

Competition and collaboration in UK payment systems

TEN-14095 Payment Systems Regulator

Final Report



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Glossary

Terminology and abbreviations

ACH Automated Clearing House

AML Anti-Money Laundering

ATM Automated Teller Machine

BPSL BACS Payment Schemes Limited

BBCC - The Belfast Bankers' Clearing Company Ltd

C&CCC - Cheque & Credit Clearing Company Limited

CCP - Central Counterparty - A central counterparty is an entity that interposes itself between the original counterparties of a trade, thereby acting as a seller to the buyer and a buyer to the seller. The legal process of such contract substitution is called trade novation.

Central bank credit (liquidity) facility: A credit facility which can be drawn upon by certain designated account holders (e.g. banks) at a central bank. A standing facility can be used automatically at the initiative of the account holder. Other facilities may be provided on an emergency basis or attached to conditions. The loans typically take the form of either advances or overdrafts on an account holder's current account which may be secured by a pledge of securities or by repurchase agreements.

CHAPS Co - CHAPS Clearing Company Limited

Cheque imaging: the electronic transmission, by an institution authorized to draw a cheque, of an image and payment information of the cheque, to the payee institution on whom it is drawn.

Cheque truncation: a cheque which is truncated during the course of a clearing cycle, either by the clearing house or by the bank whether paying or receiving payment, immediately on generation of an electronic image for transmission, substituting the further physical movement of the cheque in writing.

CHIPS - Clearing House Interbank Payments System

Clearing - clearing is the process of transmitting, reconciling and, in some cases, confirming payment instructions prior to settlement, potentially including the netting of instructions and the establishment of final positions for settlement. The clearing house, in some industries as a central counterparty, may capture, match and confirm payment instructions, as well as calculating obligations relating to fund transfer instructions prior to settlement.

Collateral: Assets pledged (e.g. by credit institutions with central banks) as a guarantee for the repayment of loans, as well as assets sold (e.g. to central banks by credit institutions) as part of repurchase agreements.

Correspondent banking: An arrangement whereby one credit institution provides payment and other services to another credit institution. Payments through correspondents are often executed through reciprocal accounts (nostro and vostro accounts), to which standing credit lines may be attached. Correspondent banking services are primarily provided across national borders, but are also provided in some domestic contexts, where they are known as agency relationships. A vostro account is the term used

by a correspondent to describe an account held on behalf of another credit institution; the other credit institution would in turn regard this account as its nostro account.

Credit risk/exposure: The risk that a counterparty will not settle an obligation in full, either when due or at any time thereafter. Credit risk includes the replacement cost risk and the principal risk. It also includes the risk of settlement bank failure.

Credit transfer system: A funds transfer system through which payment orders move from (the bank of) the originator of the transfer message or payer to (the bank of) the receiver of the message or beneficiary.

Credit transfer: A payment order or, sometimes, a sequence of payment orders made for the purpose of placing funds at the disposal of the beneficiary. Both the payment instructions and the funds described therein move from the bank of the payer/originator to the bank of the beneficiary, possibly via several other banks as intermediaries and/or more than one credit transfer system.

Direct debit: A pre-authorised debit on the payer's bank account initiated by the payee.

DNS Deferred Net Settlement

EAPS Euro Alliance for Payment Schemes

EBA European Banking Association

EBA CLEARING is a bank-owned infrastructure solutions provider for the European payment industry.

ECB European Central Bank

Electronic money (e-money): electronically, including magnetically, stored monetary value as represented by a claim on the issuer, which is issued on receipt of funds for the purpose of making payment transactions and which is accepted as a means of payment by persons other than the issuer.

EPC European Payments Council

EURO1 EU-wide payment system of the European Banking Association

FPSL - Faster Payments Scheme Limited;

Financial risk: A term covering a range of risks incurred in financial transactions, e.g. liquidity and credit risks.

Gross settlement system: A transfer system in which the settlement of funds or securities occurs individually (on an instruction-by-instruction basis).

Hybrid system: A payment system which combines characteristics of RTGS (real time gross settlement) systems and netting systems.

Interbank payment: In the UK, this refers to payments made through the Bacs, C&CC, CHAPS, FPS and LINK payment systems, it does not include card payment systems.

IBAN International Bank Account Number: The IBAN concept was developed by the European Committee for Banking Standards (ECBS) and by the International Organization for Standardisation (ISO), and is an internationally agreed standard. It was created as an international bank identifier, used to uniquely identify the account of a customer at a financial institution, to assist error-free customer payments between

Member States, and to improve the potential for straight-through processing (STP), with a minimum amount of change within domestic schemes.

Intraday liquidity: Funds which can be accessed during the business day, usually to enable financial institutions to make payments in real time.

ISO International Organisation for Standardisation

ISO 20022: International standard for developing financial message standards, the methodology of which features the representation of business processes and related transactions in a formal but syntax-independent notation.

Large-value payments: Payments, generally of very large amounts, which are mainly exchanged between banks or between participants in the financial markets and usually require urgent and timely settlement.

LVPS - Large-value payment system: A funds transfer system through which large-value and high-priority funds transfers are made between participants in the system for their own account or on behalf of their customers. Although, as a rule, no minimum value is set for the payments they carry, the average size of payments passed through such systems is usually relatively large. Large-value funds transfer systems are also known as wholesale funds transfer systems.

Legal risk: The risk of loss owing to the unexpected application of a law or regulation or because a contract cannot be enforced.

LINK - LINK ATM Scheme

Liquidity risk: The risk that a counterparty will not settle an obligation at its full value when due, but instead on some unspecified date thereafter.

Operational risk: The risk of human error or a breakdown of some component of the hardware, software or communications system which is crucial to settlement.

Pan-European automated clearing house (PE-ACH): A business platform for the processing of euro payment instruments which is made up of governance rules and payment practices and supported by the necessary technical platform(s).

Payment message/instruction/order: An order or message to transfer funds (in the form of a monetary claim on a party) to the account of the beneficiary. The order may relate either to a credit transfer or to a debit transfer.

Payment system: A payment system consists of a set of instruments, banking procedures and, typically, interbank funds transfer systems which facilitate the circulation of money.

Payment: The payer's transfer of a monetary claim to a party acceptable to the payee. Typically, claims take the form of banknotes or deposit balances held at a financial institution or at a central bank.

POS (Point of Sale); A Point of Sale Transfer is a method of electronic payment which allows money to be transferred from the account of the buyer to the merchant.

Principal risk: The risk that a party will lose the full value involved in a transaction. In the settlement process, this term is typically associated with exchange-for-value transactions when there is a lag between the final settlement of the various legs of a transaction.

Queuing: An arrangement whereby transfer orders are held pending by the originator/deliverer or by the system until sufficient cover is available in the originator's/deliverer's clearing account or under the limits set against the payer; in some cases, cover may include unused credit lines or available collateral.

RTGS - Real-time gross settlement (RTGS): The continuous (real-time) settlement of funds or securities transfers individually on an order-by-order basis with intraday finality (without netting).

Real-time processing: The processing of instructions at the time they are received rather than at some later time.

Retail payments: Payments which are not included in the definition of large-value payments. Retail payments are mainly consumer payments of relatively low value.

SEPA Single Euro Payments Area

Settlement: An act which discharges obligations in respect of funds or securities transfers between two or more parties. Settlement may be final or provisional.

Settlement risk: A general term used to designate the risk that settlement in a transfer system will not take place as expected. This risk may comprise both credit and liquidity risk.

Single Shared Platform (SSP): TARGET2 is based on a single technical platform, known as the Single Shared Platform, which includes payment and accounting processing services and customer-related services.

STP Straight-through processing: The automated end-to-end processing of trades/payment transfers, including the automated completion of generation, confirmation, clearing and settlement of instructions.

SWIFT (Society for Worldwide Interbank Financial Telecommunication): A cooperative organisation created and owned by banks which operates a network designed to facilitate the exchange of payment and other financial messages between financial institutions (including broker-dealers and securities companies) throughout the world. A SWIFT payment message is an instruction to transfer funds; the exchange of funds (settlement) subsequently takes place through a payment system or through correspondent banking relationships.

Systemic risk: The risk that the inability of one institution to meet its obligations when due will cause other institutions to be unable to meet their obligations when due. Such failure may cause significant liquidity or credit problems and, as a result, could threaten the stability of or confidence in markets.

Systemically important payment system: A payment system is deemed systemically important if, in the event of being insufficiently protected against risk, disruption within it could trigger or transmit disruption to participants or cause broader systemic disruption in the financial area.

TARGET: Trans-European Automated Real-time Gross settlement Express Transfer system: the Eurosystem's real-time gross settlement system for the euro. The first-generation TARGET system was replaced by TARGET2 in May 2008.

TARGET2: The second-generation TARGET system. It settles payments in euro in central bank money and functions on the basis of a single shared IT platform, to which all payment orders are submitted for processing

T2IS: TARGET2 Information System

T2S: TARGET2-Securities system

Executive summary

Introduction

This report considers UK payment systems, with a particular focus on interbank payment systems. It analyses the conditions for competition at different levels of the payments supply chain as well as the motivations, merits and potential drawbacks of collaboration among market participants.

For the present purpose, a payment system is defined as a set of economic activities that deliver to final users the ability to make and receive transfers of funds. Payment systems generally involve: payer and payee interfaces; payment services providers; scheme operation; infrastructure services; and settlement arrangements. With particular reference to interbank systems this report looks at two separate levels of the supply chain:

- Provision of payment system central infrastructure services - A secure communications system which is used for the transmission of payment instructions, collation of instructions for clearing in accordance to scheme rules, and transmission of processed instructions for settlement.
- Payment system operation - Each payment product is defined by a set of rules that characterise the payment, including operational elements, risk management procedures, conditions of direct membership, time to completion, price, and finality of the service, among others. A payment system operator may have more than one payment products.

UK interbank systems and main players under the scope of the present study

Payment systems are commonly characterised by a series of collaborative arrangements alongside competition in downstream provision of payment services ('upstream cooperation combined with downstream competition'). The UK payment systems, in addition, are also characterised by combinations of features such as lack of for-profit motive / joint ownership or control by competitors / vertical integration / barriers to entry / market power. The UK has five interbank payment systems:¹

- CHAPS, the United Kingdom's real-time gross settlement system operated by CHAPS Clearing Company; the infrastructure to CHAPS is provided by the Bank of England. CHAPS payment instructions are routed via SWIFT to the Bank of England's RTGS system and settled individually across individual banks' settlement accounts (sending bank debited, receiving bank credited). Finality of the funds transfer between sending and receiving banks is achieved at the moment the payment is settled across the books of the Bank of England.

¹ Under the Banking Act, HM Treasury recognises interbank payment systems, for oversight by the Bank of England, that meet certain criteria set out in the act. The three recognised sterling payment systems are CHAPS, Bacs and FPS. There are four payment systems designated under the Settlement Finality Directive by the Bank of England which include the three recognised systems plus C&CCC. (The Bank of England is the relevant designating authority for systems under the Settlement Finality Directive. The Bank analyses applications for designation from such systems and decides whether to designate a system on the basis of whether it meets the requirements set out in the Settlement Finality Directive/Financial Market Insolvency (Settlement Finality) Regulations)

- Bacs, is a high-volume, low value deferred net settlement system operated by Bacs Payment Schemes Ltd; it operates a three-day clearing cycle; the infrastructure for Bacs is outsourced to VocaLink. It is the United Kingdom's largest retail interbank payment system by volume, providing services for bulk clearing of electronic transfers. Bacs is responsible for the Bacs Direct Credit and Direct Debit payment instruments.
- Faster Payments Service (FPS), a retail deferred net settlement system operated by Faster Payments Scheme Limited. Launched in 2008, it runs three settlement cycles per day although customers make and receive payments in near real-time. The contract to provide the central infrastructure for FPS was awarded to a joint venture between Voca and LINK. Voca and LINK merged before FPS went live, which brought together the real time element from LINK with the processing experience of Voca and VocaLink provides the infrastructure for FPS today.
- Cheque & Credit Clearings (C&CC), is operated by the Cheque & Credit Clearing Company (C&CCC); it offers clearing for paper-based payment instructions; the volumes of these type of transactions have been in long-term decline; it has several infrastructure services providers because it requires a complex set of functions due to the physical transport of cheques involved. The future use of cheque imaging will change the nature of the infrastructure services required.
- LINK connects the ATMs of different providers throughout the UK to enable withdrawal of cash and support a range of payment card scheme transactions; the infrastructure for LINK is provided by VocaLink.

The Belfast Bankers' Clearing Company Limited (BBCCL) oversees the clearing arrangements for cheques and paper credits in Northern Ireland (NI) but has not been considered in this report.

In addition:

- Visa and MasterCard are the main brands behind debit and credit cards, with Amex a smaller player; these schemes use dedicated infrastructures.
- Electronic money (e-money) schemes are seeing increasing number of providers; these schemes can offer a range of internet-based, mobile-based and prepaid card schemes. These schemes often build upon an existing payment system infrastructure.
- Mobile-based payment is a particular area of growth. Examples include Paym and Pingit and the soon to be introduced Zapp. As above, these payment types often build upon an existing payment infrastructure.

Infrastructure level

Definition of relevant markets - infrastructure

The main body of this report discusses the appropriate definition of markets for the supply of infrastructure services to payment systems. We conclude by taking as our working assumption that there appear to be separate markets at the infrastructure level. In other words, the infrastructure services for each of the 5 interbank payment systems within our scope are, each, a separate relevant market delimited by the ability to offer some unique characteristics of the sets

of payment products under each payment system.² That is, infrastructure for one payment system can not be used for other systems without significant changes arising in the infrastructure provision.

Infrastructure competition – in what form and to what extent is it feasible

The cost structure for payment system infrastructure services is characterised by a predominance of fixed costs over variable costs. Indeed, we may be in a situation of “natural monopoly” which implies that the market in question is more efficiently served by a single supplier rather than by two or more competing suppliers.

There are, however, situations where, in the presence of natural monopoly –type costs structures, competition “for the market” can achieve reasonably efficient market outcomes and thus obviate the need for regulation. Competition “for the market” means that at any one time there is a single supplier of the services in question but this supplier is chosen through a competitive process at appropriate time intervals. This form of competition is seen in areas such as the National Lottery and rail operating companies. Competition “in the market” is the more familiar form where several suppliers simultaneously offer close substitutes of the products or services in question.

We have found indications that competition in the provision of infrastructure services for a given scheme or a given class of payments seems feasible in the shape of “competition for the market”, i.e. where a given scheme uses a competitive process to select a single infrastructure provider.

Competition “for the market” has taken place in some areas and has been particularly common when new payment systems are designed. For example, VocaLink was not the only bidder for the provision of infrastructure for FPS when this was being designed; VocaLink has bid against alternative suppliers for payments infrastructure contracts in other countries. Further, other European interbank infrastructure providers such as Equens and STET are potential credible international competitors to VocaLink for elements of its core UK business.

However, competition for the market will not be effective if schemes/banks have very high switching costs due to scheme specific investments or if there are high barriers to entry and significant cost advantages to the current supplier versus a potential competitor. Switching costs seem likely to vary across the interbank schemes reflecting the extent of these specific investments. These costs would need to be examined in detail to assess whether or not competition for the market is in fact likely to be effective for all of the schemes.

The fact that VocaLink is owned by the banks, who also control the schemes, who in turn would be responsible for selecting an alternative competing supplier, may put a non-bank owned supplier at a disadvantage. The banks may value the possibility of exerting control over the infrastructure provider over any benefits that could arise from using a potentially more efficient and lower cost supplier.

Competition for the market could be facilitated if there were greater standardisation across schemes or internationally as this would facilitate competition among potential infrastructure

² A relevant market is the narrowest set of products in relation to which there is limited scope for either demand or supply substitution away from the products. As a result, a hypothetical single supplier of such a set of products would have considerable market power, defined as the ability to raise prices and/or decrease service quality without losing significantly in terms of sales.

providers. However, standardisation can also make it harder to introduce different standards in competition schemes potentially limiting innovation from elsewhere.

So, while there are some indications that competition for the market is likely to be developing in at least some of the payment infrastructure markets we looked at, a number of structural factors may cause this form of competition to be less than effective. This is not dissimilar to what occurs in a number of other sectors such as lotteries and rail operation where the regulators are unsatisfied with the outcomes of “for the market” competition and have been trying to introduce or enhance “in the market” competition.

In such cases regulatory intervention may be required in order to ensure that the single supplier does not unduly exploit its market position to the ultimate detriment of users. There are several examples of regulated natural monopolies, including gas, water and electricity distribution networks. These typically involve a combination of price regulation and requirements on the quality of service

Conversely it may be plausible to seek competition “in the market” i.e. to consider whether it would be feasible for one scheme to buy infrastructure services simultaneously from more than one competing firms. For example, we could envisage the scenario where the Visa infrastructure took over some of VocaLink’s FPS business, or one of the international operators coming into the UK to offer services in competition with VocaLink.

Competition in the market could result in inefficient duplication of fixed costs when the cost structure is such that the “minimum efficient scale” is large compared to the size of the market.³ This will vary from market to market, and possibly over time, and it may be true for some of the payment schemes infrastructures but not for others.

This form of competition is not developed within UK interbank central infrastructure at present but it may be feasible in the medium term. One important necessary condition is the development of interoperability.

In this regard we note an important parallel with the successful introduction of competition in clearing of equity trades. Clearing was long perceived to be a natural monopoly, similarly to what is generally thought to be the case for at least some of the interbank payment systems infrastructures in the UK. In the case of clearing, though, technology has significantly changed the characteristics of the activity and has allowed competition to develop (once the regulatory framework was reviewed to take into account the new competitive possibilities).

Competition in the market may already be in place in ATM processing since different ATM transactions are already processed by VocaLink (under the LINK system), and by Visa / MasterCard (under their schemes)

³ In the presence of large fixed costs, the average cost of production goes down as output grows. However, at some stage this effect may reverse, for example when a capacity constraint is reached and new fixed cost investments are required to further increase output. Minimum efficient scale is precisely the level of output at which the average cost of production starts to increase.

Infrastructure competition – to what extent might it address potential problems

There are three areas where problems resulting from weak competition can manifest themselves: excessive prices, low quality of services supplied, and little innovation. We discuss the extent to which the market where VocaLink operates, given its particular features, is likely to be affected by these.

An infrastructure provider for a given scheme with considerable market power has the ability to charge high prices without significant loss of volumes. But the owners of VocaLink are also its main users so the advantage of higher prices is small. The owners might charge high prices to pass them on to non-owners as a form of raising rival costs but there does not appear to be evidence that this happens. Even if some overcharge is introduced at that stage, gains from increased competition may have little significance when compared to total revenues estimated at the retail level.⁴

The incentives to provide a below-par service may also be counteracted by the fact that the owners are also the main users of VocaLink. Profits at the retail level are likely to benefit from a smoothly functioning payments infrastructure. On the other hand, since all major competitors are “in the same boat” there would be little individual reputational loss from a poorly functioning system; certainly less so than would be the case if different banks used different infrastructures. Technical rules can also influence access conditions although they are mainly set by system operators and are considered in connection with system operators.

The question of lack of incentives to innovate may be the more significant. Lack of infrastructure competition leads to lack of pressure to innovate and to keep costs low. Owner banks may be quite content to have little innovation because innovation can be disruptive and costly for the banks to implement. If all main competitors are able to make this decision together they may well prefer to see less innovation. This does not give them an individual competitive disadvantage since their main competitors are in the same situation. And, conversely, they would have relatively little to gain from innovation since all their main competitors would have access to it as well.

The consequences of the above are more or less severe depending where in the payment systems supply chain is innovation most likely to occur e.g. at infrastructure or system level.

Payment infrastructure markets - conclusions

- Competition for the market is likely to be feasible and that, to a certain extent, already occurs internationally. This is particularly the case when new payment systems are being developed.
- The strength of the above conclusion varies across schemes; infrastructure for Bacs may be less contestable due to scheme specificity; the same appears true for CHAPS given its tight link to the BoE’s RTGS services; infrastructure for FPS and C&CCC (after cheque imaging) appears more so. Further research would need to be conducted on switching costs within banks and within corporates in order to assess the strength of competition for the market.
- Competition in the market has drawbacks in terms of fixed cost replication and seems less feasible for some schemes – competition in the market does, however, occur for LINK,

⁴ E.g. a 20% overcharge at VocaLink level could be less than 1% higher price at the retail level, even if overcharge were fully passed on.

given the immediacy and low cost with which a switch to for example Visa could take place.

- Currently UK interbank schemes use a range of standards most of which differ from standards used internationally; standards convergence would facilitate competition for the market as well as in the market. However, standardisation can also make it harder to introduce different standards in competition schemes potentially limiting innovation from elsewhere.
- Interoperability has the potential to allow multiple infrastructure providers for a particular scheme and therefore to make competition in the market feasible for the other interbank schemes in the medium term.
- The particular ownership structure of VocaLink does not appear likely to have significant detrimental effects on competition: doesn't appear to give an incentive to have excessive prices for infrastructure; and doesn't appear likely to be facilitating collusion of prices in other markets. On the other hand it seems to have an unclear effect on incentives to innovate and it may have the potential to replicate problems such as limiting access which more commonly arise at system operator level.

