exchange. 'Scrip', or substitute money, emerged, typically taking the form of vouchers or coupon books. Such monies had otherwise only been commonly used in isolated lumber or coal-mining communities in the United States – communities lacking banks or financial intermediaries. But while adequate for the purchase of provisions at the local general store, such forms of money were clearly an imperfect medium of exchange and created otherwise unintended credit exposures between agents.

18 The recent market turbulence offers a further reminder of the importance of resilient infrastructure for conditions in financial markets. When markets are fragile, any interruption to normal service could have particularly serious implications: further clouding judgements as to individual participants' solvency; undermining agents' risk management; or affecting asset prices in dependent markets. With volumes and values in several markets having hit record levels during the market turmoil and remaining high for a sustained period, infrastructure providers have experienced a severe stress test and, by and large, have passed with flying colours. CLS, for instance, processed nearly

860,000 transactions (more than $8trn in value) on 19th September, 2½ times the daily average in June.

4. Current trends in the wholesale market infrastructure: new markets and new demands.

19 Today, central banks around the world still typically provide the ultimate settlement asset and sometimes operate, and also own, key components of the payment and settlement infrastructure. For key elements of the infrastructure central banks have assumed an oversight role. Depending on the particular regulatory architecture in place, this is sometimes shared with the financial regulator, as in the UK.

20 But this is a dynamic environment: the landscape is broadening and deepening, with niche market-specific facilities, cross-border systems, new entrants and commercial bank providers becoming more important. New sources of risk are emerging, presenting new challenges for central banks in their pursuit of monetary and financial stability.

Financial innovation and technological advancement

21 The way technology is transforming markets and therefore payment systems is illustrated in the rapid growth in OTC derivatives markets; and the increased penetration of electronic trading platforms – and automated trading strategies – across a range of markets.

22 According to data released by the Bank for International Settlements, notional amounts outstanding in global OTC derivatives markets rose by almost 40% in 2006 – up more than 260% over the past five years. The outstanding value of the credit segment of the market doubled in value in 2006 alone and trading activity has remained high through 2007, especially during the recent market turmoil.

23 These markets have traditionally been cleared and settled via bilateral arrangements between the counterparties to the trade, but new automated infrastructure services have emerged, partly in response to an international regulatory initiative led by the Federal Reserve Bank of New York (FRBNY). Major dealers now confirm almost 90% of credit derivatives trades electronically, as against less than 50% two years ago.

24 An important recent addition to the landscape is DTCC Deriv/SERV's Trade Information Warehouse, which maintains a so-called 'golden copy' of each credit derivatives trade. With appropriate interoperability between systems, these data can support a range of ancillary services: calculating and settling payment obligations, managing collateral, terminating trades and reconciling portfolios. The Warehouse is likely ultimately to be rolled out for other products.

25 The declining cost of technology has also been a key driver of the rise of electronic trading in recent years. Almost 60% of trade in foreign exchange is now executed electronically and close to 50% in repo.

26 Automated and algorithmic trading strategies are becoming more widespread across asset classes. The London Stock Exchange (LSE) reports that the proportion of the order flow on the exchange that is automated has risen from negligible amounts just four or five years ago to approaching half today. This not only has implications for the scale of trading activity – volumes have tripled on the LSE's SETS system over the past five years – but also the design and location of the trading infrastructure. For many algorithmic trading strategies, processing speed is critical. The faster systems can process trades in just one or two milliseconds: a tiny fraction of the blink of an eye. But ultimately speed and thus the ability to gain a competitive advantage depends on proximity to the platform; hence, the old geographical pull of markets has begun to re-

emerge with exchanges selling space near their trading platforms to those who want to be first in the queue.

27 Many new entrants to the trading arena are therefore competing with incumbent exchanges on the basis of processing speed. These new platforms are also looking for lower cost post-trade solutions. As such, those emerging in Europe have looked beyond incumbent providers: new entrants and commercial bank providers of clearing and settlement services have featured strongly in their plans. Such providers not only aim to meet demands in terms of flexibility and cost, but also to offer sufficient breadth to deliver a multicurrency clearing and settlement service.

Globalisation, regulatory change and the market structure of infrastructure

28 This is part of a general reshaping of the infrastructural landscape in a global market place. Market participants are becoming increasingly international, operating in multiple markets and facing obligations in multiple currencies. Latest international banking data from the Bank for International Settlements revealed growth in excess of 20% in reporting banks' total cross-border claims in the year to end-Q1 2007, taking the total to $28.5trn.