Payment system operator level

Definition of relevant markets – scheme level

Payment system operators set rules about how payments are processed and the criteria members need to meet in order to gain access to the system. They also select the infrastructure provider.

Dimensions that characterise a payment transaction, i.e. characteristics on which substitutability of payment instruments can be assessed, include:

- Payment to a person, business or government
- Payment from a person, business or government
- Initiated by payer (push) or payee (pull)
- Large value, not large value, very small value
- Time critical, time sensitive, not time sensitive
- Face-to-face transaction, remote transaction
- Cross border or domestic
- Recurrent/predictable or one-off/spontaneous
- Large number of payments in a batch, single payment
- Immediate authorisation required, not required
- Real time settlement required, not required

Different “payment products” meet the needs of the many types of transactions that payment system users might need to carry out to different degrees.

The level of substitutability among different interbank payment products seems at present to be low. In the main body of the report, a range of examples is used to illustrate this and lead us to adopt as a working assumption that, at present, payment products from the different interbank payment systems do not compete in the same relevant markets. As such, we propose that we consider each of the payment systems operate in separate relevant markets.

There are, however, a number of factors likely to impact on the level of substitutability among alternative payment products in the future. Innovation in payment products creates greater scope for product overlap. Prominent here is the range of possible new products that may be offered under the relatively new FPS payment system.

FPS has the potential and flexibility to be used as a basis for a range of payment products that will offer alternatives to existing products. This could create competition for usage among the schemes. Furthermore, competition between FPS-based products and card schemes is eminently plausible because they both offer instant authorisation of transactions and therefore the necessary characteristics to provide point-of-sale payment services. The main body provides a series of examples where either actual or potential competition at scheme level appears feasible. These illustrate the feasibility of competition among different payment products. But it is important also to consider both potential benefits and potential drawbacks that may be expected as a result of enhanced competition at payment system operation level.

It is difficult to predict where the definition of relevant markets at the level of the products offered by payment systems would lead us, once we take into account a range of possible developments. Importantly, though, it seems reasonable to expect that there is scope for increased substitution among payment products to develop in the near future.

Potential benefits and drawbacks of competition at payment system operator level

Competition at system operator level can result in lower fees, increased convenience and improved services. It may also promote innovation which for example opens up payment services to people who do not have or cannot qualify for a bank account or credit card and might even create new products which are more secure thus contributing to mitigated system risks.

The magnitude of the benefit that may result from lower fees at system operation level appears small given that this represents only a very small portion of respective value chains and interbank schemes are not-for-profit entities which operate on a cost recovery basis.

Competition among schemes may drive stronger bargaining for lower charges from infrastructure providers if there is a choice of infrastructure provider. But given existing ownership patterns, both schemes and infrastructure should already have an incentive to keep these costs low.

A potentially very important benefit of competition is greater incentives to innovate. Under current conditions, payment system operators, given their ownership structure and their not-for-profit status, may lack incentives to innovate. But multiple competing schemes could involve a loss of network effects and reduced adoption rates for different products compared to where a single product is developed.

One of the current concerns regarding interbank schemes is to do with access conditions. The main banks may have the incentive to set high access criteria in order to prevent other banks gaining direct access to payment systems. Such behaviour could distort competition in banking and payments markets. Competing schemes would have an incentive to increase the number of direct members as that would likely increase volumes for that scheme compared to a competitor scheme. A greater number of direct members would have positive effects for competition in the downstream retail banking market. Issues to do with access are not covered in detail in our report as the PSR has other work focused on access.

Competition at the scheme level might additionally bring benefits in terms of other aspects of the level of service that schemes provide.

Potential drawbacks

There are three categories of potential drawbacks which may result from the introduction of competition at scheme operation level. First, competing schemes may set insufficiently prudent rules, second, the profit maximising motive may lead to higher prices, and finally competing scheme operators may fail to collaborate in situations where collaboration might have been of value.

The first is an argument about a possible “race to the bottom” in rule setting competition. The introduction of competition risks introducing a desire to gain volume and thus an incentive to lax rule setting. The possible reputational cost from an increased likelihood of system failure may be insufficient to guard against the incentive to lax rules because this cost would be similar across all main participants and thus have limited impact on each individually. However, rule-setting by some payment scheme operators has been and will continue to be subject to oversight by the Bank of England and sectoral regulators. So that even if we conclude that in the presence of scheme competition, regulatory maintenance of minimum resiliency requirements is necessary, this is not different from what is already currently the case.

Examples where competition was introduced and no indication of a race to the bottom effect has been found include competition among central counterparties (CCPs) and competing capital market information rules. In the first case, the owners of the CCP have significant reputational risk as well as own capital at risk, and this counteracts the benefits from lax rules. In the case of accounting information rules, managers may be tempted to select the least strict rules but this entails a trade-off as investors are quite aware of this problem and reward firms which commit to strict disclosure requirements.

The for-profit motive implies a desire to charge high prices (certainly when compared to the current simple cost-recovery objective). High costs of entry, loss of economies of scale if competing products each serve fewer customers, asymmetric information about the quality of security and fraud protection, and low level of commoditisation, are factors likely to contribute to less than fully efficient competitive outcomes and, in particular, higher prices.

Furthermore, direct scheme competition may prevent the achievement of certain gains which result from collaboration, as discussed in the final chapter.

Conclusions on competition at the level of payment system operation

- There appears to be limited competition at present among the payment products offered by the 5 interbank schemes but some of these products have characteristics that could make them feasible alternatives to each other in the future
- The recent introduction of FPS has the potential to promote the development of payment products that will significantly increase the overlap among existing products and thus enhance the potential scope for substitution among them
- However, competition between scheme operators is significantly affected by the nature of payment systems operation: high switching costs, network externalities and economies of scale imply high barriers to entry

- The benefits of greater competition among payment system operators are likely to manifest in terms of product design and innovation much more so than lower prices given the relatively small value of payment system operation in the overall payment systems supply chain. Competition can also bring benefits to access criteria which can help competition in downstream banking and payments markets although access criteria has not been the focus of our work since the PSR has other work specifically on access.
- The potential drawbacks to some, but not perfect, competition among payment system operators include higher prices if the system operators are able to exploit market power; a “race to the bottom” effect on rule setting, which ultimately is considered unlikely to occur; and decreased collaboration among payment system operators.

Collaboration

Collaboration can, under some circumstances, weaken competition and distort incentives on market participants, in particular where it involves collaboration between scheme members and results in inadequate representation of the interests of indirect participants. For example:

- Scheme rules and operational features may be skewed towards the preferences of direct members
- Collaboration between members may be used to deter entry or raise rivals costs in downstream markets
- Collaboration between members may facilitate collusion in downstream markets

But collaboration has, as well, an important efficiency-enhancing role and pro-competitive effects. This is the case in, for example:

- Instances of collaboration at payment system operation level, such as
 - Multi-sided agreement of scheme rules and operational features so as to save on series of bilateral agreements
 - Removal of termination issues
 - Scheme security and incident management
- Instances of collaboration between payment systems, such as
 - Setting common standards across schemes such as EMV in payment cards
 - Security of payment systems overall
 - Allocation of payment products and ancillary services, such as the Current Account Switch Service, across schemes without the costs of commercial negotiations without the costs of commercial negotiations

1 Introduction

1.1 Objectives

The overall objectives of the present study have been defined in the following way:

- 1) to provide a high level overview of the current state of competition and collaboration in UK payment systems
- 2) to consider whether more competition could be feasible and desirable in each of the relevant markets analysed
- 3) while taking into account the importance of collaboration, in each case

We have not undertaken a formal competition analysis but rather provide an initial high level overview on the issues in order to assist the PSR.

One important aspect is the proper balance between competition and collaboration among firms participating in a payment scheme. In many instances, rules and technical standards for the use and operation of a payment system have been developed collaboratively between some or all the firms participating in the payment scheme. There are important efficiency motivations behind this but such arrangements, possibly in conjunction with existing ownership structures, also raise questions about possible distortions to competition in the relevant markets directly and indirectly affected by them.

1.2 Scope

The scope of this study is the UK payment systems but with a particular focus on the interbank schemes.

In very general terms, a payment system is a structure and process which allows the transfer of funds between two payments services users (PSUs) through the use of payment service providers (PSPs). Settlement between payment service providers can be in central bank money (i.e. a movement of funds between accounts held by the payment services providers at the central bank) or commercial bank money (i.e. a movement of funds between accounts held by the payment services providers at a bank other than the central bank).

Payments supply chain

A payment system is made up of five key elements:

- 1) Settlement arrangements
- 2) Infrastructure: A secure communications system which is used for the transmission of payment instructions, collation of instructions for clearing in accordance to scheme rules, and transmission of processed instructions for settlement
- 3) Payment system operation: a set of rules defining the characteristics of the payment, the system's operational and risk management procedures, conditions of direct membership, the speed, pricing and finality of the service, etc

4) Payment service providers wholesale and retail payment services providers which may be direct or indirect participants, such as:

- Banks (i.e. organisations authorised to accept deposits). Banks also own the main payment systems in the UK;
- Payment institutions and small payments institutions licensed to provide payments services under the Payment Services Regulations 2009 (PSRs) which transposed the Payment Service Directive - this group includes remitters, foreign exchange brokers/bureaux, three-party card schemes, bill payment networks, acquirers, etc.;
- E-money institutions which are licensed under the Electronic Money Regulations 2011 which transpose the E-money Directive;⁵ and
- Third party services providers or overlay services providers (such as account verification or payment initiation service providers) - these types of services are not yet regulated but may be under the PSD II.

5) Payers and payees: payers select among feasible means of payment and payees accept or do not accept particular means of payment.

We provide an overview of the main types of payments systems operating in the UK in the following section.

1.3 Main types of payment systems

Most countries make a demarcation between large value payment systems and retail payment instruments and systems.

Large value payment systems

Most of these systems around the world settle on a bilateral basis in gross terms and in real time - real time gross settlement or RTGS. By effecting settlement finality of individual funds transfers on a continuous basis during the processing day, RTGS systems are a crucial mechanism for limiting settlement and systemic risks in the interbank settlement process. The operator of the large value real time system in the UK is CHAPS. The RTGS infrastructure for CHAPS is provided by the Bank of England (BoE). Settlement also arises through the BoE.

These systems typically have very high liquidity requirements which translate into important liquidity costs for commercial banks resulting from the level of collateral to be held at their central bank accounts. The BoE, as has been done elsewhere, has introduced a variant to the basic RTGS system, to take advantage of liquidity-saving features that exist in net settlement systems.

In almost all countries there is a single RTGS system. Two important exceptions include CHIPS and Fedwire in the US and Target2 and euro1 in the euro area.⁶

⁵ DIRECTIVE 2009/110/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC.

⁶ This is discussed further in Section 3.3.

Retail payment products and systems

Retail payments are designed to meet different types of user needs and can be distinguished along a series of dimensions:

- A main distinction is whether the payment is initiated by the payer in the form of a credit to the receiving account – a push transaction – or by the receiving side in the form of a debit to the payer’s account – a pull transaction.
- Different types of payment product are typically required depending on whether the payment is to/from a person (e.g. it would be unusual for an individual to be paid via a credit card) , business or government
- Another main functional distinction is whether the payment instrument can be used at point-of-sale, for remote transactions or for cross border transactions; whether immediate authorisation is required or not required
- Yet another important distinction is whether the payment is predictable and recurrent versus one-off and spontaneous and whether or not a very large number of payment instructions are sent simultaneously by the same user (i.e. bulk versus non-bulk).
- For some retail payments the speed of the transactions may be important to the user; real time settlement is not generally required but for example at point-of-sale, immediate “authorisation” would typically be an important characteristic.
- Large value payments may need to be processed individually and real time settlement may be required

Retail payments usually fall under one of the following categories:

- Cash
- Cheques
- Credit Transfers
 - Paper-based credit transfers
 - Electronic credit transfers
- Direct debits and standing orders
- Payment cards such as Debit cards, credit cards which include Four-party systems and Three-party systems, pre-paid cards
- Mobile payments such as Zapp, Paym, Pingit and those over the card systems
- E-money / digital wallets such as PayPal

Cheques

Cheques draw funds from an individual’s bank account to be transferred to another individual’s bank account or to be turned into cash. Because these payments are paper-based, processing requires the physical transport of cheques making this the most costly of all payment instruments.⁷ Several countries, including the UK, are in the process of introducing cheque

⁷ Based on a representative sample, a 2012 ECB study finds that cash payments as the most commonly used payment instrument have the lowest social costs per transaction, at €0.42, closely followed by debit cards with costs of €0.70. Cheques are the most expensive form of payment, with unit costs of €3.55. (The rankings however depend on characteristics specific to each country’s payment system, on the market size and its development, and on payment behaviour). Source: ECB Occasional Paper No. 137, The social and private costs of retail payment instruments: a European perspective, 2012.

imaging, a time-saving procedure that replaces the physical movement of paper payment instruments by the transmission and processing of electronic records of their content.

Credit Transfers

Credit transfers are generally initiated by a payment instruction or a series of payment instructions from the payer to its bank to debit its account and forward the payment to the receiving party's (or parties') accounts. They are commonly used for direct payroll deposit, regular government transfer payments, but also for bill payments by individuals. Interbank clearing and settlement between the parties to the transaction takes place over the agreed payment infrastructure. The transaction is completed once the receiving bank finally credits the corresponding amounts on the receiving account.

Paper-based credits are often used for making payments to large organisations such as utility, credit card or mail order companies.

The vast majority of regular interbank electronic credits are processed by Bacs. FPS processes credit transactions comprising single immediate payments, forward-dated payments and standing orders.

Direct Debits and Standing Orders

A Direct Debit is an instruction to a customer's bank or building society authorising the payment originator to collect funds from the customer's account, provided the customer has been given prior notification of the collection amount and date. Direct Debits allow the originators of payment instructions, or a bureau acting on their behalf, to collect payments automatically from bank and building society accounts. They are generally paid at regular frequencies for obligations of possibly varying amounts such as utilities bill payments and rent or mortgage payments. The Direct Debit scheme is operated by BPSL.

Under the rules of the direct debit scheme, the customer's bank or building society must (on request) make an immediate refund to the customer's account should any money be taken in error.

Standing Orders are similar to Direct Debits in that they are set up to enable regular payments to be made. The payer determines the amount of money to be paid and unlike with Direct Debits, this value cannot be altered by the payee.

Payments cards

Payment cards are an alternative to cash and cheques as a form of point-of-sale payment. They include credit cards and charge cards, debit cards, and stored-value or "prepaid" cards. They are used mostly in small-to medium-value transactions. Payment cards have an embedded magnetic stripe or microchip containing encrypted information relevant for the discharge of any payment obligation undertaken by its holder such as the identity of the cardholder and of the card issuer to allow appropriate routing of the payment messages.

Mobile-based payments

In this category there is a range of different payment types with the common feature that they can be activated through a mobile device. The proposed service, Zapp, will have the feature of allowing consumers to use their bank account balances directly for payments at point of sale by using their mobile phone. Other mobile based payment products draw funds from a range of sources including bank account balances, credit and pre-paid.

e-money / digital wallets⁸

Electronic money (e-money) is broadly defined as an electronic store of monetary value on a technical device that may be widely used for making payments to entities other than the e-money issuer. The device acts as a prepaid bearer instrument which does not necessarily involve bank accounts in transactions.

1.4 UK Payment systems

Five interbank payment systems have been considered in this report:

- CHAPS, the United Kingdom's real-time gross settlement system operated by CHAPS Clearing Company; the infrastructure to CHAPS is provided by the Bank of England. CHAPS payment instructions are routed via SWIFT to the Bank of England RTGS system and settled individually across individual banks' settlement accounts (sending bank debited, receiving bank credited). Finality of the funds transfer between sending and receiving banks is achieved at the moment the payment is settled across the books of the Bank of England.
- Bacs, a high-volume, low value deferred net settlement system operated by Bacs Payment Schemes Ltd; it operates a three-day clearing cycle; the infrastructure for Bacs is outsourced to VocaLink. It is the United Kingdom's largest retail interbank payment system by volume, providing services for bulk clearing of electronic transfers. Bacs is responsible for the Bacs Direct Credit and Direct Debit payment instruments.
- Faster Payments Service (FPS), a retail deferred net settlement system operated by Faster Payments Schemes Limited. Launched in 2008, it runs three settlement cycles per day although customers make and receive payments in near real-time. The contract to provide the central infrastructure for FPS was awarded to a joint venture between Voca and LINK. Voca and LINK merged before FPS went live, which brought together the real time element from LINK with the processing experience of Voca and VocaLink provides the infrastructure for FPS today.
- Cheque & Credit Clearings (C&CC), operated by the Cheque & Credit Clearings Company (C&CCC); it offers clearing for paper-based payment instructions; the volumes of these type of transactions have been in long-term decline; it has several infrastructure services providers because it requires a complex set of functions due to the physical transport of cheques involved.⁹ The future use of cheque imaging is expected to change the nature of the infrastructure services required.

⁸ From the ECB website: <https://www.ecb.europa.eu/stats/money/aggregates/emon/html/index.en.html>

⁹ The infrastructures for cheques clearing operates in two layers, namely, member processing and central processing. The precise activities undertaken at the member processing stage vary from member to member. At the central processing stage, the provision of a number of elements of the C&CCC infrastructure (data network, settlement system, unpaid cheques courier services, etc) have been outsourced to different suppliers in competitive tenders but remain managed by C&CCC. At the members' level the supply of

- LINK connects the ATMs of different providers throughout the UK to enable withdrawal of cash and support a range of payment card scheme transactions; the infrastructure for LINK is provided by VocaLink.

The Belfast Bankers' Clearing Company Limited (BBCCL) oversees the clearing arrangements for cheques and paper credits in Northern Ireland (NI) but has not been considered in this report.

In addition:

- Visa and MasterCard are the main brands behind debit and credit cards, with Amex a smaller player; these schemes use dedicated infrastructures.
- Electronic money (e-money) schemes are seeing increasing number of providers; these schemes can offer a range of internet-based, mobile-based and prepaid card schemes. These schemes often build upon an existing payment system infrastructure.
- Mobile-based payment is a particular area of growth. Examples include Paym and Pingit and the soon to be introduced Zapp. As above, these payment types often build upon an existing payment infrastructure.

1.5 Contents of this report

This remainder of this report is organised over 4 main sections and 1 annex:

- Overview of competition at infrastructure level
- Overview of competition at payment system operation level
- Competition and collaboration in payment systems
- Annex – Models of competition and collaboration

services is by exclusive contract. HPES provides services to the RBS Group, and IPSL and UPSL provide processing services to most other members of the C&CCC scheme.

2 Overview of competition at the infrastructure level

This chapter considers the conditions of competition in the provision of infrastructure services to payment system operators. The first section provides definitions and background. In particular, it makes some initial proposals in terms of definition of relevant markets, lists the main suppliers of these services and notes some of the cost structure characteristics. The second section discusses the notions of competition “for the market” and competition “in the market”, taking into account cost features that may lead competition in the market to be inefficient as well as market conditions that may make competition for the market ineffective. The following section poses some questions on how to assess the current state of competition in these markets. Subsequent individual sections focus on incumbency advantages and barriers to entry, the role for standards and interoperability and possible distortions arising from the existing ownership structure. A final section provides an overview of the state of and prospects for competition in these market segments.

2.1 Definitions and background

This section focuses on the market segment defined as “provision of infrastructure services to interbank payment schemes.”

2.1.1 Proposals in relation to definition of relevant markets

A relevant market is the narrowest set of products in relation to which there is limited scope for either demand or supply substitution away from this set. As a result, a single supplier of such a set of products would have considerable market power, defined as the ability to raise prices and/or decrease service quality without losing significantly in terms of sales.

To apply this test to the market for infrastructure services, we look for sets of such services so that relatively little demand substitution to outside the set and relatively little supply substitution into the set could occur. On the demand side we have the payment system operators (and indirectly the banks) and on the supply side we have other, existing or potential, suppliers of similar services.

We propose to take as the working hypothesis for this chapter that there are separate infrastructure markets for each of the five interbank schemes. In other words, we propose that there are five separate relevant markets each consisting of the provision of infrastructure services to the payment system operator of each of the five interbank payment systems.¹⁰

This working hypothesis seems sensible because: 1) FPS needed to be built from scratch when it was introduced even though its eventual supplier (VocaLink) was at the time the supplier of two other interbank payment systems (LINK and Bacs) 2) Bacs has the particular feature of providing for direct connectivity to tens of thousands of corporate customers and this is something that may not easily be replicated; 3) C&CCC currently needs infrastructure to deal with paper rather than electronic transactions and this makes it quite a specific infrastructure (although this is going to change). 4) LINK’s infrastructure consists of communicating transaction requests across the UK’s

¹⁰ One relevant market would be: “market for the provision of infrastructure services to the scheme operator of the FPS payment system”

network of ATMs. 5) Finally, CHAPS has a very thin infrastructure layer given that instructions are directly communicated to the Bank of England's RTGS.