29 Banks, therefore, seek infrastructural solutions that will accommodate the international organisation of their businesses. So, while, historically, financial infrastructure has typically evolved along national lines, cross-border alliances and mergers are now more common, both in trading and post-trade: e.g., NYSE Euronext; LCH.Clearnet; Euroclear Group. And alliances in the form of cross-border clearing and settlement links are also widespread, enabling, for instance, securities traded in Italy to be settled and held in an account in the securities settlement system in Germany.

30 Commercial bank providers – namely, correspondent banks and global custodians – may be best placed to meet the demand for multicurrency settlement,

leveraging their extensive international connections. This could then reinforce their important position in the infrastructural landscape. Indeed, the major global custodians each posted growth in assets held in custody in excess of 20% in just the past year.

31 And differences between the regulatory regimes for incumbent providers of infrastructure and those for either commercial bank providers or smaller new entrants could tilt the playing field. For example, CLS is subject to close central bank scrutiny, operates as a narrow bank, and has to meet exacting – and costly – resilience standards. New clearing arrangements and bilateral netting schemes are now penetrating the foreign exchange markets, threatening the volumes passing through CLS. In messaging, too, SWIFT – which submits voluntarily to central bank oversight – is beginning to face competition in certain markets from new entrants not subject to oversight. Authorities must be alert to the challenges these competitive developments provide.

32 Other regulatory initiatives are contributing to a reshaping of the landscape. MiFID, in the EU, and RegNMS, in the US, have sought to encourage increased competition in trading; and the Code of Conduct, recently signed in the European Union, establishes terms under which infrastructures operating in one member state can clear and settle (initially equity) trades in another. More than 20 applications have now been made under the terms of the Code.

33 Whether trading, clearing and settlement infrastructure markets can support a wide range of providers in the long-term remains an open question. There is generally a tendency towards concentration in infrastructure provision because of increasing returns to scale in a fixed cost business and often powerful network effects. This applies equally in the case of commercial bank provision of infrastructure: ECB survey evidence reveals that the ten largest correspondent banks in euro account for around

80% of correspondent banking payment values; and the top-4 global custodians now account for three-quarters of total assets in custody. Indeed, regulators have been giving increasing attention to the potential systemic spillovers from operational or business failures at major commercial bank providers of infrastructural services. That has led, for example, to the initiative in the US to implement 'New Bank', a dormant shell company to take over the functions should one of the two major clearers in the US Treasury market cease operations.

34 It may be that a competitive environment can be sustained, particularly as the cost of technology falls, lowering barriers to entry, and liquidity bridges and other forms of interoperability are established between systems. But, the jury is still out. Recent evidence on the trading side, particularly in the US, is mixed: some trading platforms, such as Archipelago and INET, have been swallowed up by the incumbent exchanges; others, such as BATS Trading are thriving, keeping the pressure on the exchanges to cut costs and upgrade their services.

35 I suspect what we are seeing is a redefinition of the market on an international scale. In the process, national incumbents are being challenged by a combination of ambitious foreign incumbents eager to exploit economies of scale and nimble, unencumbered new entrants sometimes specialising in niche products. A process that is likely to lead in time to greater consolidation at international level is currently manifesting itself in terms of fragmentation at the national level as local incumbents are challenged.

36 The end-game may well be lower transaction costs at both the trade and post-trade level and more concentrated (if not monopoly) cross-border infrastructure in each. But it may take some time to reach a new equilibrium. Central banks and regulators

need not only to prepare for and perhaps help shape the end-game, but also address challenges arising during the transition.

5. Issues and challenges for central banks and regulators going forward

37 Two key challenges, in particular, will need to be met:

(i) Preserve enough influence to protect the collective interest while maintaining a level regulatory playing field

38 The resilience and efficiency of the core infrastructure is an important public good and, given the tendency to monopoly, the authorities need to ensure that they maintain sufficient influence to ensure resilience in this increasingly complex landscape. That requires consistent and objective criteria to be applied to new as well as established systems. Such criteria might include: *size* – the volume and value of flows; *type of flow* – the extent to which interdependencies are generated with other systems or underlying financial markets; and *substitutability* – the potential for rerouting flows to other systems.

39 A changing market structure may also alter the nature of risks posed by the systems themselves. For instance, to the extent that we are entering a phase of competing provision of services at the national level, issues might arise around the potential fragmentation of system liquidity. Equally, we are also seeing pressures for greater consolidation of systems at an international level, where the challenges of lowering single point of failure risks remain at the top of the agenda.