A payment system operator wishing to deliver a particular-type of service would not be able to substitute towards an infrastructure providing other forms of service. As such there is little scope for demand substitution in these markets i.e. Bacs could not simply switch to using the FPS infrastructure.¹¹ Substitution is made more difficult due to payment system operators typically contracting with a sole supplier for most of the infrastructure services they require. It is possible however that, in the future, payment system operators could contract with separate infrastructure providers for different parts of the value chain within their systems. This could make the bidding markets thus created more competitive if there are firms that are able to provide services for some parts of the value chain, but which cannot provide the whole value chain.

On the supply side, the possibilities for substitution may be somewhat greater. We could ask, in relation to the three infrastructures for Bacs, FPS and LINK, whether a supplier for one of them could easily also supply one of the other schemes.¹² There are strong indications that supplying one scheme does not necessarily make it easier to supply the other schemes. Indeed, the infrastructure for FPS was not readily available when FPS was introduced because of its real time operation requirements.

But, could for example, the infrastructure for FPS be able to offer also batched, non-time-sensitive services, to supply infrastructure services to Bacs? There is some indication that this could be possible with insignificant additional cost (by queuing and processing at hours when the core FPS system is underused). However, the Bacs scheme has other important specificities that cannot easily be replicated (such as the direct connections to about 100,000 corporate customers) although FPS also offers direct corporate access but this is not widely taken up at present.

On the other hand the fact that companies such as VocaLink, STET and Equens, offer services for schemes like Bacs, FPS and LINK, internationally, may be an indication of synergies across these infrastructure services. As such, parts of the analysis of competition at the infrastructure level that we make in the following section are applicable to infrastructure for more than one type of scheme.

The current situation in the UK interbank payment systems is one where there is substantial scheme-specificity. It therefore seems more appropriate to currently characterise relevant markets at the infrastructure level in terms of the characteristics of the infrastructure service rather than the functions that the downstream payment product performs.

On the basis of the above we would therefore propose the following working assumption for the definition of relevant markets at the infrastructure level:

¹¹ For example, the scheme operator needs an infrastructure that delivers the FPS service, and in the hypothetical where all the infrastructures that deliver the FPS service are owned by a monopolist, the scheme cannot replace this for something else. The alternative that the scheme could break up its needs of infrastructure into bits and pieces and buy these from alternative/separate suppliers is not really a close substitute. The other alternative is to buy infrastructure services that do not deliver FPS, but something else, possibly not very different. Again, this is not a close substitute, and in the present case it is not even a possibility.

¹² Note that this is different from the observation that VocaLink does in fact supply all three schemes.

- There appear to be separate markets at the infrastructure level delimited by the ability to offer some unique characteristics of the sets of payment products under each scheme. In other words, our working assumption is the infrastructure services for each of the 5 interbank schemes within our scope are, each, a separate relevant market
- For example, the infrastructure services that deliver real time payment like FPS are in a separate relevant market to the infrastructure services that deliver the post-dated batched processing for Bacs. Similarly an infrastructure that offers direct connections to tens of thousands of corporate users, as Bacs does, is in a separate market to infrastructures that do not.

More detailed work would need to be conducted through a more formal market definition exercise in order to draw stronger conclusions on these issues. However, at present, the infrastructure services required for the different schemes seem different enough to have the working assumption that each set of infrastructure services is in a separate relevant market. Hence when considering competition at the infrastructure level, we consider competition for the provision of infrastructure to each individual scheme rather than considering competition to supply infrastructure to payment systems generically.

It is possible, and perhaps likely, that with greater innovation by payment system operators, and greater interoperability, respective infrastructures may become similar enough so that not all infrastructures remain separate markets in the future.

2.1.2 Current Infrastructure service providers

Infrastructure for Bacs, FPS and LINK

VocaLink is the infrastructure provider to the interbank schemes Bacs and FPS and to the ATM network LINK. It is a for profit organisation, although has not distributed dividends, and is 85% owned by the 5 largest retail banks with other banks owning the remainder.

Box 1: Revenues along the UK interbank payment systems supply chain

The turnover for payment system operators is small compared to the value of payments related turnover at the downstream retail banking level. Even the combined turnover of VocaLink plus the payment system operators can be estimated at well below 1/20 of the corresponding retail value.

- VocaLink had a 2013 turnover of £190 million (2012: £163.5 million); and an operating profit in 2013 of £28 million (2012: £35.3 million)
- FPS 2012 turnover was £2.404 million
- C&CCC 2012 turnover was £4.020 million
- CHAPS 2012 turnover was £2.005 million
- Bacs 2012 turnover was £3.003 million
- Total payment system operators plus VocaLink yearly turnover amounts to about £200 million
- Banks revenues from payment services: only data for one major bank for which interbank payment services revenues were £600 million in 2013. So the total for all banks is almost surely in the order of several £billions

Source: Published accounts for VocaLink, FPS, C&CCC, Bacs, CHAPS, and Natwest

Infrastructure for CHAPS

In CHAPS each payment instruction is individually transmitted via RTGS for immediate settlement at the Bank of England (BoE). Unlike in the other interbank schemes, there is no clearing function within CHAPS. The settlement service is directly provided by the BoE and there is no alternative to this in the UK.¹³ (RTGS also provides the settlement service for the other interbank payment systems that settle in central bank money at the Bank of England.)

Infrastructure for C&CCC

This report does not consider extensively the current infrastructure arrangements for the C&CCC scheme because it is widely expected that significant changes will occur with the introduction of cheque imaging.

An interesting aspect of the C&CCC infrastructure arrangements is their separation into individual processes that are contracted for separately.

2.1.3 Infrastructure cost characteristics

This sub-section considers particular features of infrastructure costs, such as the significant predominance of fixed over variable costs. This has implications for the feasibility, as well as, possibly, the desirability, of competition in these markets.

The infrastructure consists of hardware and software linking the payments institutions in a payment system between themselves and the settlement institution (central bank or credit institution) and of technical standards allowing the system to be operated.

In addition, each payment system has adopted a set of operational rules, standards and governance rules specifying, among others, how a payment is to be effected, how risk is to be managed, which access conditions direct members must meet, etc. Some of these rules arise from external regulation such as, for example, the Payments Service Directive, the Settlement Finality Directive, SEPA, or the CPSS-IOSCO Principles. If costs are mostly fixed, there are huge economies of scale, implying that a smaller scaled entrant is at significant cost disadvantage and that indeed it may be inefficient to have more than one supplier simultaneously operating in the market. However, large fixed costs are a common feature in many other sectors, even in some competitive ones like mobile network operation or clearing of transactions in cash equity markets.¹⁴ Detailed evidence on costs would need to be gathered to understand the precise extent of economies of scale within infrastructure services.

For competition in markets with large fixed costs to be viable, economies of scale must be exhausted (i.e. average costs per unit supplied no longer decreasing) at a level of output well below the volume of total demand. This does not result in an immutable optimal number of competitors: if technology changes, the relation between fixed and variable costs may change

¹³ There is a separate question about whether a competitor to CHAPS is feasible. This is discussed further in chapter 3 and in particular in reference to CHIPS v Fedwire.

¹⁴ The cash equity market is the same thing as the stock market. It's where companies raise cash by selling shares of ownership and where investors buy and sell those shares of ownership.

causing the efficient number of competitors to change; if market demand grows, the number of competitors that can profitably operate in the market may also grow.

It is therefore important to consider, on an on-going basis, whether each of the 5 infrastructures supporting each of the five interbank schemes has a component of fixed costs that is too great for competition in the market to be considered viable. Or, alternatively, whether developments are likely that will reduce the “minimum efficient scale” for these infrastructures. The answers for the 5 schemes may be different and may change over time. For example, some ATM transaction processing is done by VocaLink, some by Visa or MasterCard and some within the respective bank. Another example is the infrastructure for C&CCC: with cheque imaging, the ratio of fixed to variable costs may change dramatically.

For the three schemes that VocaLink supplies (and other smaller areas of business), from VocaLink’s 2013 accounts, we can see that the company generated £190 million turnover on fixed assets valued at £50 million. Although the value of fixed assets cannot be equated to the economic concept of fixed costs, the orders of magnitude of fixed assets relative to turnover seem to indicate that the value of fixed costs may not be huge compared to turnover.

For C&CCC the infrastructure provision is about to see radical change with the introduction of imaging. It is unclear as yet what the structure of costs would be. We may see a single competitor in a “for the market” sense, or it may turn out that fixed costs decrease sufficiently for there to be two or more “in the market” competitors. Given this market is about to change, we do not consider it further at this stage.

2.2 Competition “in” and “for” the market

It is important, given the specific cost structures encountered in these infrastructure markets, to consider the feasibility and desirability of competition “for the market” in addition to the more traditional form of competition “in the market”.

In this section we focus on the conditions that might support effective competition “for the market” and “in the market”. By effective competition “for the market” we mean that at any one time there is a single supplier of the services in question but this supplier is chosen through a competitive process at appropriate time intervals. Competition in the market is the more familiar form where several suppliers simultaneously offer close substitutes of the products or services in question.¹⁵

Competition for the market may be, under certain conditions, quite an effective form of competition which may in fact be desirable if costs structures are heavily tilted towards fixed costs. Such competition will usually involve committing to certain quality and price standards throughout the course of the contract. Whenever feasible, however, competition in the market is generally preferable. In other words, a regulator should be content with competition for the market only when competition in the market implies significant efficiency losses.

¹⁵ Although there is currently no in-the-market competition at the infrastructure level, existing contracts do not preclude such a possibility.

Box 2: Competition “for the market”; conditions under which a bidding market is effectively competitive

The role of competition for the market

For infrastructures exhibiting natural monopoly characteristics, it is inefficient to have two or more firms in competition. Competition for the market is, in these cases, an alternative that still allows users to gain at least some of the benefits of competition. In these situations, the contract to provide the infrastructure services is put out to tender or auctioned and the winner is given the right to operate as a monopoly for a pre-determined period of time. A well designed tendering process can have a number of positive effects: (1) cost efficiency is achieved because the firm able to offer the lowest quality-adjusted price is also the most efficient service provider; and (2) monopoly rents can be distributed to customers via competition among bidders to offer the lowest quality-adjusted price.

Conditions for competition for the market to be effective

Markets where competition is for the market have important parallels with bidding markets. It is commonly accepted that highly concentrated bidding markets can nonetheless be competitive. However, it is important to bear in mind that this is so only in what Klemperer (2006)¹⁶ calls “ideal bidding markets” and these are described by the following cumulative conditions:

- (1) Competition is ‘winner takes all’.
- (2) Competition is ‘lumpy’. That is, each contest is large relative to a supplier’s total sales in a period, so that there is an element of ‘bet your company’ in any contest.
- (3) ‘Competition begins afresh for each contract, and for each customer’. That is, there is no ‘lock-in’ by which the outcome of one contest importantly determines another.
- (4) Entry of new suppliers into the market is easy.

It is important for the PSR to consider whether all of these conditions are met so that it could be concluded that, in spite of its large market share, VocaLink does not in effect hold significant market power. Alternatively it may be the case that lock-in effects or barriers to entry are such that competition against VocaLink will not be effective.

Frequent rebidding may help remedy problems of excessive market power, but tenure periods have to be sufficient to attract new entrants, given for example the need to recover fixed costs from bid-specific investments, such as investments to ensure resilience and security. The frequency of re-bidding will also need to take into account the cost of the bidding process. To encourage participation from new bidders it is crucial that bid contracts include detailed provisions for end of tenure contract termination and asset transfer.

Therefore

Competition for the market is an important tool to achieve efficient market outcomes when competition in the market is inefficient, however, it is important to bear in mind that only under certain conditions will competition for the market deliver competitive market outcomes.

¹⁶ Klemperer, P.(2006) “Bidding market”, <http://www.nuff.ox.ac.uk/users/klemperer/biddingmarkets.pdf>

Box 3: Competition “for the market”; examples in other sectors

When competition is “for the market”, the key issue in assessing existing and potential competition is the ability of outside firms to bid at the time that contracts are tendered.

Franchising is an example where potential operators compete to win franchises to operate in particular areas or particular services. It is more commonly seen as an efficient arrangement for situations where a range of bidders exist and there is relatively little advantage to incumbents in forthcoming contests.

Examples where competition for the market works well include situations of markets with low entry costs such as running concession stands at theatres or football games. Ideally, the franchise pricing should be simple and plans for charged prices should be part of the tender submissions.

Competition for the market has also been used for rail services, the national lottery and local bus services, to name just a few examples. In these cases, however, the performance of “for the market” competition has been subject to debate and regulators periodically review whether market conditions have changed sufficiently for them to start promoting competition in the market.

In the rail services example, bidders will bid an amount up to the level of the profits they expect to earn across the lifetime of the franchise. This form of ‘competition for the market’ therefore incentivises efficiency because the bidder whose expected revenue exceeds its expected cost to the greatest extent will win the franchise. However, other things being equal, this provides franchisees with weaker incentives to charge lower prices and/or improve service quality on an ongoing basis than would be the case for companies facing direct competition. In practice, their ability to exploit their market power is restricted – and passengers are protected – by service standards and fares regulation imposed by the Office for Rail Regulation.

Source: The potential for increased on-rail competition – a consultation document, 2011; http://orr.gov.uk/_data/assets/pdf_file/0016/3751/on-rail-competition-consultation-oct11.pdf.

The conditions under which competition for the market delivers fully competitive outcomes are quite stringent. It is therefore important to explore the possibility for competition “in the market”. The example below illustrates how cost structures and market conditions can change in a such a way that competition in the market becomes feasible where it apparently had not been so before.

Example of competition “in the market” – introduction of competition in clearing

There are important similarities between infrastructures that do clearing for equity trades and payments infrastructures:

- Both handle a very large volume of instructions on a daily basis and uses automated clearing processes to determine each participant’s position (net or gross) at the end of the day or several times during the day
- Both processes are technology intensive and involve significant intra-day risk which is mitigated through the posting of collateral and the mutualisation of losses arising from a default of participant if the latter’s collateral is insufficient to cover the losses.

Clearing was long perceived to be a natural monopoly, similarly to what is generally thought to be the case for at least some of the interbank payment systems infrastructures in the UK. In the case of clearing, though, technology has significantly changed the characteristics of the activity and has allowed competition to develop (once the regulatory framework was reviewed to take into account the new competitive possibilities).¹⁷

Box 4: Competition among clearing houses

Clearing of equity trades by central counterparties (CCPs) is nowadays an automatised, technology-intensive process similarly to clearing of payments by payment system operators. And, in both cases, the purpose is to determine net positions at the end of trading day/payment cycle for transmission to settlement. One key difference is that in equity clearing, the CCP takes intra-day risk, but in both cases participants (banks, equity traders) have to post collateral to address intraday risk and mutualisation of a defaulting party's obligations

MiFID¹⁸ was very important for competition in clearing of cash equity trades as it introduced competition among stock exchanges and aimed to break up vertical silos and exclusive arrangements between trading and clearing services provision.

Competition in cash equity trading among trading platforms for the provision of trading services in most liquid stocks has developed rapidly. Developments in clearing have been slower. However, competition among CCPs emerged as a) newly competing equity trading platforms saw competitive advantage in being able to offer choice in clearing and lower overall trading costs (due to lower clearing costs) – market response encouraged by policy-makers and b) entrants and existing CCPs saw business opportunities

There are now 3 CCPs that are fully interoperable in Europe: LCH.Clearnet, X-Clear and EuroCCP. Among incumbent stock exchanges, LSE and Six Swiss Exchange offer clearing by LCH.Clearnet and X-Clear – LSE to add soon EuroCCP soon. However, new trading platforms offer much more clearing choice - for example, BATS CHI X Europe and Turquoise offer 4 clearers: LCH.Clearnet, X-Clear, EuroCCP and EMCF

All these CCPs compete in the market (i.e. clearing of trades for particular clients on particular trading platform) and not for the market (i.e. clearing of all trades in a particular security or on a particular trading platform)

There is some evidence of the impact that greater competition in clearing has had. A 2011 study by Zhu (DNB, Dutch Central Bank)¹⁹ concludes that competition in the market between LCH.Clearnet, EuroCCP and EMCF²⁰ has resulted in lower clearing tariffs but no deterioration in the robustness of the CCPs' risk standards. Zhu finds that the pricing levels of all three CCPs have dropped remarkably. For LCH.Clearnet, more than 90% of the clearing fee for cash equity has been progressively reduced since January 2007 (from EUR 0.65 to EUR 0.05), on the face of the emergence of the new entrants and the resulting increase

¹⁷ As is often the case with significant technology change, the market definition in this case has also changed. It is no longer clearing for a particular trading platform, but rather "clearing for cash equities in Europe" (or even wider than Europe).

¹⁸ MiFID is the Markets in Financial Instruments EC Directive, in force since November 2007. This directive sought to create competition and bring more choice and lower prices in the provision of investment services in financial instruments by banks and investment firms and the operation of traditional stock exchanges and alternative trading venues. Shortcomings were revealed during the financial crisis and MiFID 2 was tabled in 2011 with aim of making financial markets more efficient, resilient and transparent, and to strengthen the protection of investors.

¹⁹ Zhu, S., "Is there a "race to the bottom" in central counterparties competition? - Evidence from LCH.Clearnet SA, EMCF and EuroCCP" DNB Occasional Studies Vol.9/No.6 (2011).

²⁰ The European Multilateral Clearing Facility is a clearing house based in the Netherlands for equity trades done on stock exchanges or multilateral trading facility throughout Europe. EMCF and EuroCCP merger was approved at the end of 2013.

in competition. Likewise, EMCF has lowered its clearing fee by approximately 80% (from about EUR 0.28 to EUR 0.05 or even lower depending on the transaction volume).

According to another 2011 study of the European market (Oxera, 2011)²¹, there were significant falls in clearing fees of between 7 and 59 per cent across European CCPs, on a per transaction value basis, over the period between 2006 and 2009 when competition in clearing first emerged.

Developments in the cash equity clearing sector industry show vividly that technology has opened up to sustainable and welfare-enhancing competition an industry considered by many some years ago as being a natural monopoly.

However, Zhu (2011) includes a cautionary note in the study's conclusion:

“Although there is no solid evidence suggesting that competition has forced CCPs to take drastic actions that will result in a “race to the bottom”, a prudential oversight on CCPs’ response to the increasing competition is vital to ensure the functioning of CCPs and the resilience of the financial market infrastructure, particularly in light of the recent development regarding interoperability which is expected to shape the post-trade landscape and level the playing field. By the launch of interoperable arrangement, it is envisaged that competition among the pan-European CCPs will be noticeably sparked. Therefore, it is important for policymakers and overseers to make efforts to strike an appropriate balance between safeguarding a sound and stable financial system and preserving the advantages of having a highly competitive market.”

Competition, therefore, was successfully introduced and has resulted in reduced prices for users without any negative effects for systems resilience (so, without a “race to the bottom” in clearing-related rules).

An important pre-requisite for competition in clearing to develop was interoperability. This is also one important issue for the UK stakeholders to consider since it would be crucial for competition “in the market” at the infrastructure level to be able to develop.

Regulation; when no form of competition is likely to be effective

In some cases competition in the market is not feasible due to the particular cost structure and competition for the market is ineffective because the conditions for a “perfect bidding market” are far from being met. In such cases, regulation is likely to be required. Regulators have a range of tools and methods at their disposal as the box below illustrates.

Box 5: Regulation of natural monopolies

Typical examples of natural monopolies are the operation of the networks that support utilities such as water, electricity, and natural gas, due to the very high fixed costs relative to quite low variable costs. To prevent utilities and other natural monopolies from exploiting their monopolies with high prices, they are regulated by government.

Regulation can take several forms which can be roughly divided into price cap (or incentive regulation) and rate of return regulation.

²¹ Oxera (2011), Monitoring prices, costs and volumes of trading and post-trade services, May. Available at <http://ec.europa.eu/internal_market/financial-markets/docs/clearing/2011_oxera_study_en.pdf>.

Regulators such as Ofgem, Ofwat and ORR use a form of price cap regulation known as RPI-X regulation. This consists of limits to price increases. In the formula, X is the amount by which regulated monopolies have to cut prices by in real terms and reflect expected efficiency savings. (For example in the first few years of telecom regulation, the level of X was quite high because efficiency savings enabled big price cuts.)

This form of regulation allows the regulator to set price increases depending on the state of the industry and the estimated potential for efficiency savings. If a firm cuts costs by more than X, they can increase their profits, so this form of regulation gives firms the incentive to be efficient. If the 'X' in the formula is set at an appropriate level, the regulator would prevent abuse of monopoly power.

On the other hand, it is clearly very difficult to determine what the appropriate level of X should be. This leads to the danger of regulatory capture, where regulators become too soft and allow supranormal profits or conversely to claims that regulators are too harsh and allow firms too little profit with firms therefore unable to invest or even maintain business capital. Since the 'X' is decided on a recurring basis (e.g. every 5 years), the regulator may penalise with a higher X a firm that performs particularly well in increasing its efficiency levels.

'Rate of Return' regulation looks at the capital structure of the business and evaluates what would make a reasonable level of profit. If the firm is considered to be making excessive profit, the regulator may enforce price cuts or take one off tax.

A disadvantage of rate of return regulation is that it can encourage 'cost padding'. This is when firms allow costs to increase so that profit levels are not deemed excessive. Rate of return regulation gives little incentive to be efficient and increase profits. Also, rate of return regulation may fail to evaluate how much profit is reasonable. If it is set too high, the firm can abuse its monopoly power. The use of this form of regulation is generally declining as regulators increasingly favour some form of incentive regulation.

In addition, sectoral regulators will typically also regulate quality of service. For example, the rail regulator imposes safety targets on rail firms; in gas and electricity markets, regulators will require outages be kept below a certain level; and in airports queuing times will be required to stay below a certain number of minutes, to name just a few examples.

While, in the circumstances above, some form of price regulation may seem warranted, it should also be recognised that in the context of payment systems high prices is not the main accusation with respect to infrastructure provision and given that owners are also customers and that therefore there is some degree of buyer power by customers (banks) low/adequate prices may result even through non-regulatory means including e.g. measures such as open book accounting.

2.3 Competition

A large part of the central infrastructure services are similar to those provided in relation to other payment schemes, such as card schemes. The way in which card schemes are organised is however quite different given that they are vertically integrated systems – including, within the same corporate structure, infrastructure, payment system operation and payment service. This makes card schemes potential competitors for infrastructure services to the interbank schemes but

makes it hard for other providers to compete for the infrastructure services to the card schemes.²² Thus our discussion of competition at the infrastructure level focuses on infrastructure to interbank schemes.

In relation to interbank payment schemes, we start by considering the existing situation and the extent to which competition is currently effective. We look for possible impediments to effective competition and finally discuss whether changes could be introduced to improve the competitive operation of this market segment.

2.3.1 Potential causes for ineffective competition

Most competitive harm in particular markets generally stems from a limited number of common potential sources:

- (a) unilateral market power (including market concentration);
- (b) barriers to entry and expansion;
- (c) coordinated conduct;
- (d) vertical relationships; and
- (e) weak customer response driven by various issues including information asymmetry and behavioural effects.

In applying these questions to the markets for the provision of infrastructure services to UK payment systems, the following elements for analysis arise:

- Does VocaLink have market power due for example to significant barriers to entry to the provision of infrastructure services, such as economies of scale, sunk costs, switching costs and network effects; is incumbency advantage in this market strong enough to prevent competition for-the-market from being effective at promoting competitive outcomes
- What is the role of standards and interoperability, or what could this role be, in promoting effective competition in these infrastructure markets
- Is the fact that VocaLink is owned by a group of downstream competitors affecting e.g. VocaLink pricing incentives and distorting downstream competition?
- Are the “buyers” from VocaLink able to and incentivised to exert pressure on VocaLink to offer good quality products and fair prices?

2.4 Strength of incumbency advantage

Competition to provide infrastructure services can arise when a scheme first starts, such as was observed for FPS. It can also arise over time since incumbents can be replaced by other providers either for part of the service that they provide or in total.

²² It is, as a result, being discussed at European level whether to force vertical separation between infrastructure and card payment service in order to introduce competition at the infrastructure level for these schemes. The extent to which other parties can compete in infrastructure may vary depending on which parts of infrastructure are being considered.

This section focuses mostly on VocaLink and on whether VocaLink has acquired a degree of market power or incumbency advantage through its supply of the infrastructure services to Bacs, FPS and LINK schemes.

There are some indications that there is, or could be, competition “for the market” in some of the infrastructure markets where VocaLink operates. However, barriers to entry, in terms of “competition for the market”, are likely to vary across different payment system operators. They seem higher for Bacs due to many specificities of the scheme but are likely to be lower for FPS and LINK.

A new entrant has to consider a range of costs/ possible barriers to entry: communication infrastructure linking banks, linking ATMs (for a LINK competitor), reputation, and a contract with a payment system operator. It needs to gain sufficient volume to cover fixed costs and thus needs to convince a large part of the banks to incur the switching costs that would be involved in switching infrastructure suppliers.

Switching costs to banks

Switching costs for the banks may be high. When FPS was introduced, banks claim to have incurred very significant costs to operate with the new system. But bank costs to connect to an alternative supplier of FPS infrastructure may not necessarily be huge because much of the costs to adapt to FPS were in large part due to the need to update the banks’ internal systems to deal with near time payments and therefore may not be sunk in the relationship with VocaLink.

This same reasoning may apply to different degrees to different payment schemes depending on the degree of specificity of the investments towards the infrastructure provider itself as distinct from the specificity of the investments towards the particular type of infrastructure. Given the importance of continued supply of services to banks and their customers, switching costs are also likely to arise through transitional testing and possibly parallel running of services when the infrastructure provider changes.²³

Information would need to be collected to understand the level of potential switching costs within the banks, distinguishing between switching costs among different infrastructure providers of a given service and switching costs to a different service.²⁴

Fixed costs and economies of scale

Detailed information would need to be gathered to assess whether fixed costs are high relative to turnover. If fixed costs are not too high, this would be an indication of low barriers to entry in a scenario of competition for the market.²⁵ Information gathered would also need to take into account any sunk costs and the cost of bidding for new contracts.

²³ Some, but not all, of these costs may also arise if the existing provider needs to update their systems.

²⁴ A possible analogy would be with TV services: we need a new TV set to switch from a non-HD to an HD service but the costs are likely to be much smaller when switching between two different providers of HD services. In any event, it cannot be ruled out that total switching costs to banks, even if just switching between different suppliers of the same service, add up to more than the savings that are likely to be gained as a result of introducing competition.

²⁵ In terms of competition “in the market”, high fixed costs relative to variable costs imply a disadvantage to a smaller player even if fixed costs are low relative to turnover.

It is furthermore possible that technology development will make these fixed costs decrease in the future. Subject to interoperability with other countries, it is also possible that any fixed costs can be spread across transactions arising in multiple countries.

Economies of scope

Economies of scope could be a further source of competitive advantage to VocaLink since VocaLink provide infrastructure for 3 different schemes. However, we understand that the three infrastructures operate broadly separately. So economies of scope may only be significant if supplying infrastructure services to a close variant of an existing product.

Having one infrastructure provider serving several schemes may also have resilience benefits as, in theory, they might be able to move transactions from one scheme to another if one scheme had a problem. At the same time, though, competing infrastructure suppliers could imply greater resilience if one infrastructure provider had a problem.

Resilience and risk aversion

A further barrier to switching infrastructure provider may be risk aversion on the part of the scheme users. Their priority is likely to be that the system keeps running well so a potential cost reduction that will not be big in relative terms may not be enough to persuade them to take a risk on using a new provider. This will apply both to competition for the market and in the market but probably more so to the former.

Barriers to entry to competition “in the market”

Barriers to entry may be generally higher in terms of “competition in the market”, i.e. in terms of how likely it is that an infrastructure will be able to offer its services for a scheme where another infrastructure already operates.

This type of competition involves costs of infrastructure duplication for exactly the same service, and infrastructure costs are mostly fixed costs so duplication may lead to considerably higher prices. In addition this type of competition would require a very high level of interoperability among the infrastructures so that a payment initiated through one of the two could be completed in the other one without significant loss of functionality. Convergence of standards and technology development particularly internationally may contribute to facilitate interoperability.

Network effects

Network effects²⁶ may play a role as an additional barrier to entry at the infrastructure level. With imperfect interoperability across infrastructures, there is more cost to a transaction that ‘crosses’

²⁶ Network effects are said to be present when the value of a product/service to users depends on how many other users select the same product/service. Here, we consider “positive network effects” – the value to users increases with the number of other users of the same product/service. Network effects are said to be negative if the converse is true.

infrastructures than one within the same infrastructure.²⁷ As a result, an infrastructure provider may look less attractive if it supplies only a small fraction of the market.

Interoperability

Smooth interoperability of infrastructures would also contribute to reducing network effects with respect to infrastructure provision and this would be particularly important for competition “in the market”. It would imply that an infrastructure would not be driven out of the market if it had a small share because its small share would not decrease its value to users.

Competition “in the market” in infrastructure services for the LINK scheme

An example where competition in the market may already occur is in the provision of infrastructure services to LINK which is provided by VocaLink under a set of parallel contracts between VocaLink and individual banks. Visa and MasterCard have practically identical connectivity across ATMs and between ATMs and banks, by virtue of their operating of the Visa and MasterCard schemes, so that they are immediately feasible alternative suppliers of the services that VocaLink currently provides to the LINK scheme.²⁸

Furthermore, any one issuing bank may be able to switch to Visa individually without incurring any inconvenience even if they were the only ones switching. When a transaction is initiated (a card slotted into the ATM) the ATM has a mapping from the card number to processors to whom the transaction is to be sent. This mapping is already in use under the LINK scheme as for example when a card is used in an ATM of the drawn account own bank (a on-us transaction) the ATM’s mapping routes the transaction not to VocaLink for processing but to be processed internally by the bank in question. As such competition in-the-market for LINK scheme transaction processing may already be able to take place seamlessly from the perspective of the card issuer.

Indeed, given the immediacy and very low cost with which both demand substitution and supply substitution could occur for the provision of infrastructure services to the LINK scheme, VocaLink may already be in competition with Visa and MasterCard in this market.

This is therefore an important example to illustrate the argument that barriers to entry are significantly lower and competition in the market is greatly facilitated when interoperability and commonality of standards are high.

Competition “for the market” for FPS, for other schemes, and internationally

An important indication of feasibility of competition for the market is the fact that there was at least one other credible bidder in the contract for infrastructure business for FPS. Bidding in infrastructure contracts happens in other countries as well and a number of credible bidders is generally present ensuring a degree of competition in these markets. This is particularly the case where new systems are being developed. As VocaLink has bid for systems infrastructure business

²⁷ A parallel from mobile network operation is when users are charged more for cross network than own network calls (which may be cost reflective or not). Under this pricing structure a smaller network is at a disadvantage because its customers can expect to on average pay more for their calls.

²⁸ It is also worth noting that Visa and MasterCard are competitors, at the scheme level, to LINK.

in other countries, so could infrastructure service providers from other countries compete with VocaLink for markets in the UK.

A number of potential competitors include SWIFT who signalled interest in entering into payment systems infrastructure and Equens and STET, both often identified as key potential competitors for VocaLink. Equens currently provides retail payments services (including payments infrastructure provision) in the Netherlands for its domestic payment processing. STET provides similar retail payments services in France and Belgium. These firms' capability in the provision of payments infrastructure is likely allow them to compete with VocaLink in the UK.

It is however worth distinguishing between competition in bidding to build the infrastructure for a new system and competition to supply infrastructure to a system which is already in operation. Clearly, incumbency effects will be much stronger in the latter. However, it is also possible to design a bidding process where only the management of existing assets is put to tender. In this way, switching costs for a new provider of these services would be lower and, for the management part of the services, competition for the market should be able to deliver efficiency gains.

Conclusions on potential market power and incumbency advantage of VocaLink

Incumbency advantages may be significant and a particular source of incumbency advantage in infrastructure to interbank payment systems is the significant switching costs that banks would face to change supplier of infrastructure services.

On the other hand, VocaLink is not unbeatable and indeed it has failed to win contracts in the UK to the C&CCC scheme.²⁹ Losses may be an indication of strong competition "for the market" but may also be specific to the C&CCC scheme where it has been possible to break up infrastructure functions somewhat and commoditise some of these services.³⁰ Hence the incumbency advantages seem likely to vary by scheme.

It is difficult to precisely assess the strength of the competitive constraint exercised by international competitors, such as the examples discussed above, on VocaLink, particularly when competing for relatively complex infrastructure services for which VocaLink is the incumbent. They are credible companies that successfully operate in similar markets in other countries. Therefore, they could be in a position to bid against VocaLink in UK markets as well unless there are reasons to expect the UK to be less contestable than other markets. This could perhaps be the case because of its currency area (making it a smaller market than euro-area or dollar markets) or specificities in its existing systems (in particular the Bacs scheme and its tens of thousands of direct connections to corporate users and the UK systems' use of a range of standards that differ from ISO20022 and SEPA). It is also unclear whether competitive constraints which may be present when selecting a provider for a new scheme remain effective at a later stage.

2.5 Standards, interoperability and competition

This section discusses some of the attempts at European level to increase standardisation and improve interoperability in the provision of services to payment systems. We start by discussing

²⁹ VocaLink did not win subsequent re-tendering of the C&CCC contract.

³⁰ Or it could be because the actual central infrastructure service to C&CCC is not as complicated as that required by other schemes.

what interoperability is and how interoperability and standardisation may help in facilitating or promoting competition. We discuss also possible drawbacks in relation to standard negotiations. We conclude with what is arguably the most ambitious project in this area, SEPA, the Single European Payments Area project, and some examples, followed by section conclusions.

What is interoperability?

Full interoperability requires common messaging and processing flows, common operational procedures and exception handling, synchronisation of routing tables, of processing cycles and of settlement phases and cycles. Indeed, ensuring this within a system is what the payment system operator does with respect to its members, but in this section we consider interoperability with respect to infrastructure providers such that two infrastructure providers could deliver services within the same payment system.

Interoperability would probably require collaboration in the process of reaching and implementing the arranged conditions. Parties to an interoperability agreement may need to cooperate on creating the interoperable connection even though they subsequently compete on services

Interoperability, standardisation and competition

Standardisation is needed for complementarities³¹ to be fully exploited and to facilitate the achievement of network benefits. Standards include technical standards (how systems operate), business standards (a standardised legal and contractual framework), and standards regarding interoperability. Technical standards foster industry-wide adherence to a system and reduce development and operational costs in the processing of payments.

Non-proprietary, transparent and open standards that also facilitate interoperability can help introducing competition “in the market” where otherwise only competition “for the market” would have been feasible. They may create the possibility that transactions between users of different infrastructures are completed seamlessly and thus open up the market to the possibility of more than one infrastructure operating simultaneously. This means renewed incentives in terms of pricing, distribution channels, brand, customer service and core value propositions. Similarly, they can facilitate platform competition and entry through a relative reduction of the market advantages of incumbent payment systems over newcomers. This effect may occur as the flexibility of infrastructure services improves and an entrant is able to choose among alternative providers and obtain a competitively priced supply of infrastructure services.

The consequences of low interoperability, on the other hand, include overlapping coverage and inefficiency. By keeping as separate market segments that could otherwise be brought together, low interoperability complicates the exploitation of economies of scale and of positive externalities and may obstruct the modernization of retail payment systems.

The effects of the lack of interoperability are well exemplified by the situation of locally-based solutions and different country implementations of similar payment products across Europe, thus rendering cross border transactions cumbersome and costly. This in effect prevents competition

³¹ Complementarities are generally in the sense of investments that are made and which can benefit all competitors. For example a good quality messaging system once agreed upon and jointly implemented can bring benefits to all competitors and those benefits are greater the more widespread is its use.

from outside national markets to have a disciplining effect on national suppliers. Due to path-dependence, cross border interoperability is very hard to achieve in a decentralised form. It is only recently, motivated by the Single Euro Payments Area (SEPA) project, that all major stakeholders have become actively engaged in the aim of overcoming many of these hurdles and so, contribute effectively to bringing all these payment systems together.

But standardisation can also have drawbacks

Standards and the slow process of bargaining and agreeing standards can have a negative impact on market competition. Standardisation may result in lock-in into obsolete and/or inefficient solutions and may increase the future costs of transitioning to new and improved technologies. Standards can be devised in a strategic way so as to raise entry costs to potential rivals and may more generally distort competition if they have diverging costs impacts on the different competitors.

Another risk of standardisation, and the discussions among competitors that it entails, is that standards may affect effective competition in downstream markets. Centrally-agreed common features in the functioning of payment arrangements can sometimes hamper product and/or service differentiation at the level of individual banks. For a payment system to ensure a smooth and seamless exchange of data and financial flows, it is necessary to rely on a minimum set of shared technical standards and business rules. Most of the time, this common framework is developed jointly and it implies that members of the scheme have chosen to abide by certain rules that, for example, set down fixed execution times or specify underlying technical requirements. At times, upstream restrictions can set a binding cap to the extent private service offerings in downstream markets may deviate from certain core propositions common to all participants in the scheme. This could imply a low level of retail innovation outside the platform. In addition, it may cause insufficient product variety and facilitate collusion.

SEPA

The single European payments area or SEPA Regulation (EC 260/2012) adopted in 2012, aims to create the reality of a European Single Market for retail payments. . SEPA requires interoperability between retail payment systems processing euro payments such that all credit transfers and direct debits in euro are to be made under the same SEPA format.³²

Box 6: Interoperability and SEPA – single European payments area?

The European Commission and the ECB idealised SEPA as an integrated market for payment services which is subject to effective competition and where there is no distinction between cross-border and national payments within the euro area. This ultimately implies the removal of all technical, legal and commercial barriers between the current national payment markets.

³² The original migration rates for credit transfers and direct debits on 1 February 2014 were not high enough to ensure a smooth transition to SEPA despite the important work already carried out by all involved. Therefore, the Commission introduced an additional transition period of six months – until 1 August 2014 – to ensure minimal disruption for consumers and businesses. After this period, no bank or payment institution should use any payments processing that differ from the SEPA standard.

Art. 4.2 of SEPA

“The operator or, in the absence of a formal operator, the participants of a retail payment system within the Union shall ensure that their payment system is technically interoperable with other retail payment systems within the Union through the use of standards developed by international or European standardisation bodies. In addition, they shall not adopt business rules that restrict interoperability with other retail payment systems within the Union.

Payment systems designated under Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems (14) shall only be obliged to ensure technical interoperability with other payment systems designated under the same Directive”.

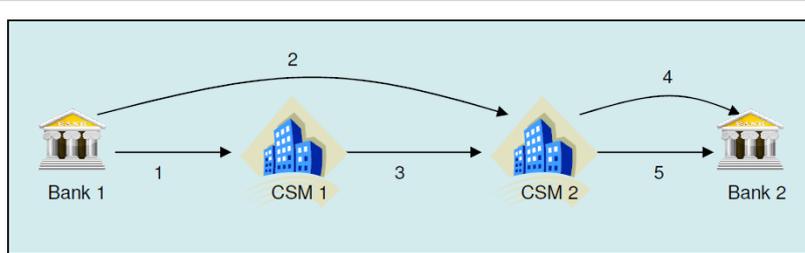
Interoperability is a key condition to enable banks to be reachable without necessarily being obliged to participate in different infrastructures. Interoperability of payments infrastructures is a cornerstone of SEPA.

EU Regulation 260/2012 (March, 2012)

Considerations:

- (10) Technical interoperability is a prerequisite for competition. In order to create an integrated market for electronic payments systems in euro, it is essential that the processing of credit transfers and direct debits is not hindered by business rules or technical obstacles such as compulsory adherence to more than one system for settling cross-border payments. Credit transfers and direct debits should be carried out under a scheme, the basic rules of which are adhered to by payment services providers (PSPs) representing a majority of PSPs within a majority of the Member States and constituting a majority of PSPs within the Union, and which are the same both for cross-border and for purely national credit transfer and direct debit transactions. Where there is more than one payment system for the processing of such payments, those payment systems should be interoperable through the use of Union-wide and international standards so that all payment services users (PSUs) and all PSPs can enjoy the benefits of seamless retail euro payments across the Union.

Example - EACHA³³ Interoperability Framework



- 1) Bank1 sends Payments file to Clearing and Settlement Mechanism 1 (CSM1) for processing
- 2) At Settlement time CSM1 will debit Bank1 and Credit CSM2 though TARGET2 with the value of transactions for Bank2
- 3) CSM1 will send the Payment instructions to CSM2
- 4) CSM2 will reconcile the Credit amount received in TARGET2 with the Payment files received from CSM1. Upon successful reconciliation, at Settlement time CSM2 will Credit Bank2 through Target2 with the funds received from CSM1
- 5) CSM2 will send the Payments file to Bank2

Source: EACHA

³³ EACHA stands for European automated clearing house association.

The European SEPA project creates a common standard in payment instruments in order to drive a more efficient market, competition, and faster and better operation of cross border transfers. SEPA is already operating but as yet there has been limited consolidation and most EU countries continue to have their separate systems.

Interoperability in the SEPA framework has been an important objective in Europe to facilitate and lower the cost of cross border transactions. In the UK, cross border transactions are a very small percentage of all transactions so the motivation for interoperability with the euro area is less direct. However, most of the stakeholders we spoke to shared the view that interoperability would be an important step towards increasing competition at different levels of the UK payments supply chain.³⁴ The SEPA standards were not, however, unanimously regarded as ideal.