40 Where new services are offered by commercial bank providers, central banks need to cooperate closely with banking supervisors to ensure that potential sources of financial stability risk in their infrastructure roles are embedded within regulatory assessments. Indeed, to the extent that new services are multicurrency in nature an international dialogue may be necessary. I am pleased that the Basel Committees on

Banking Supervision (BCBS) and Payment and Settlement Systems (CPSS) have agreed to strengthen communication between the committees, for example by holding joint meetings of sub-groups, which will help to support this dialogue

41 As recent events have underlined, regulation and public intervention can not only change market incentives for the better but can also have unintended side effects. For instance, the creation of the off-balance sheet vehicles at the centre of the recent market turbulence may be seen in part as a response to the crude regime for capital charges established under the original Basel Accord, under which liquidity facilities under a year in maturity were exempt. That is being remedied under Basel II. But it is a reminder that we need to be very careful to watch for these distortions in the regulation and oversight of payment systems and other infrastructures, so as to ensure that we do not inadvertently alter incentives in a way that may hamper the future development of the landscape.

42 This issue arises for example in the context of the establishment of ESCB-CESR standards for securities settlement systems. The Bank of England supports the principle of risk-based functional regulation, which implies that regulatory standards should be applied to a function – such as settlement – regardless of the status of the institution providing that function. We hope that further moves towards implementation will adhere to this principle, thereby establishing a level regulatory playing field at least between CSDs and ICSDs, but ideally also between traditional infrastructures and commercial banks offering infrastructural services.

43 Finally, with a wider spectrum of participants, issues arise around the way in which members interface with infrastructures. It is important to ensure that individual member behaviour cannot threaten the smooth-functioning of the system. Some incidents during the recent market turbulence revealed issues around members'

processing capacity, underlining the value in member-level testing to ensure that participants can always support the delivery of the network benefits from the smooth operation of the infrastructure.

(ii) Ensure effective international cooperation in oversight and operations, and coordination in risk assessment activities

44 The second main challenge is to allow market participants to reap the benefits of globalisation, while ensuring that the risks are adequately controlled. An extended and highly connected network can simultaneously be both robust and fragile: *robust*, because risks may be more effectively shared and dispersed across the system; *fragile* in that major risks can flow more rapidly through the system.

45 Naturally, market participants have been pushing hard for the removal of obstacles to efficient cross-border settlement and barriers to the seamless cross-currency management of liquidity. Central banks have been urged to consider accepting foreign collateral or implementing other arrangements to facilitate cross-currency liquidity management. Some already do so – the Bank of England, for instance, routinely accepts euro-denominated collateral in its operations – and a recent report from the CPSS encouraged other central banks to consider accepting foreign collateral, at least in emergency circumstances. The Eurosystem has recently begun to explore new options.

46 Provision of cross-border collateral arrangements may entail a high degree of coordination and cooperation between central banks internationally, for instance in opening custody and correspondent accounts, and sharing information on local infrastructures and market practices.

47 More generally, strong international cooperation in the sphere of risk assessment and crisis management responses is also clearly important. With increased links between infrastructure providers in different centres and the emergence of new cross-

border infrastructures, greater cooperation is also required in the conduct of oversight: not only in terms of assessment of particular overseen cross-border infrastructures against international standards, but also in identifying potential interdependencies between national infrastructures. While existing cooperative arrangements work well, the model needs to expand and continue to evolve.

6. Concluding remarks

48 The resilience of the infrastructure of wholesale payment, clearing and settlement systems to both operational and financial shocks remains a key requirement of financial and monetary stability. But the landscape is changing fast in response to technological change and the financial innovation and globalisation it allows. Cross border and global networks are squeezing our national monopolies and commercial banks are playing an increasing role. These changes present several challenges for central banks and regulators:

- We need to establish and apply consistent criteria for the scope of oversight, in order to maintain a level regulatory playing field;
- We need to take full account of new interdependencies between systems when assessing financial stability risks at a national and international level;
- We need to work more closely together in risk assessment and oversight and ensure that cross-border operational arrangements are robust ;
- We need to ensure that financial stability risks posed by financial firms operating key infrastructure functions are adequately captured in their regulation.

49 Meeting these challenges will deliver a robust, resilient financial infrastructure, which the global financial system and the global economy depend upon.