Examples

Two of the larger market players in this area are Equens and STET and they provide two distinct examples of how interoperability has been the basis for two different forms that competition may take.³⁵

Equens' business model, following the imposition of interoperability between payments infrastructure, is one of multiple clearing & settlement mechanisms (CSMs) operating in the same market.³⁶ Equens is lining up customers (financial services providers) in a range of EU countries and entering into inter-operability agreements with other infrastructures. Equens therefore seems to be aiming at "competition in the market"

In contrast, STET appears to compete "for the market". Since 2012-2013, STET serves also the Belgian market, using a CSM specific to Belgium, which was built on the infrastructure developed for France.

In contrast, in the UK, the newly developed FPS uses the ISO 8583 messaging standard, in line with the UK's existing card payment infrastructure. Countries where versions of faster payments have developed more recently such as Singapore and Australia have gone with the newer and internationally accepted ISO 20022 standard, the same standard used by SEPA. ISO 20022, and in particular ISO20022 XML, allows a lot more, and more structured information to flow alongside the payment itself and is more flexible.³⁷

Conclusions from this section

Interoperability makes all system participants (e.g. banks) reachable while allowing each participant choice as to the infrastructures in which to participate. Interoperability is therefore a pre-condition for competition in infrastructure markets.

³⁴ Interoperability understood as the ability to have transactions that initiate in one infrastructure and terminate in another, seamlessly, has the potential to open up the infrastructure market segment to new providers and increase competition at that level. This would in turn facilitate entry at the system operation level because finding a competitive infrastructure provider would be easier.

³⁵ However, it is important to recognise that SEPA has not brought as much standardisation as originally hoped for. There are still different countries with different approaches even when using ISO20022.

³⁶ Equens is the provider of the Dutch central infrastructure.

³⁷ "The business case for ISO 20022 is compelling, providing financial services decides to change its existing systems and commercial structure to one that is standardised around internal and external industry process and procedural standards," says Gary Wright, CEO at BISS Research.

Standards that are non-proprietary, transparent and open are necessary to facilitate interoperability and introduce competition “in the market” where only competition “for the market” would otherwise be possible.

SEPA is an ambitious project to integrate the payment systems markets across the EU. An example of how it might succeed is provided by Equens and the way Equens has used interoperability to introduce itself as an additional competitor in markets where other infrastructure service providers already operate.

The UK’s FPS has not been made to be SEPA compliant and uses a standard different from SEPA’s ISO 20022, contrary to what other countries where own versions of FPS have subsequently been introduced. This may compromise interoperability between UK and other EU systems (which in itself is unlikely have a significant effect given that cross border transactions are an almost negligible percentage of UK transactions) but may have been a missed opportunity to start moving all UK systems to a more interoperable standard. Conversely it would need to be considered whether there have been any advantages including those associated to interoperability from FPS using the same standards as in the card systems.

2.6 VocaLink incentives to affect prices and downstream markets

In this section we consider whether, in the event that it were concluded that VocaLink has significant market power in some or all of the markets where it operates, we would expect VocaLink to use such market power to overcharge for its services, reduce quality, stall innovation and/or affect downstream markets.³⁸ The motivation for the question is that, due to its particular ownership and charging structures, VocaLink’s incentives to exploit eventual market power are different from what would normally be expected.

We are making this assessment under the assumption that VocaLink’s strategy is determined by the preferences of its owners. This raises particular concerns because VocaLink’s owners operate as competitors in downstream retail banking services, in relation to which interbank payment provision is an important input and where, in turn, they compete with other service providers who are not owners of VocaLink. Clearly, with effectively independent governance, many of the incentives discussed here, where they relate with VocaLink’s owners being in competition with non-owners in downstream markets, may not be present.

VocaLink’s ownership structure

VocaLink’s joint owners are competitors in the downstream retail banking market. This ownership structure is therefore both a form of collaboration by competitors and vertical integration between infrastructure and payment system operation levels.

The latter has advantages in situations where it avoids the “hold-up problem”. This problem relates to supplier reticence to make sunk costs investments on a highly relationship-specific product/service, for fear of being “held-up” by the customer since there is no other possible

³⁸ An issue of particular relevance in downstream markets (i.e. retail banking level) is the set of conditions for “direct access” to schemes. These are mostly determined at the level of the scheme operator (with the exception of LINK where VocaLink deals directly with banks) and as such will be discussed in the respective chapter.

purchaser. This problem leads to underinvestment in the relationship-specific product/service. It can be solved by vertical integration between the supplier and the purchaser.

Collaborations by competitors may be justifiable by pro-competitive motives. Banks have both operational and strategic interest in having some control over VocaLink given its important role in payments infrastructure and given that they are also VocaLink's main users. But collaborations may also have the effect to distort competition in the affected markets. In particular, it is important to assess whether this particular collaboration might have the effect to exclude rivals or raise rivals costs and/or facilitate collusion in the downstream market.

Access conditions

At present, access conditions are determined at the payment system operator level so there is no direct impact of collaboration and/or joint ownership at infrastructure level on access. But, if in the process of reviewing access conditions at the payment system operator level, changes are introduced at that level, it must be ensured that they are not replaced by restrictions imposed at the infrastructure level. As for the possible effect on rivals' costs or on downstream prices, we note that the infrastructure costs are quite small relative to the level of revenues associated with interbank payment services at the retail banking level. These issues are not discussed here but in the next Chapter since access conditions are mainly determined by the payment system operators.

Direct incentive to charge high prices

VocaLink is owned by its main users, 13 banks/building societies, and the 5 biggest banks own 85% of the firm. Given that owners are also users, there is no direct incentive to overcharge. On the other hand, any profits from overcharging would accrue to owners – so incentives for overcharge effects roughly net out.³⁹ It is noteworthy that VocaLink has not in fact distributed any profits.

Incentives to charge high prices to affect downstream markets

The effectiveness of using excessive prices upstream to sustain collusive high prices downstream depends on these upstream costs representing a large fraction of downstream revenues. There are strong indications that this is not the case, although bank revenues for payment services are not always easy to identify. Some estimates put payment services revenues collected by banks at tens of times greater than the total paid to the payment system operator and the infrastructure. As such, upstream prices would be a weak coordinating device to maintain high downstream prices. (See Box 1)

Incentives to stall innovation

Incentives for innovation could be affected by ownership arrangements of VocaLink or through decisions made by payment system operators. For example, some large could limit innovation at the infrastructure level because of costs which they would have to incur within their own banks or because the (slow) speed at which they would be able to adapt their systems would give an advantage to other smaller or newer banks.

³⁹ Although this is only exactly true if ownership proportion is roughly the same as transaction volume proportion. If ownership share is greater than transaction, share then there would remain some incentive to overcharge.

The owners of VocaLink could have the incentive to prevent downstream competing offerings from developing. For example, VocaLink could be prevented by its owners from offering competitive services to payment systems that would compete with the ones run by the banks or that give banks significant revenues. In this regard, however, the new mobile-based point-of-sale Zapp service which is being introduced by VocaLink seems to show precisely the opposite – that VocaLink’s owners have allowed it to develop a product which could cannibalise other areas of downstream revenue for the banks.

On the other hand, VocaLink’s introduction of Zapp might be considered the least bad outcome from its owners’ perspective. If there is a conviction that either Zapp or a Zapp equivalent will be introduced, the banks may well prefer a solution where it is introduced by a supplier which they own. In addition, if this introduction implies specific investments by the banks, the vertical ownership approach solves the potential hold-up problem that could otherwise arise.

2.7 Conclusions on feasibility of competition at the infrastructure level

The discussion in this section suggests that

- Competition for the market is likely to be feasible and that, to a certain extent, already occurs internationally. This is particularly the case when new payment systems are being developed.
- The strength of the above conclusion varies across schemes; infrastructure for Bacs may be less contestable due to scheme specificity; the same appears true for CHAPS given its tight link to the BoE’s RTGS services; infrastructure for FPS and C&CCC (after cheque imaging) appears more so. Further research would need to be conducted on switching costs within banks and within corporates in order to assess the strength of competition for the market.
- Competition in the market has drawbacks in terms of fixed cost replication and seems less feasible for some schemes – competition in the market does, however, occur for LINK, given the immediacy and low cost with which a switch to for example Visa could take place.
- Currently UK interbank schemes use a range of standards most of which differ from standards used internationally; standards convergence would facilitate competition for the market as well as in the market. However, standardisation can also make it harder to introduce different standards in competition schemes potentially limiting innovation from elsewhere.
- Interoperability has the potential to allow multiple infrastructure providers for a particular scheme and therefore to make competition in the market feasible for the other interbank schemes in the medium term.
- The particular ownership structure of VocaLink does not appear likely to have significant detrimental effects on competition: doesn’t appear to give an incentive to have excessive prices for infrastructure; and doesn’t appear likely to be facilitating collusion of prices in other markets. On the other hand it seems to have an unclear effect on incentives to innovate and it may have the potential to replicate problems such as limiting access which more commonly arise at system operator level.

3 Overview of competition at the payment system operator level

This chapter provides an analysis of competition in payment systems operation, with a particular focus on interbank payment systems.

We start by noting particular characteristics of payment systems which are likely to affect the way in which competition might develop in these markets. These influence our approach to definition of relevant markets and lead us to consider how market definition may be affected by future developments in the sector.

We then consider factors that are likely to affect the effectiveness of competition in the relevant markets, such as barriers to entry resulting from high switching costs and network externalities which can unduly strengthen the market position of incumbents. We consider also what might be gained if more effective competition could develop, as well as potential drawbacks from competition in these markets.

The final section concludes.

3.1 Definitions and background

For the purpose of this document we define a payment system as a set of rules designed to enable transfers of funds. The rules set out how payments are processed and the criteria service providers need to meet in order to gain access to the system.

There may be separation between ownership and governance if the scheme rules and other important elements of the scheme's strategy are determined with a degree of independence from scheme owners and scheme direct members.

Direct members are banks or building societies that have a direct connection to the scheme and therefore are able to make scheme transactions on their own accord. Indirect members on the other hand require an agency agreement with a direct member to effect scheme transactions on their behalf.

Important elements of the scheme's strategy, in the case of interbank payment systems, are the selection of the infrastructure services provider and the determination of the criteria for direct membership. In the UK interbank schemes, historically, both scheme operators and the Payments Council have been involved in specifying what services the infrastructure needs to provide and in the process of selecting the infrastructure provider.⁴⁰

Annex 1 provides background information on the characteristics and services offered by the main payment systems operators in the UK.

⁴⁰ e.g. "In 2012, the Payments Council awarded VocaLink the contract to provide a database service to support the development of a new mobile payments infrastructure for the UK." According to <http://www.VocaLink.com/payments-services/uk-payments.aspx>.

The two sub-sections below provide some background on economic characteristics of payment systems operation and different levels at which competition might occur, before embarking on the definition of relevant markets and the analysis of competition therein.

3.1.1 Particular economic features of payment systems operation

Payment systems are characterised by network effects which derive from the fact that each additional user increases the value of the network for each of the existing users. The provision of payment services requires connectivity between millions of payees, payers, financial institutions and payment system operators. This may give rise to inefficiencies caused by misalignment of incentives.

Payment systems are also characterised by coordination among the large number of participants and the setting of industry-wide standards. This coordination may inhibit long-run growth and the development of modern and innovative payment solutions.

“Two-sided” network effects cause complex interdependencies that affect the pricing structure of payment instruments, in particular the setting of interchange fees in payment card markets. Economic models of two-sided markets suggest that competition among network operators may not yield efficient market outcomes.⁴¹

Finally, payment systems must be highly secure and resilient which involves investment in fraud mitigation systems and other elements of resilience. The incentives of private, competing operators to make such investments may not be aligned to achieve the socially desirable level of prudent behaviour by market participants.

Asymmetric bargaining positions in payment system markets

Payment card schemes have network effects: consumers prefer cards that have widespread acceptance and merchants prefer to accept (indeed are “compelled” to accept)⁴² cards that are widely held. They are also two-sided markets where the split of total costs or prices between the two side can affect overall transactions. Hence, it may be efficient for the side that is most price-sensitive to pay less (including being subsidised). In card schemes it is currently the merchants who are considered the less price sensitive side. This is because acceptance of a range of widely held cards is something that the merchants feel compelled to do at the risk of losing business to competitors. As a result, card schemes, even competing card schemes, may have the ability to charge high fees to merchants.

There may be a similar effect in the current context of UK’s interbank schemes. Systems like Bacs, FPS, CHAPS, LINK, C&CCC, have network effects from the banks’ perspectives – adhering to a scheme is only valuable if other banks adhere and not adhering to a scheme that is widely used by others results in potential loss of retail customers. Non-member banks may feel compelled into gaining connections to all of these schemes in order to be able to offer the services that their customers are likely to demand. This puts them in a situation of weak bargaining position and

⁴¹ See, for example, Rochet, J-C and Tirole, J (2003) Platform Competition in Two-Sided Markets. Journal of the European Economic Association, Vol. 1(4), 990—1029.

⁴² As the number of merchants accepting cards and consumers using cards increase, merchants have more and more to lose if the decide not to accept cards.

therefore they can be made to overpay for using the system, particularly if there is weak competition among direct members to provide sponsoring services to give them indirect access to the schemes.

This could be considered similar to an ‘access to an essential input’ situation – in order to compete in retail banking, banks need access to payment schemes that are commonly used by customers. The possibility that those who benefit from scheme revenues will overcharge non members needs therefore to be considered.

But since we do not have one scheme owner but rather several banks own the interbank systems, it would rather be expected that direct members compete with each other for the business of the indirect users. However, there have been complaints from indirect users about access conditions. These may be a manifestation of the type of incentives described above.

What is meant by competition at payment system operator level

Competition among payment schemes implies the availability of two or more products – i.e. payment products and associated scheme rules that define them – that are quite close substitutes from the perspective of those responsible for making the choice of which to use and/or from the perspective of those responsible for making the choice of which to select to offer their clients as alternatives.

Similarly, when considering the existence of barriers to entry for a new scheme we need to consider the relevant switching costs and that these may be the banks’ rather than the final users’. For example, if a competitor to Direct Debit tried to enter the market offering a shorter payment cycle or some additional functionality, this could be preferred by final users but it would be to a large extent the banks’ decision whether or not to incur the potentially large costs involved in setting up secure connections to this new scheme. Hence switching costs for both banks and users would need to be considered.

3.1.2 Two interconnected levels of competition

Competition among payment systems can be characterised as occurring at two levels. At one level, payment systems compete for members or participants and at one other level, they compete for usage. The terms in which competition develops at each of these two levels are interconnected. So, if only one of two potential competitors is successful at attracting participants, this system will face little competition for usage. If conversely two separate systems have achieved ubiquity in theory they could compete aggressively at the usage level.

The two levels of competition influence each other: if a system is successful at gaining significant volumes, high levels of acceptance at merchants or access to a large number of ATMs, it becomes more attractive to new participants; and, the more participants a scheme has, the greater the scope to gain further volumes, merchants or ATMs.

For example, Visa and MasterCard are an example of two schemes that compete at both levels. The outcome at the participation level is that there are many consumers and retailers that participate in both schemes. Hence it may be the case that competition causes schemes to focus on encouraging consumers to use their cards

Card schemes have also the characteristic that value of acceptance by merchants and of participation by consumers are interconnected. A scheme with high adoption rates by consumers may face little competitive pressure on the merchant side. For example, merchants may feel the need to accept both Visa and MasterCard since failing to accept either could entail significant loss of sales. As such, from the perspective of the merchants, Visa and MasterCard may not really be substitutes. Yet Visa and MasterCard compete both for participants and for usage on the consumer side.

Interbank schemes have achieved a high level of ubiquity in the sense that retail banking customers have access, and expect to have access, to all 5 schemes.⁴³ This may imply that from a bank's perspective, the 5 schemes are not substitutes. Given their ubiquity, they also may not compete for participants on the consumer side. It therefore only remains to question whether they compete for usage. The current design of these systems mostly envisages complementarity rather than substitution among the services that they provide. As such, there may not currently be a context of competition among these schemes.

3.2 Definition of relevant markets

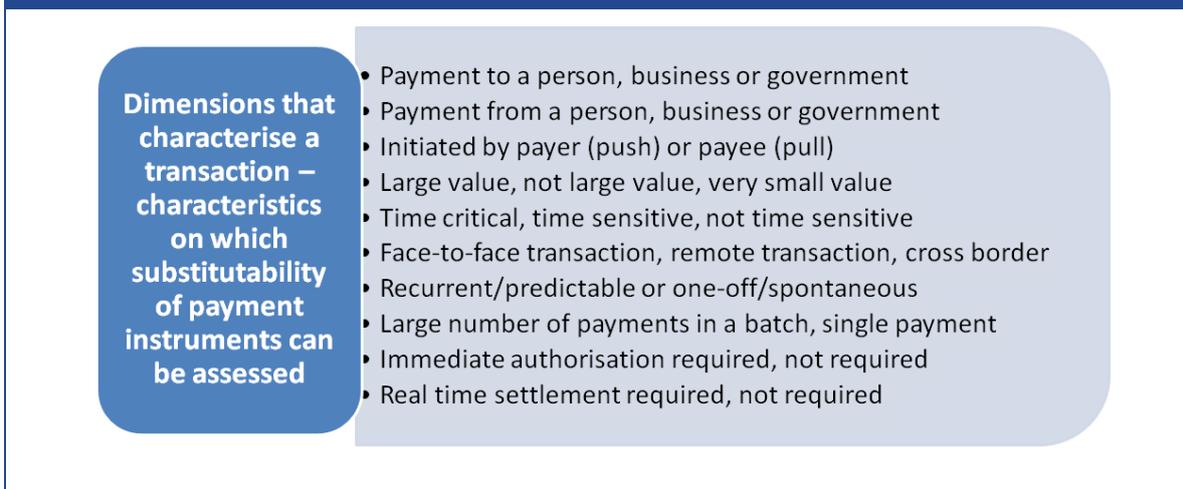
To define relevant markets at the scheme level, we take into account the characteristics of the different payment products that each scheme offers and the range of payment functions that they can be used for. Different payment "products" generally have different value for particular demand segments and as a function of the particular "payment situation". The main payment products currently offered in the UK are the following:

- Cash (supported by the LINK network of ATMs)
- Bacs Direct Credits
- Bacs Direct Debits
- CHAPS Retail and Commercial
- CHAPS Wholesale Financial
- FPS Standing Orders
- FPS Single Immediate Payments
- FPS Forward Dated Payments
- C&CCC Cheques
- C&CCC Credits – paper based
- Credit card payments
- Debit card payments
- e-money services (PayPal)
- Mobile payment services (Paym, Pingit, to be introduced Zapp) which mainly go across the FPS scheme and similar services going over the card systems.

Payment needs vary widely across users and according to circumstance. The main "payment situations" can be characterised along a set of dimensions according to which substitutability of payment instruments can be assessed. These include:

⁴³ Consumers may or may not understand the distinction between the schemes as opposed to expecting to be able to use all of the various products designed by the schemes.

Figure 1: Dimensions of relevant payment characteristics



Source: London Economics

One approach commonly followed to define relevant markets is to start with a relatively narrow set of products and ask whether a hypothetical monopolist supplier of these would be able to profitably sustain supra-competitive prices. If the set of products we start with is too narrow to form a relevant market, the answer to this question will be negative. In other words, there will be products outside the initial set that are perceived as close substitutes by a significant subset of demand (or there are producers in adjacent markets that could rapidly and at very low cost initiate supply of products in the set). We should progressively expand the initial set of products until we find the narrowest set in relation to which the possibilities of substitution to products outside the set are limited, so that a hypothetical controlling monopolist would be able to charge supra-competitive prices without losing significant sales.⁴⁴⁴⁵

In the following sub-sections we first consider substitutability among payment products under current market circumstances and, next, potential for substitutability going forward, as product range and product design evolve to take advantage of new technologies and respective greater rates of adoption. The section focuses on substitution from the perception of end users. This may differ from the derived demand for banks for the different products and systems. There may be some circumstances where banks have a choice of which system to use to execute the transaction.

3.2.1 Current level of substitutability among different interbank payment products

The level of substitutability among different interbank payment products seems at present to be low. As a high level indication of this we provide a few examples of this below:

- The direct credit product offered by Bacs has very unique characteristics given its direct connection to tens of thousands of corporations, the ability to handle large payment

⁴⁴ The hypothetical monopolist approach is often implemented through a SSNIP - a small but significant and non-transitory increase in price. The SSNIP used to test the strength of substitution away from the hypothetical monopolist is generally set at 5% or 10%. The SSNIP test is usually applied in relation to prices compared to the competitive level (or to pre-merger prices in a merger case).

⁴⁵ Retail customers do not usually face transaction prices for most payment types and therefore the SSNIP test is likely to be most applicable to transactions by corporate customers.

batches and to correct mistakes after sending the instructions. Furthermore Bacs' Direct Debit is a pull product which can deal with recurring, regular payments of fluctuating value, for which no close substitutes are available elsewhere.⁴⁶ Bacs does not therefore appear presently to be significantly constrained by other payment products, not even those currently offered by FPS. In addition, FPS currently has a higher cost per transaction than Bacs. A 5% increase in the price of Bacs would therefore probably not make a large volume of demand move to FPS (or other alternatives).

- CHAPS seems unlikely to constrain FPS at current price levels because CHAPS is more expensive to process so a 5% price increase in FPS seems unlikely to shift volume from FPS to CHAPS; but a CHAPS transfer is also a different product from an FPS credit because it offers real time settlement which is valued when dealing with high value payments but less so for small value payments.
- FPS may be able to constrain CHAPS for the below £100,000 payments that are currently done through CHAPS. In reality, banks currently impose limits of around £25,000 on FPS transactions for retail customers although this varies by banks and customers. It is not clear why this is the case, but the implication is that there is currently a relatively small overlap between payments that can be processed by CHAPS and by FPS. As such there is only a very narrow range of CHAPS transactions whose pricing is constrained by FPS.
- Cheques do not currently appear to exert a constraint on any of the other payments for a large chunk of all transactions and this is unlikely to change in the future. In addition, declining cheque usage may mean that the customers who continue to use cheques perceive the other payment products as less of a substitute than those customers who have already switched to other payment products
- Some payment products have no close (demand-side) substitutes. A clear example is CHAPS given its uniqueness as RTGS service for large payments. An equally clear example is LINK since the ATM network based functionality that it offers does not have a close substitute in any of the other payments systems. Another example is Bacs, for some types of customer: corporations that value having a direct connection into the Bacs infrastructure may not find alternatives to Direct Debit or Direct Credit to be adequate substitutes. Similarly, FPS deals with transactions that are time sensitive, (although retail transactions tend not to require real-time settlement).

The information above is not designed to be a formal approach to market definition which would require substantially more work. Instead it leads us to have as a working assumption that, at present, payment products from the different interbank payment systems do not compete in the same relevant market. As such, we propose that we consider each of the payment products listed above as operating in separate relevant markets.⁴⁷ (Table 1, under the next heading, provides transactions information on each product by each of the interbank schemes.)

⁴⁶ Continuous Payment Authorities on payment cards can replicate some of this functionality as merchants can charge a payment card on a regular basis but this is not thought to have the same flexibility for merchants as Direct Debits.

⁴⁷ Consideration of supply substitution might lead us to conclude that the different products from a given payment system operator are all in the same relevant market since they share a lot of the same system operation elements and therefore a supplier able to supply one of the services is also likely to be able to supply the other services in the scheme. To exemplify, an operator of Direct Debit may be able to easily operate Direct Credit as well. Whether or not we have all the payment products of a given scheme in the same relevant market, many of the determinants of effective competition might need to be looked at at the individual product level because that is the more relevant grouping from the demand perspective.

We envisage, however, a significant scope for products to develop in the near future which may be more substitutable, as discussed in detail below.

Volumes processed under selected payment systems

The table below provides an overview of the relative volumes and values processed for a selection of payment products under each of the main schemes.

Table 1: Volumes processed under selected payment systems						
		Volume of transactions (000s)		Value of transactions (£ millions)		avg value per transaction (£)
		2013	%change over 2012	2013	%change over 2012	2013
Bacs	Standing Orders	18,409	8%			
	Direct Credits	2,151,714	-1%	3,103,579	2%	1,430
	Direct Debits	3,524,905	3%	1,115,065	4%	316
	Total Bacs	5,695,028	1%	4,218,644		741
CHAPS	Retail and Commercial	27,557	2%	15,509,721	-3%	562,823
	Wholesale Financial	7,419	7%	54,629,206	-2%	7,363,419
	Total CHAPS	34,976	3%	70,138,927	-2%	2,005,344
Faster Payments	Standing Order Payments	312,995	4%	88,885	11%	284
	Single Immediate Payments	502,025	32%	423,571	29%	844
	Forward Dated Payments	150,381	16%	257,794	24%	1,714
	Return Payments	2,228	25%	1,111	15%	499
	Total Faster Payments	967,629	19%	771,361	25%	797
C&CCC	Cheques	525,295	-12%	535,513	-11%	1,019
	Credits	40,569	-14%	21,109	-11%	520
	Euro debits	131	-21%	1,166	-2%	8,901
	Total Cheque & Credit	565,995	-12%	557,787	-11%	985
	Currency Clearing: US Dollar	26.9	-13%	328	-20%	12,193
Total interbank		7,263,655	2%	75,687,047	-2%	10,420
Cards	Total credit cards	2,550,000	7.5%	159,508	4.4%	62.6
	Total debit cards	8,386,000	7.1%	372,738	7.9%	44.4

Source: UK Payments Council - UK Payment Statistics Key statistics on the UK payment clearings, cash, card payments and payment markets, 2014

The different average transaction values of different products may also lend support to the view that various payment types are not close substitutes for each other.

3.2.2 Prospects for future substitutability among payment products

There are a few factors likely to impact on the level of substitutability among alternative payment products in the future. First, innovation in payment products under a given network and

innovation in payment networks themselves create more possibilities for payment product overlap. Prominent here is the range of possible new products that may be offered under the relatively new FPS payment network. Secondly, substitutability among products may be affected through changes in pricing structure such as for example making prices more transparent and more cost-reflective to end users. Another way in which new options for substitution may be activated is by giving potential users the option to choose among alternative payment products which product innovation, often on top of existing products, will facilitate.

As a result, if we frame the questions about relevant markets in more forward looking terms, we may have significantly different answers.

We can start with individual products from the above list. For example, Direct Debit (DD): is DD, as a means of effecting payments, a relevant market? In other words, would sufficient demand for the DD product switch to other payment forms if the cost of use increased significantly above its competitive level?⁴⁸ There are segments of demand for which DD is a preferred payment method (DD is used for close to 70% of household bill payments by UK residents⁴⁹) with but it is possible that perceived substitutability with other products increases in the future as new products are developed. Possible substitutes to DD may include existing alternatives such as credits (bank transfers using FPS through online banking, for example), debit cards, cheques and/or bank giro credit, and alternatives that might be created in the near future such as payments at ATMs, Zapp payments, and new forms of accessing banking services. If, in addition, consumers are given the option to choose among them and if the way in which consumers are charged for DD and other products becomes more transparent, the combined effect could be substantial enough that a hypothetical monopolist supplier of DD would lose significant sales to other products if it tried to charge a supra-competitive price for DD. This would then imply that DD would no longer constitute on its own a relevant market. The receiver of payments can also influence the choice of the payer by accepting or refusing to accept certain payment types. They can also impose charges or discounts to discourage or encourage the use of particular payment types.

Similar arguments might be valid for each of the other payment products. The degree of substitutability of alternatives may in each case be sufficient so that in the future existing and new payment products do not, on their own, constitute a relevant market. The following section provides a series of examples where substitutability among payment products, existing and new, is likely to increase.

The answer in each case will depend on demand elasticity, of which there is very little information in the literature. In addition, before pricing becomes more transparent and consumers are made aware of the price when making their choices, it may be quite difficult to estimate demand elasticity for consumers. It may be easier to do so for businesses since they are already often charged per unit fees for the payment services that they use.

If a prospective definition of relevant markets leads us to conclude that individual payment products are unlikely to form separate relevant markets, in the future we might test, next,

⁴⁸ It is very difficult to determine what the “competitive price” for a given payment product might be. Most of the products considered here are not currently supplied competitively and in some cases competitive supply may even be inefficient or at least result in unit costs and as such competitive price level much higher than current levels.

⁴⁹ From Bacs annual report, page 8 (the reported figure is 67%), which can be found at http://www.bacs.co.uk/Bacs/DocumentLibrary/Bacs_corporate_report_annual_review_2013.pdf

whether a group of payment products, in conjunction, might form a relevant market. For example, we can group payment products by the type of payment needs that they can fulfil – e.g. the set of all payment products that can be used to make purchases at point of sale (POS). It is difficult to say without making a detailed study of consumer behaviour at point of sale (with actual pricing variation for the alternative payment means) where the market definition exercise would lead us.⁵⁰ One possible scenario is one where in the future there will be more than one payment product in each relevant market while probably not the full set of products that could be used to make a certain category of payments will all be included in the same relevant market.

Importantly, though, it seems reasonable to expect that there is scope for increased substitution among payment products to develop in the near future. This is further illustrated by a number of examples, in the next section, of areas where product substitutability might develop. It is, in our view, more important to consider the scope for competition in the future to develop than to invest excessive resources in determining the exact boundaries of all the relevant markets in question at the current time.

3.3 Competition among payment schemes in the future

In this section we discuss some of the theoretical and practical aspects regarding the feasibility of effective competition at payment system operator level. We focus primarily on competition among interbank payment schemes.

One of the reasons that competition may change in the future is as a result of the creation of FPS and of related innovations. FPS has the potential and flexibility to be used as a basis for a range of payment products that will offer alternatives to existing products. This could create competition for usage among the schemes. Furthermore, FPS in competition with card schemes is also eminently plausible because they both offer instant authorisation of transactions and therefore the necessary characteristics to provide point-of-sale payment services.

This sub-section provides a series of examples where either actual or potential competition at scheme level appears feasible. We start with examples that involve services that are or might be offered on the basis of FPS, given the relatively recent introduction of this payment system and its great scope for being used as a basis on which to develop new products.

⁵⁰ We would also have to consider where else these products are used and whether they have close substitutes from outside the group in those other uses. For example, credit cards can be used also for remote payments; in some types of remote payments they may compete with other products, for example interbank credits or direct debits. The monopolist increasing the prices for all POS products may lose sales in non POS segments. This might be a significant constraint if credit cards have a lot of uses outside POS and there exist close substitutes in several of these.

⁵¹ A similar analysis would have to be done in relation to other payment situations. For example: what are all the payment products that a business could use to pay its employees and its suppliers? Which can we take away from this initial set so that no significant ability to substitute towards products outside the set remains? And in what other uses, and how significantly, might the products in the set lose market share to other products? What are all the payment products that can be used to for private parties to make remote payments to businesses? Which products can be used to make person-to-person payments?

FPS and Bacs

FPS payments are to some extent a substitute to Bacs Direct Credit payments. The levels of functionality are currently quite different, though. Substitutability could be likely to significantly increase as the use of FP-based services by businesses becomes more widespread and perhaps additional functionalities are developed.

Using FPS compared to Bacs based payments brings a shorter processing period and, in the particular case of forward-dated payments, that they can be processed when convenient for the banks or the system as a whole (e.g. evenings), compared to the ones that customers enter themselves which get processed immediately.

Credit transfers using FPS are also to some extent a substitute to Bacs Direct Debit but with significantly differing level of functionality at present. Again, it is possible that developing use and features will make the products closer substitutes in the future.

In terms of pricing, FPS is currently more expensive than Bacs on a per transaction basis. However, if there will be migration over time from Bacs, and from other payment products, to FPS and, if the cost per transaction of FPS goes down in response to this greater volume (which is likely where there are large fixed costs and small marginal costs) FPS will become an increasingly close substitute to Bacs also in terms of price.⁵²

Stakeholders during our consultations also noted that the file submission standard is the same for both Bacs and FPS and defended that both Bacs and FPS can deal well with payments which are sent as large batches of aggregated instructions. One advantage of the planned aspect in Bacs is that a substantial amount can be netted off.

FPS and C&CCC

Cheque payments, provided by C&CCC and credit transfers, provided by FPS are quite different products from the demand perspective. However, both can be used for person to person transfers and, for some demand segments, FPS could be considered to be simply a faster cheque. But for particular demand segments, especially final users who remain less willing to experiment with new payment forms, or who do not have account or mobile details for the payee, a switch from cheques to an FPS-based product is difficult to contemplate.

In the future, however, with digital imaging, it is possible that cheques become a closer substitute for FPS because of the faster, albeit not real-time, clearing that would arise.

FPS and CHAPS

Competition between FPS and CHAPS is also likely to grow more feasible in the future. A subset of 'not so large' CHAPS payments that do not require the RTGS feature could equally be processed by FPS if the current limit of £100,000 on FPS were lifted.⁵³ If this limit were lifted there would be a

⁵² Some of FPS products may thus in the future be considered as part of the same relevant market as some Bacs products, in the sense that a 5% price increase for the Bacs products in question would not be profitable.

⁵³ About 4/5 of CHAPS transactions (by volume) are retail and commercial and average in value just over £500,000.

greater range of payments for which there would be a choice between CHAPS and FPS. Users could then decide which to select depending on features and price.

In addition, FPS could be made to substitute more closely with CHAPS with some adaptations to its processing so as to be able to provide closer to real time finality. Enhanced functionality could allow payments relative to house purchases to move from CHAPS to FPS.

CHAPS versus other schemes

Substitution into CHAPS is equally possible. Before systems like FPS were introduced, large value payment systems (LVPSs) gained volume by offering lower prices. According to Bech et al (2008)⁵⁴ the average real value of payments processed in LVPSs declined over the early part of the decade of 2000's. This means that more relatively low value transactions were being processed at LVPSs. The authors consider that this was due to declining transaction prices. As these prices declined, the benefits of real-time settlement were more likely to outweigh the costs for a wider variety of smaller financial transactions. This therefore illustrates another case where users substitute across payment systems by weighing price with other characteristics of interest to them. Trade-offs between price and other factors can change over time with issues such as the financial crisis potentially having the effect of driving greater volume to LVPSs if real time settlement is more highly valued than in the past.

Money transfer services offer a range of products

International money transfer service providers such as MoneyGram provide in addition to person to person money transfers also a range of products such as bill payment, prepaid card loading, mobile phone top-ups, and payments to government. These services therefore compete with some of the services offered by the interbank and card systems. These transfer services can be initiated by cash at the local branch and they can be accessed online and the services paid for by use of a payment card. They offer services comparable to banking services often to unbanked consumers. But, in some countries, it is also common to see MoneyGram services being offered at bank branches.

Banking products offered at ATM networks

ATM networks are an attractive basis on which to develop new banking products due to geographic reach and adaptable technology. The range of products that has been introduced internationally or for which introduction plans exist covers a wide spectrum from those that target un-served market segments to those that directly compete with existing products. Examples include offering bill payments at ATMs, as seen in other countries as well as using ATMs and ATM-accepted cards to provide a broader range of banking services.

⁵⁴ Morten L. Bech, Christine Preisig, and Kimmo Soramäki, "Global Trends in Large-Value Payments", FRBNY Economic Policy Review / September 2008

Box 7: Bill payment and other banking services at ATMs – example of Portugal

Portugal's retail payment systems make extensive use of its ATM network. Its ATM machines are some of the most advanced in the world, and provide more services than those in any other country.⁵⁵

MB is the domestic scheme, owned by SIBS PAGAMENTOS, that administers the ATM and debit card systems that run on the SIBS FPS Multibanco network. As is the case with the UK, Portugal also has separation between scheme operation and infrastructure. SIBS is the only substantial network processor. It serves as the network for its own MB scheme, as well as for the Visa, MasterCard, and American Express schemes.

The range of services available at Portuguese ATMs includes:

- Withdraw and deposit funds
- View account balances and last ten transactions
- Change PIN
- Transfer funds between accounts, even at different banks
- Order cheques
- Pay bills (water , electricity, gas, and others)
- Pre-pay for certain internet services
- Pre-pay for certain phone plans and prepaid phone cards
- Make payments to the government (taxes, fees, court costs, etc.)
- Purchase hunting and fishing licenses
- Authorise direct debits
- Purchase inter-city train tickets
- Load transit cards for the Lisbon and Oporto mass transit systems
- Load Via Verde (automatic toll service)
- Book and pay for cinemas, shows , and other entertainment
- Contribute to charities

This example illustrates that an ATM network operator has the potential to offer a range of services that compete with a range of other payment systems including interbank payment products and cards.

Card schemes and basic banking services – Amex Bluebird

The Bluebird from American Express is a current account/debit card alternative signalling an expansion by Amex, best known for high-end cards such as its Platinum and Black, into the opposing end of the wealth spectrum to provide banking products without physical branches at prices that appeal to people who don't want to pay high banking fees.

⁵⁵ David S. Evans and Rosa Abrantes-Metz, "THE ECONOMICS AND REGULATION OF THE PORTUGUESE RETAIL PAYMENTS SYSTEM", SIBS, November 2013

Bluebird is an alternative for those unhappy about the fees and hidden charges often associated with debit and current accounts. It targets most directly the 70 million Americans who are unbanked or underbanked with an affordable way to move and manage their money.⁵⁶

The Bluebird account makes no charges for opening an account online, overdraft, inactivity, card replacement, foreign transactions, and has no annual or monthly fees. The Bluebird allows you to pay bills, from rent to a car payment, with no fees, either on their website or smartphone app. It takes a bill payment request and sends a paper cheque to be received by the payee within 5-7 business days. The account can be funded through direct deposit, cash deposit refills at Walmart, and by buying Vanilla Reloads cards that are sold at some merchants.

The penetration of mobile phones is likely to be a contributing factor to many of the proposed developments aimed at replacing traditional banking services. Mobile phones penetrate all income levels⁵⁷ and can give low income consumers low cost access to virtual bank branch services and indeed change the face of consumer retail banking.

Innovations in competition to Direct Debit

Some countries have developed alternatives to Direct Debit and continuous payment authorities. Essentially this type of substitute to Direct Debit has the receiving part send a request for payment to the payer and the payer responds by agreeing or not agreeing to pay. This gives more control to payers to prioritise and time payments. This would be an interesting innovation to those people that worry that Direct Debit will result in overdrafts and corresponding penalties. Bills could be sent to the phone but the account holder would control payment amounts and timings. In Sweden the use of direct debit is understood to be already dropping as users value increased control over the process of making payments.

This example illustrates how it is possible to envisage substitutes to products and services whose uniqueness users have grown accustomed to taking for granted. Online and mobile banking may accelerate the process of putting such innovations at users' fingertips.

Consumer to consumer payments

Cash and cheques continue to be widely used in this category of payments. For an electronic transaction, users can now typically select to do the payment via a bank account using Faster Payments, or another inter-bank system. There is also a great deal of innovation and new products being launched in this space, such as Paym. The 'Visa Personal Payments' functionality was also launched in Spring 2013. Consumers can access this service via participating Visa member banks, and can transfer money to another Visa cardholder in Europe.

⁵⁶ Source: <http://about.americanexpress.com/news/pr/2014/amex-serve-largest-free-cash-reload-network.aspx>

⁵⁷ As indicated by the fact that 92% of adults have a mobile phone. Source: <http://www.mobiletoday.co.uk/news/industry/28014/uk-mobile-market-penetration-at-92-per-cent-.aspx>

Other examples

As another example, consumers value the ability to make cashless point-of-sale purchases that get directly debited to their bank accounts. For this type of payment, Visa Debit and the new payment service, to be introduced, Zapp will be direct competitors. For payments that need to be made regularly and are not point-of-sale, consumers may see Direct Debit from Bacs, online banking with FPS and Visa or MasterCard credit or debit cards all as viable alternatives.

As such, there appear to be relevant markets where products from different schemes could compete in the near future and such overlaps are likely to increase over time with the introduction of innovations that expand the range of characteristics that a payment scheme operator might offer.

In the future, delimitation of relevant markets may not align with groups of products within a scheme. In other words a given scheme may offer products that are in different markets and different schemes may offer products that are in the same market.

Interbank systems and card systems

For many consumer-to-merchant payments, cash and cheques continue to be an option, although one that appeals only to certain demand segments. Non paper-based means have taken over in popularity and thus one type of payment that consumers often require is electronic payments from a UK payer to a UK merchant.

When this is a scheduled and cyclical payment, such as paying a utility bill (gas, electric, mobile phone) or subscription, the UK consumer can make the payment each time via a card, set up a 'recurring transaction' (or continuous payment authority) via a card payment system, or initiate a direct debit (via a domestic inter-bank system).

For spontaneous/one-off transactions within this category, the payment means typically used is a plastic card (debit, credit, prepaid or commercial card) as facilitated by the international card schemes of Visa, MasterCard and American Express. The transaction can take place 'face-to-face' or via an e-commerce transaction online. For the former innovations are in the process of bringing new options to market, such as the upcoming UK launch of Zapp. For the latter, other payment systems become relevant, such as PayPal.

large value payment systems CHIPS and Fedwire; Target2 and euro1

As discussed in chapter 2, CHAPS is the only sterling large value payments system. However, different arrangements exist in the market for large value payments in other jurisdictions. Some providers of these services are privately owned and there is some scope for differentiation as the example of CHIPS and Fedwire in the US demonstrate.

CHIPS stands for Clearing House Interbank Payments System (CHIPS) and is a United States private clearing house for large-value transactions owned by the financial institutions that use it. Fedwire Funds Service ('Fedwire') is another US clearing house for large value transactions but which is

operated by the Federal Reserve Banks. CHIPS has around a 40% market share of USD large value payments overall and a 95% market share in large-value international USD payments⁵⁸

Banks have the choice to use CHIPS or Fedwire. CHIPS is less costly to use both by charges and by funds required. Fedwire is more costly in terms of funds requirements because it is a real-time gross settlement system (RTGS) while CHIPS allows payments to be netted. As a result, though, Fedwire is preferred for very time-sensitive payments.⁵⁹

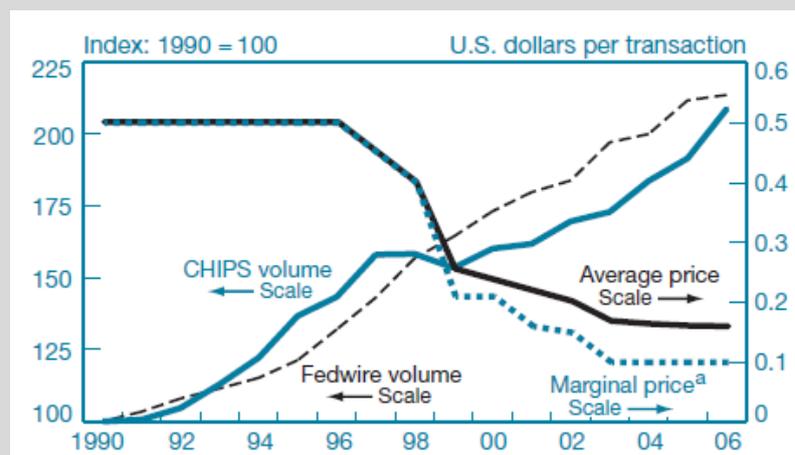
As such there may be advantages to having more than one supplier of large payment services. For example it offers greater flexibility to cater for different preferences over collateral requirements and time to completion. However: the sterling market may be too small to compensate for the additional fixed costs of having two large payments service suppliers; the savings would be low; and, in any case, banks' more significant costs arise from collateral requirements, which would be unlikely to decrease or might even increase.

Based on 2012 data, the average daily large value transactions in euro amount to €2.7 trillion; in USD the amount is around \$4 trillion and in GBP it is £280 billion. So the UK values are roughly 1/10 of their euro and USD counterparts.⁶⁰

Box 8: Competition between Fedwire and CHIPS for US large value payments

The reaction in relative volumes growth in Fedwire and CHIPS to instances of pricing changes provides a strong indication of competition between the two systems.

As an example, the growth in the respective volumes of payments submitted to Fedwire and CHIPS between 1990 and 2006 is illustrated below:



Source: Morten L. Bech, Christine Preisig, and Kimmo Soramäki, "Global Trends in Large-Value Payments", FRBNY

⁵⁸ As of 2012. Sources: ; http://www.frbservices.org/operations/fedwire/fedwire_funds_services_statistics.html; http://www.frbservices.org/operations/fedwire/fedwire_funds_services_statistics.html; http://www.treasury.gov/resource-center/international/standards-codes/Documents/FSAP_Technical%20Note_Payment%20Systems_Liquidity%20Risk%20Management_Final_5%2011%2010.pdf

⁵⁹ Fedwire processes \$2.8 trillion in transactions per day with average value per transaction of \$5.3 million. CHIPS processes about \$1.5 trillion in transactions per day.

⁶⁰ Sources: <http://www.ecb.europa.eu/pub/pdf/other/targetar2012en.pdf?bea8ebf40cb29027e889176caba8e956>; http://www.chapsco.co.uk/files/chaps/publications/chaps_market_report_sample.pdf

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The trajectory of volumes processed over CHIPS declined significantly in the late 1990s and did not recover until 2001. At the same time, Fedwire was experiencing steady growth. This change coincides with the reduction in Fedwire fees and the move to volume-based pricing. Conversely, in late 2005, CHIPS announced new incentive pricing for existing and new participants. Based on one year of data, incentive pricing appears to have had some effect, as Fedwire volume grew by only 1 percent—the lowest rate in twenty years—while CHIPS volume grew by 9 percent.

Box 9: Target2 and Euro1 for large payments in euro

The two large-value payment systems operating in euro are TARGET2 and EURO1. They were introduced in 1999⁶¹, at the time of the introduction of the euro. They are pan-European interbank payments systems which both settle cross-border payments in euros. TARGET was created on the basis of 17 domestic pre-existing RTGS systems. EURO1 was created by the European Banking Association (EBA) in conjunction with EU central banks' efforts. It was established, much like CHIPS to Fedwire, as a private sector complement to TARGET. TARGET and EURO1 are examples of LVPSs that settle cross-border payments in a local currency.

There are two competing yet complementary systems for high value cross-border payments. Central banks run their TARGET system. In this system, euro-denominated payments are transferred between participating banks through Eurosystem central banks. (...)TARGET operates on a real-time basis, and the execution of a payment takes place in a few minutes, or even seconds, whenever the system is open. It is a gross settlement system; each payment is processed separately, and no kind of netting of payments is used. (...)The private Euro1 system is owned and managed by the Euro Banking Association. Payment orders are collected during the day, but payments are not executed continuously. The system is based on end-of-day netting with central bank money.

(...)TARGET and EURO1 are not perfect substitutes. TARGET is faster, but, on the other hand, it is more expensive to use. (...) There are certain differences between typical payments processed through the two systems. Payments through EURO1, are, on average, somewhat smaller and probably less urgent.⁶²

Ancillary system transactions and monetary policy transactions have to be settled using TARGET2. For all else the two systems can be considered to compete among each other. In terms of values processed TARGET2 had a 91.6% market share in 2012 and a 57.7% share in terms of volumes.⁶³

Although they are referred to as large-value euro payment systems, the actual composition of the traffic in the two systems is largely made up of commercial payments and the two systems also compete with alternative channels, such as automated clearing houses, pan-European automated clearing houses and correspondent banking.

⁶¹ In May 2008 TARGET2 replaced the first-generation system, TARGET, offering harmonised core services on a single technical platform and pricing according to a single price structure.

⁶² K. Kauko, 2005, The Mixed Duopoly of Cross-Border Payment Systems

⁶³ ECB, TARGET Annual Report 2012, May 2013. In terms of average value per transaction, TARGET2's is about €7 million and EURO1's €840,000. (source for EURO1 figures: <https://www.ebaclearing.eu/EURO1-N=EURO1-L=EN.aspx>)

These examples illustrate the possibility of competition “in the market” at the scheme level and the benefits that it can bring in terms of product differentiation, tailoring to user needs and choice. It is unclear the extent to which these benefits could be achieved in the UK market because the value of sterling transactions is much smaller than transactions in dollars or euros. But, at least, it shows competition in large value payment systems is possible in some circumstances although it also appears that the different payment systems focus on different niches so it is unclear the extent to which the schemes genuinely compete.

3.4 Advantages and disadvantages of competition at system operator level

3.4.1 Possible benefits of competition at scheme level

We consider the potential benefits of competition among interbank payment schemes and whether the current arrangements are likely to significantly prevent these benefits from being achieved.

Competition at system operator level can result in lower fees, increased convenience and improved services. It may also promote innovation which for example opens up payment services to people who do not have or cannot qualify for a bank account or credit card⁶⁴ and might even create new products which are more secure thus contributing to mitigated system risks.

This sub-section considers in turn the main benefits generally expected from a competitively functioning market:

- Lower prices and/or lower quality adjusted prices
- Innovation
- Level of service and access

A main benefit of competition in most markets is that prices are driven down by market forces operating to drive inefficient operators to gradually lose market share. It appears unlikely that a price decrease at the scheme level will be a material benefit for the total cost of payment transactions resulting from interbank scheme competition, given that schemes represent only a very small portion of their respective value chains.⁶⁵ A slightly more material price effect could occur if competition among schemes drove them to bargain more strongly for lower charges from their infrastructure providers.⁶⁶ But given the ownership patterns both schemes and infrastructure should *already* have an incentive to keep costs low for their owners, the main retail banks.

⁶⁴ For example, prepaid cards, which can be purchased over the counter and require minimal identification and credit evaluation, give the unbanked or underbanked access to purchases where those prepaid cards are accepted. Hence, prepaid cards can help their users avoid potentially costly alternative payment arrangements that may imply higher prices, longer waiting periods or extra trips, or they can allow goods or services to be bought where alternative payment instruments cannot be used.

⁶⁵ Interbank schemes have revenues in the order of £3-£4 million and infrastructure charges for the electronic interbank schemes are in the order of around £40 million for each scheme (based on estimates using VocaLink revenues as in Box 1 for LINK, Bacs and FPS; CHAPS has lower infrastructure costs than these). One of the banks whose accounts record revenues from interbank (non card) payment services reports over £600 million. This bank represents in the neighbourhood of 10% of the retail banking market.

⁶⁶ Note however that infrastructure costs are not paid by the scheme operators but are instead charged directly to scheme participants.

Yet, it may well be that owner banks do not in fact have a clear incentive to keep upstream costs for the payment systems low. These banks are owners and also customers of the schemes and at the same time they sell, through agency deals, access to the schemes to other banks and building societies with which they compete in the downstream retail banking market. As such it is possible that keeping upstream scheme costs high is more costly for their downstream competitors than for the major banks. Indeed we could see high upstream costs as a strategy to facilitate coordination by otherwise competing banks in order to maintain supra competitive downstream prices.

Competing payment system operators, if not fully controlled by the major banks, could prevent this. On the other hand, if payment system operators have market power (because, for example, effective competition takes time to develop) freedom from ownership by a private company not controlled by the major banks may result in higher prices until effective competition develops.

A potentially very important benefit of competition is innovation. Competitors' drive for higher profits leads to the bringing to market of products that better meet customer/user needs. There has been concern about lack of innovation at scheme level and the fact that FPS was only created as a result of regulatory pressure is an example of this.

It is indeed questionable that schemes, given their control structures and their not-for-profit status, have the correct incentives to innovate. Bank owners may be more directly concerned with keeping costs down and may see innovation as very costly and potentially disruptive without having any hope of getting any individual bank an important advantage over their competitors.

These factors lead the main banks, as joint owners and users of all the interbank schemes, to have a strong preference for keeping the status quo.

Innovation could occur at the bank level if a bank or subset of banks introduced a new product or a new payment system which is subsequently expanded for others to use. But innovation in interbank payment schemes, to be truly successful, has to achieve high penetration or ubiquity in the sense that most banks and customers must be reachable. In the case of a customer-facing service, a very high penetration is crucial: customers will not do the effort of registering for the service if they believe that only a few others have done so.

In other words, interbank payment schemes have significant network externalities⁶⁷ and this raises barriers to entry to new products. To succeed, an entrant has to achieve significant market penetration very rapidly. In such an environment, collaboration among competitors may be necessary for a new product to succeed.

The introduction of new products may require the introduction of new compatibility standards. In this case there may be significant switching costs for banks in adopting a new product with new technological standards. Investments that might be lost include physical and human capital which had been adapted to a given set of products and standards.

⁶⁷ Network externalities are present when the value of a product/service to its users depends on how many other users there are. Positive network externalities correspond to a situation where the value to users increases as the number of other users increase.

The combination of network externalities and switching costs implies that the introduction of a new product requires significant critical mass of adopters, each incurring some cost. As a result, very rapid adoption of new products involving new compatibility standards may be rare.

On the other hand, failure to co-ordinate may delay or prevent economically efficient innovation, for example when network externalities arise from there being a very large installed base of users. This creates potential problems of excess inertia and a possible lock-in to an inferior standard. In other words, network externalities may result in 'insufficient friction', an inefficient maintaining of existing products and standards.

Another question on the incentives to innovate at the scheme level is whether the way in which the market operates allows users to express their preferences across payment product attributes. This is difficult in a market where a significant fraction of users do not directly pay for payment services. Typically business customers pay for these services but consumers do not – with the exception of relatively rare cases where consumers use CHAPS. There are therefore users who do not receive price signals in relation to the interbank payment products that they use. In addition users are not always given the option to select between alternative payment schemes.

Giving final users choice of payment products and appropriate price signals could give payment system operators the incentive to create new products that are valued by final users at competitive prices.⁶⁸

Competition at the scheme level might additionally bring benefits in terms of the level of service that schemes provide in general but particularly to non-members. The issues surrounding access by non-members are particularly important (given possible effects of distorting competition in the downstream banking level) and there have been concerns that the current arrangements result in inadequate levels of access to non-direct scheme members.⁶⁹

Competing schemes would have an incentive to increase the number of direct members as that would likely increase volumes for their scheme compared to other schemes. A greater number of direct members would have positive effects for competition in the downstream retail banking market. At present there is some concern that indirect members are at a disadvantage in terms of the services that they can economically offer to their customers and the indirect access conditions that they get from direct members.

Next we consider also some of the potential drawbacks of introducing competition at the scheme level.

3.4.2 But potential drawbacks need also to be considered

This subsection discusses three sets of potential drawbacks from the introduction of competition at scheme operation level. First we consider the possibility that competing schemes will set insufficiently prudent rules, next we discuss the potential pricing incentives introduced by the

⁶⁸ Alternatively, competition among payment system operators and their products could be decided at the bank level. Banks could select the payment products from an available range so as to offer their customers the ones the banks feel final users will value the most.

⁶⁹ The PSR is investigating, under a separate work stream, the issues surrounding scheme access by non direct members. We refer to that work for a fuller discussion.

profit maximising motive, and finally we note that competing scheme operators may fail to collaborate in situations where collaboration might have been of value.

Schemes too eager to gain volume may water down security protocols and excessively facilitate access conditions. This may put the system integrity at risk as a result of a “race to the bottom” in rule setting.

Box 10: “Race to the bottom” in rule setting competition

Under certain conditions, rule setting competition leads to poorer outcomes

Competition in rule setting can have desirable outcomes such as payment product innovation and better tailoring of rules to user preferences. On the other hand, if a main objective of these competitors is to increase volumes (because for example high volumes are necessary in order to gain economies of scale and to compete effectively) then there is a danger of “race to the bottom” in rule setting.

This race-to-the-bottom issue is sometimes referred to for example in the context of competition among exam boards; privately set capital market information requirements; and risk management by competing clearing houses.

There could be a parallel with interbank schemes if the objective of maximising volume were present. However, we may expect that, because schemes are owned by the main user banks, rule setting will take into account possible reputational costs for these banks of a systemic failure due to lax rule setting. In any event, rule-setting by some payment scheme operators will always be subject to oversight by the bank of England and sectoral regulators.

On the other hand, since all main competitors are joint owners of the schemes, the reputational effects would not differentiate between them and thus could have very small impact on each individual bank’s market position.⁷⁰

Competition by rule setting bodies can also lead to lack of transparency about their fail-safe procedures and potentially greater complexity of offerings and uncertainty for users.⁷¹

Comparison with competition among central counterparties (CCPs)

Central Counter-Party (CCP) competition can lead to lax access rules and less stringent capital requirements as CCPs seek to attract volume. Yet, competition among main CCPs has developed successfully in recent years with little indication of a race to the bottom. This is possibly due to a range of natural checks and balances that seem to deter CCPs from engaging in a race to the bottom on risk control standards:

- The owners of the CCP have significant reputational risk
- The owners of the CCP have capital at risk
- New market participants need to feel confident in the quality and reliability of the CCP
- A CCPs primary business purpose is risk management and mitigation; to compromise on core values is to compromise its own business model.⁷²

Some of these have a reflection on the incentives for appropriate risk management by payment schemes

⁷⁰ The possible reputational effects of a “race to the bottom” are therefore unlikely to constrain rule setting by schemes when they are all owned by the same group of main downstream competitors, whether or not there is competition among schemes.

⁷¹ Rule setters need to strike a fine balance between looking “serious and reliable” and “not giving too much of a hard time to their customers.” They may opt for not being very transparent about what is actually required lest outsiders see that requirements are too lax.

⁷² And something that regulators would, in any case, not allow.

however, reputational risk for banks, if the same group own competing schemes, may not be significant and the volume of capital at risk may be quite small for each individual bank.

In general whenever schemes see “increasing volumes” as one of their main strategic objectives (for example in order to be able to offer competitive prices) the risk of schemes opting for lax rule setting may be increased.

In the context of scheme competition, regulatory maintenance of minimum resiliency requirements is likely to be necessary (but this is also already currently the case).

Box 11: Competing capital market information rules and the “race to the bottom” problem

Rule-setting in the context of capital market information requirements is another area where rule setting by privately competing organisations could lead to a “race to the bottom”, meaning that the standard setter with the lowest degree of regulation succeeds in a regulatory competition. This is discussed by Schmidt (2002)⁷³:

“A regulatory “race to the bottom” with respect to accounting information rules can occur when standard setters try to attract managers of companies considering a listing via a systematic degradation of the strictness of the rules at investor’s expense. Managers might prefer to comply with the least rigorous and binding set of accounting standards, since the preparation of financial statements could be a significant cost factor. Even more important is the possibility of maintaining the flexibility to manage earnings in such a way as to obscure a company’s true performance. However, (...) managers must consider a trade-off because investors are quite aware of this problem and reward firms which commit to strict disclosure requirements in order to reduce information asymmetry.”

The author goes on to note that there were no published findings of such “race to the bottom” actually having occurred in that particular sector. However, it is interesting to note that the dichotomy between manager and owner is an important one for capital market information rules but less likely to be an issue in interbank schemes given the overlap between users and owners. We note also that at the moment scheme “managers” do not have an incentive to increase scheme volumes/ throughput but that if this were to change, the incentives to race-to-the-bottom might well increase.

An alternative to existing arrangements is one where scheme operators compete as profit-seeking companies. The for-profit motive implies a desire to charge high prices, certainly compared to simple cost-recovery charges. Perfect competition would impede prices from being excessive but there are generally a range of reasons why market outcomes do not match the perfect competition ideal. In the case of payment schemes several of these can be envisaged: high costs of entry, loss of network effects if competing products serve fewer customers, asymmetric information about the quality of security and fraud protection underlying a particular payment service, and low level of commoditisation, to name just a few.

Furthermore, direct scheme competition may prevent the achievement of gains arising from several different forms of collaboration, which also have an important role to play in this market, as discussed in chapter 4.

⁷³ Matthias Schmidt, ON THE LEGITIMACY OF ACCOUNTING STANDARD SETTING BY PRIVATELY ORGANISED INSTITUTIONS IN GERMANY AND EUROPE, Schmalenbach Business Review, Vol. 54, April 2002, pp. 171 – 193

3.5 Barriers to entry into payment schemes

This section focuses on barriers to entry into interbank payment scheme operation. There is some evidence that entry occurs, albeit infrequently, in other forms of payment as the examples of PayPal and Google wallet illustrate.

Entry into interbank scheme operation can be through new entry or expansion of the range of products offered by existing schemes. An entrant may be looking at gaining market share from existing schemes or creating its own demand (for example, if a disruptive innovation is offered).

An entrant into interbank payment scheme operation faces a number of difficulties.

Significant entry barriers exist because the value of using a new scheme is generally dependent on others using the new scheme as well (network effects). A critical mass of adherents is therefore likely to be necessary.

During stakeholder consultations it was often mentioned that a scheme requires ubiquity. This is an extreme form of network effects which implies that for any given form of payment, users do not like to have to check whether or not the other side of the transaction participates in the scheme. Users value the fact that, for example, an FPS bank transfer can be sent to almost anyone in the UK with a current account. Achieving even near-ubiquity for a new scheme is something very difficult to do.

If the new entrant is offering a product that loosely replicates existing products it may be met with insufficient demand. An entrant might have a better chance if introducing a product which noticeably improves on existing ones in some relevant dimensions.

Another major and corroborating issue is the likely predominance of fixed over variable costs at infrastructure level and within payment service providers. As a result, to be competitive, a new scheme needs to rapidly generate a very large volume of transactions. For that to happen, there has to be either significant new demand for this scheme or willingness to switch into it by those who currently use other schemes.

Switching costs for those who use other interbank schemes are likely to be high although possibly more so for banks than for final users. Banks need to adapt their IT systems to communicate securely with the new scheme's operational arm. Given the demanding security specifications of such systems and the need for them to communicate with several areas of the bank, these connections are costly and possibly disruptive for the banks. Banks may lack the incentive to embark on this type of investments as they may have limited benefits and not align with their other strategic priorities. These investments only become attractive when a large number of other banks have already made them. The presence of network effects together with high switching costs considerably raises entry barriers to new schemes.

The fact that existing interbank schemes are not for profit may be a further deterrent to new entrants, particularly if they offer only very similar products. New entrants are often attracted by the prospect of profit and if potential competitors operate on a cost-recovery basis, prevailing prices would in principle be too low to attract entry, unless the new entrant is able to offer a much better product and/or at a much lower cost due, for example, to substantial technical progress and innovation.

Not for profit schemes would in principle lack the incentive to innovate unless pushed by their bank owners to create a new product with particular characteristics that favour these banks in the downstream market.

Governance arrangements can also be a factor acting to prevent entry and innovation. The presence of many decision makers delays and complicates agreements to effect significant investments; decision-making is often restricted by “the pace of the slowest”.

The major UK banks, being also the main owners of all the interbank schemes, are likely to be unsympathetic to the introduction of competition at the scheme level. Although existing schemes are not for profit, owner banks may want to prevent significant loss of volume to a potential competing scheme as this would imply higher unit costs for transactions in the original scheme. In addition direct members, who typically overlap with scheme owners, make revenues on agency agreements with non members who wish to offer the scheme to their respective customers. Bank owners may benefit if the scheme has no close substitute and is effectively an “essential facility” for the supply of retail banking services. This depends on the level of competition by direct members in the provision of sponsoring services to indirect members.

Competition with non interbank schemes

Existing interbank payment schemes face not only competition from new interbank schemes that might be developed, but also from other payment schemes, such as card schemes and a range of new and potential entrants.

Competition can be quite strong between interbank and non-interbank payment schemes, as is observed in a number of countries. An example is where the ATM network is used for payments to merchants and to government. This interbank service may then be in the same relevant market as non-interbank payment cards. An even closer substitute to cards could be the proposed new mobile-based product for use at point of sale, Zapp. In addition, a range of new overlay products may draw interbank schemes into closer competition with card schemes.

Competition is therefore possible between interbank and card payment systems. However, there is a perception of insufficient competition at this level in the UK (Zapp is a counterexample, but it has not yet actually started).

One reason could be that incentives to compete are weakened because of some ownership overlap between interbank schemes and card schemes as well as banks receiving substantial revenues from serving the cards market

Another reason could be that collaborative, not-for-profit schemes have no drive to compete with products offered in adjacent markets and therefore are slow to act on innovation.

To assess the extent to which this may be a problem further research may be needed to compare the UK with other countries and investigate if there is a correlation between interbank scheme ownership / profit motive and innovation by interbank schemes into the payment cards space.

3.6 Conclusions

The main conclusions from this chapter can be summarised as follows:

- There appears to be limited competition at present among the payment products offered by the 5 interbank schemes but some of these products have characteristics that could make them feasible alternatives to each other in the future
- The recent introduction of FPS has the potential to promote the development of payment products that will significantly increase the overlap among existing products and thus enhance the potential scope for substitution among them
- However, competition between scheme operators is significantly affected by the nature of payment systems operation: high switching costs, network externalities and economies of scale imply high barriers to entry
- The benefits of greater competition among payment system operators are likely to manifest in terms of product design and innovation much more so than lower prices given the relatively small value of payment system operation in the overall payment systems supply chain. Competition can also bring benefits to access criteria which can help competition in downstream banking and payments markets although access criteria has not been the focus of our work since the PSR has other work specifically on access.
- The potential drawbacks to some, but not perfect, competition among payment system operators include higher prices if the system operators are able to exploit market power; a “race to the bottom” effect on rule setting, which ultimately is considered unlikely to occur; and decreased collaboration among payment system operators. The latter is further discussed in Chapter 4.

4 Competitive effects of collaboration

This section reflects our discussions with stakeholders which brought to the fore a series of circumstances where collaboration among schemes and payments infrastructures has played an important role. Collaboration has facilitated an allocation of payment products across schemes⁷⁴, has played a role in creating FPS, in creating Paym and allowing it to function both on FPS and on LINK. Collaboration is fundamental for agreements on security and fraud issues, as well as for standard setting and cross scheme resilience, among many others.

The section also discusses the implications of collaboration in the UK payments markets. We focus, in particular, on interbank payment systems.

4.1 Observed instances of collaboration

It may be useful to consider separately different forms of collaboration across the UK interbank payments system:

- Collaboration at individual scheme level
- Collaboration among schemes
- Collaboration among scheme direct members

Collaboration at individual scheme level

Design and operational collaboration at individual scheme level generally involves infrastructure providers, scheme operators and direct users.

An interbank payment scheme is a collaborative venture among those who agree to its design and operational features, suppliers of services to the scheme and scheme members. It is founded on the basis of collaboration between participants who will send and receive payments to ensure proper functioning of the payment scheme to all users.

In the absence of collaboration across all of the banks there would be a need for an inefficient series of bilateral agreements. Instead, a scheme is a form of “hub and spoke” model. This reduces barriers to entry since only one agreement with the scheme is required rather than numerous individual agreements with future competitors.⁷⁵

This also has the important advantage of removing the “termination” issue. When different users are connected to different infrastructures, as in mobile telephony, the owner of the infrastructure where the message terminates has significant market power. In theory, a similar issue could arise in payments where the customer’s bank is the monopoly provider of access to the customer’s bank account. However, in practice this is not observed.

⁷⁴ Examples of this include Standing Orders moving from Bacs to FPS and smaller payments moving from CHAPS to FPS.

⁷⁵ It would be possible to do this through a third party scheme rather than through a scheme which is owned by the banks

Box 12: Competition issues avoided by collaboration – parallel with mobile termination charges

The fact that payment systems are set up in a collaborative way has the important consequence of avoiding the problems encountered for example in mobile network operation in relation to mobile termination charges. It is important to recognise that a system with non-collaborative termination arrangements can have significant drawbacks for competition, particularly when system participants differ significantly in terms of market shares.⁷⁶

The relationship between mobile termination rates (MTRs) and asymmetric market shares was identified by the Commission, among other factors, in support of its recommendation for regulation of MTRs. In the recital to its Recommendation, it stated that "Termination markets represent a situation of two-way access where both interconnecting operators are presumed to benefit from the arrangement but, as these operators are also in competition with each other for subscribers, termination rates can have important strategic and competitive implications. (...) In addition, in markets where operators have asymmetric market shares, this can result in significant payments from smaller to larger competitors."⁷⁷ The Explanatory Note to the Recommendation, also explained that "Above-cost termination rates can give rise to competitive distortions between operators with asymmetric market shares and traffic flows. Termination rates that are set above an efficient level of cost result in higher off-net wholesale and retail prices. As smaller networks typically have a large proportion of off-net calls, this leads to significant payments to their larger competitors and hampers their ability to compete with on-net/off-net retail offers of larger incumbents. This can reinforce the network effects of larger networks and increase barriers to smaller operators entering and expanding within markets."

A very close parallel can be drawn between the situation in mobile network operation (MNO) markets and what might have been the situation in payment systems were there not a collaborative approach to "termination" of payments. Since system participants share the costs of the entire system in accordance to respective use, we do not have a situation where smaller users are disadvantaged for having to pay disproportionately given their likely high shares of "off-network" payment transaction terminations.

Key examples of other central challenges that are addressed in the collaborative space intra and inter payment systems include Cyber Security, Participant Incident Management (given the integrated underlying IT systems present within the major Participant banks), Resolution of a failed/defaulting Participant, Richer Data and common messaging standards.

It is worthy of note, however, that collaboration at this level may not always give adequate representation to the interests of payment services providers (PSPs) that are not scheme members or indeed to final users. It is therefore possible that some of the scheme design and operational arrangements are less than ideal from the perspective of these two groups.

⁷⁶ As a result, termination rates are, in most cases, subject to regulatory intervention.

⁷⁷ Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU; OJ L 124, 20.5.2009, p. 67–74

For example, features of the design or of the operation of the scheme may be such that they weaken the competitive position of non members in the downstream retail markets. This in turn could be to the detriment of final users.

Collaboration between schemes

Our discussions with stakeholders also highlighted several examples of collaboration between schemes. Standards are important in the interbank world as well as in payment cards. In the UK card industry, standards are mostly co-ordinated by the UK Cards Association. Card schemes support industry-led standardisation, with representation of all relevant stakeholders, in order to ensure the interoperability that is needed to support the growth and efficiency of domestic and international card payments.

Collaboration across schemes in order to ensure security of transactions is well exemplified in the card world by the EMV and the SEPA Card Standards which include European-wide security requirements. Another good example of cross-cards industry collaboration was the creation and roll-out of Chip and PIN. These examples are particularly striking in that they show collaboration and competition co-existing among the same market players.

Interbank schemes also perform a range of ancillary services such as fraud prevention, failed payments recovery and account information database management. There are several examples of collaborative arrangements in relation to these.

Scheme representatives consider that it is important to allocate additional services such as these to the right scheme. For example FPS is responsible for credit payment recovery service, partly because individuals make mistakes on their FPS payments more so than in other schemes. There are some data protection requirements where again FPS was thought to be the most appropriate scheme to do it. For example, the Sort Code management service is operated by Bacs on behalf of a number of other schemes.

Schemes have no incentive to try to get these services off each other and according to their statements feel that services should be allocated to the scheme best placed to handle them. Crucially, there are no additional revenues involved in offering these services. Without collaboration, we could imagine schemes entering into lengthy discussions about who would do what and in exchange for what compensation. The lack of need for such commercial discussions is one of the advantages of a collaborative mindset.

Two examples where a cross payment system collaborative initiative has been required to achieve an innovation or end user objective are the Current Account Switch Service and the Mobile Payments service. In such cases, it is important that a capacity or framework is established that provides a mechanism for change to be explored and subsequently delivered.

The interbank scheme representatives we spoke to see their schemes rather like not-for-profit utilities, whose main objective is to offer the services they were designed to offer as efficiently and securely as possible, while contributing to the overall efficiency of the entire interbank payments ecosystem. As such, the schemes do not focus on seeing to actively attract transactions from other

schemes because moving transactions across schemes does not change the overall fixed costs of the system so has limited efficiency benefit for the interbank system as a whole.⁷⁸

As a result, we observe several cases where types of payment services move across schemes by mutual agreement. For example, FPS got the Standing Orders service from Bacs because the 3-day payment completion cycle under Bacs was not compliant with a desire to remove float. The motivation was that to give this service to FPS made most sense for the ecosystem as a whole since the design of FPS was intended to include dealing with Standing Orders within its existing framework.

As another example, FPS may in the future seek to take some of the CHAPS transactions for relatively smaller values, such as house purchases. Unlike the behaviour we would expect to see in a competitive market, it does not appear likely that CHAPS would fight to retain these transactions but instead will focus on the very large payments while FP can deal with payments well above £100,000 (their current limit) with only some minor adjustments from an IT perspective.

Collaboration among scheme members

Scheme direct membership includes all of the major banks that operate in the UK retail banking market as well as some of the smaller banks. Two concerns can arise as a result: that the larger banks have a large influence in the design and operational features of respective schemes; and that they use their joint scheme membership as a platform to aid in coordinating behaviour in the downstream retail market. We discuss these two concerns below although, in fact, the two are not necessarily separate.

Collaboration to deter entry or raise rivals costs

Direct members have preferred conditions of access to the payment services offered by the respective scheme. They may choose to sell access to the scheme services to indirect participants through agency agreements. This is a possible source of revenue (and risk) to the member banks and, theoretically, could be manipulated so that the number of banks with direct access is minimised in order that access can be priced higher and the competitive position of non-members in the downstream retail banking market correspondingly deteriorated.⁷⁹

Collaboration to facilitate collusion

The analysis of structural conditions which facilitate coordination and collusion encompasses the following aspects:

- Is a coordinated strategy easily devisable which makes coordination considerably more attractive than competition to all participants?
- Can deviations that would undermine the coordinated interaction be detected and 'punished'?

⁷⁸ It is possible that moving transactions from one scheme to another would change total costs. This depends on the pattern of fixed and marginal costs in each scheme.

⁷⁹ For this to be feasible, there must be weak competition in the sponsoring market as perfect competition there would mean banks competing with each other to offer access services to non members thus competitive prices would result.

- Are there no disrupting forces from outside the coordinating group such as a ‘maverick’ bank or potential entry?

In some markets, firms may be able to exercise market power by either explicitly or tacitly coordinating their actions. Accordingly, one way in which collaborative arrangements at scheme level or among scheme direct participants (and possibly across different schemes) may create or enhance market power or facilitate its exercise is by making such coordinated interaction among banks more likely, more successful, or more complete.

If there is a concern with potential for collusion then it is important to break up the components of the collaboration and question which elements are more likely to facilitate collusion. Given the potential form of the collaboration in question, aspects that could be facilitated and in turn facilitate coordinated outcomes in downstream markets are:

- Information sharing
- Commonality of costs
- Alignment of service characteristics
- Alignment of strategic decisions

It may be expected that joint direct membership in all major schemes by the same group of major banks gives ample scope for information sharing, alignment of service characteristics and even of strategic decisions (for example, the creation of new scheme). It is also the case that the costs faced by these banks for the transactions through each of these payments schemes are similar. But in order for that to give rise to commonality of costs we need to consider banks’ cost structures more broadly. Either payment services costs are large in relation to overall retail banking costs or there is similarity of most other costs.

If we look at each payment scheme in isolation it is less likely that collaboration at the level of scheme operation leads to collusion at the retail banking level since the costs of each scheme are low compared to the overall costs and revenues in retail banking. However, if we consider that banks have several other sources of cost commonality because of other payment schemes on which they collaborate as well as schemes’ infrastructure, then increased risk of collusion due to scheme-level collaboration can be a cause for concern.

4.2 Balancing collaborative benefits with potential competitive harm

In some circumstances it may be appropriate to accept a degree of potential negative effects to competition in exchange for the significant efficiency benefits that collaborative arrangements can bring. But efficiency benefits should be material and verifiable and not achievable through alternative less restrictive means. Furthermore, it must be possible to show that a significant portion of these efficiency benefits are likely to be passed on to final users.

Box 13: EU guidelines on balancing of benefits of collaboration against competitive harm

Article 101(1) of the Treaty on the Functioning of the European Union (TFEU) prohibits all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between European Union (EU) countries and which have as their object or effect the prevention, restriction or distortion of competition. As an exception to this rule, Article 101(3) TFEU provides that the prohibition contained in Article 101(1) TFEU may

be declared inapplicable in case of agreements which contribute to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefits, and which do not impose restrictions which are not indispensable to the attainment of these objectives and do not afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products concerned.

The assessment under Article 101 TFEU thus consists of two parts. The first step is to assess whether an agreement between undertakings that is capable of affecting trade between EU countries has an anti-competitive object or actual or potential anti-competitive effects. Article 101(3) TFEU becomes relevant only when an agreement between undertakings restricts competition within the meaning of Article 101(1) TFEU. The Commission guidelines on vertical restraints, horizontal cooperation agreements and technology transfer agreements contain substantial guidance on the application of Article 101(1) TFEU to various types of agreement.

The second step, which becomes relevant only when an agreement is found to be restrictive of competition, is to determine the pro-competitive benefits produced by that agreement and to assess whether these pro-competitive effects outweigh the anti-competitive effects. The balancing of anti-competitive and pro-competitive effects is conducted exclusively within the framework laid down by Article 101(3) TFEU. There are four conditions in Article 101(3) TFEU:

- the restrictive agreement must lead to economic benefits, such as improvements in the production or distribution of products or the promotion of technical or economic progress, i.e. efficiency gains;
- the restrictions must be indispensable to the attainment of the efficiency gains;
- consumers must receive a fair share of the resulting efficiency gains attained by indispensable restrictions;
- the agreement must offer the parties no possible elimination of competition in relation to a substantial part of the products in question.

Given that all four conditions need to be fulfilled, it is unnecessary to examine any remaining conditions once it is found that one of them is not fulfilled.

Source: Communication from the Commission - Guidelines on the application of Article 81(3) of the Treaty [Official Journal No C 101 of 27.4.2004].

The Box below describes the assessment that the OFT made in 2000 of a set of collaborative arrangements by the payments systems operator LINK and in particular whether it met the conditions for a 101(3) type exemption.

Box 14: LINK collaborative agreements – MIF exemption granted by the OFT⁸⁰

The OFT investigated a range of collaborative arrangements under the LINK scheme for breach

⁸⁰ OFT, Decision of the Director General of Fair Trading, LINK Interchange Network Limited, 16 October 2001, (Case CP/0642/00/S)

of competition rules. At issue was, in particular, the agreement on the level of the Multilateral Interchange Fees (MIF)⁸¹ as part of the LINK Member Pricing Schedule and the LINK Operating Rules.

The LINK Operating Rules require Members to pay centrally determined interchange fees. A LINK's Board Resolution in 2000 provided for a flat rate MIF with separate MIF amounts for branch and non-branch transactions, cash transactions and non-cash transactions.

The OFT considered that the agreement on the level of the LINK MIF may appreciably prevent, restrict or distort competition within the meaning of the Chapter I prohibition. It restricts the freedom of the LINK Members individually to decide their own pricing policies and is restrictive of intra-bank competition.

The OFT concluded that the LINK arrangements met the required conditions for exemption on the basis of the following:

- **Contribute to Improving Production or Distribution or Promoting Technical or Economic Progress:** a universal network may not be workable without the use of MIFs because of free rider and technical efficiency effects; LINK branded ATMs provide cardholders with access to nearly all of the ATMs in the UK. This means that given the extensive membership of the participating institutions, ATMs are accessible to the majority of UK cardholders regardless of the financial institution with whom they hold their current account; in particular it allows smaller institutions to provide their customers with access to a large network of ATMs without having to incur the costs of building such a network themselves. It therefore contributes to improving distribution and accordingly meets this exemption criterion.
- **Allowing Consumers a Fair Share of the Resulting Benefit:** LINK Members are able to spread the costs of the provision of ATM services across a larger number of users by providing universal access to cardholders; the arrangements do not prevent Members from competing over charges to their customers, and it can be expected that these benefits will be passed onto cardholders through competition in retail banking.
- **Restrictions which are Indispensable to the Attainment of the Objectives and that do no eliminate competition:** in assessing the issue of indispensability the OFT considered whether the methodology used to derive the MIF would result in an MIF being set higher than it needs to be for cost recovery and concluded that "the rules on issuer and acquirer charging limit the opportunity for LINK Members to over-recover the ATM transaction cost."

A non-payments example where the application of the 101(3) exemption was tested, but which bears some similarities to collaboration among scheme participants, is the agreement about international mobile roaming (IMR) among mobile operators back in the 1990s when mobile network operation was still an incipient market.⁸² The first inter-operator roaming agreement was signed in 1992 (between Telecom Finland and Vodafone UK), but the growing number of operators

⁸¹ The MIF is the fee paid by the card-issuer to the acquirer on shared transactions and it covers the cost of the services provided by the acquirer to the card-issuer on shared transactions.

⁸² Source: Ewan Sutherland "International mobile roaming: competition, economics and regulation"

and the desire to ensure that all could offer equivalent pan-European IMR services meant that the scale was growing exponentially. In order to simplify negotiations the sectoral association, representing all the operators, proposed a framework, known as the Standard Terms for International Roaming Agreements (STIRA). This presented a legal problem, since it violated Article 85 (1) (now 101(1)) in that it limited market entry; set trading conditions; and shared markets. On 11th November 1997, the EC granted a letter of comfort to the GSM Association for the STIRA under Article 85 (3) (now 101(3)) which gave exemptions to agreement which could be shown to meet the four conditions from Box 14 above.

4.3 Conclusions

This chapter discussed some important benefits as well as possible drawbacks from collaboration in payment systems markets.

Collaboration can, under some circumstances, weaken competition and distort incentives on market participants, in particular where it involves collaboration between scheme members and results in inadequate representation of the interests of indirect participants. For example:

- Scheme rules and operational features may be skewed towards the preferences of direct members
- Collaboration between members may be used to deter entry or raise rivals costs in downstream markets
- Collaboration between members may facilitate collusion in downstream markets

But collaboration has, as well, an important efficiency-enhancing role and pro-competitive effects. This is the case in, for example:

- Instances of collaboration at payment system operation level, such as
 - Multi-sided agreement of scheme rules and operational features so as to save on series of bilateral agreements
 - Removal of termination issues
 - Scheme security and incident management
- Instances of collaboration between payment systems, such as
 - Setting common standards across schemes such as EMV in payment cards
 - Security of payment systems overall
 - Allocation of payment products and ancillary services, such as the Current Account Switch Service, across schemes without the costs of commercial negotiations without the costs of commercial negotiations

References

All references given in footnotes, in main body

Annex 1 Payment systems

This annex provides a brief overview of the UK payment system operators and the main payment products offered by each.

CHAPS

CHAPS is the United Kingdom's large-value sterling payments system. The scheme is run by the CHAPS Clearing Company (CHAPS Co) and payments are processed by the RTGS system run and owned by the Bank of England. A memorandum of understanding between the Bank of England and CHAPS Co sets out the services which the Bank will provide as well as the service levels expected. In 2000, CHAPS was designated under the Financial Markets and Insolvency Regulations 1999 (FMIRs). CHAPS is a recognised interbank payment system under Part 5 of the Banking Act 2009 and subject to oversight by the Bank.

The CHAPS Company is member-owned, each member holding one share in the company. The CHAPS system has 21 direct members who operate as correspondent banks for other banks, processing payments on their behalf. Membership criteria for CHAPS are set out in the CHAPS Rules.

CHAPS processes sterling payments in real time. There are no restrictions on the type or value of transactions in CHAPS. The payer (i.e. the settlement bank) must have sufficient liquidity in its settlement account in RTGS before the payment can be made. The majority of CHAPS transactions (by value) relates to large financial transactions, either between banks or between banks and corporates. Some retail transactions such as house purchases also go through CHAPS.

CHAPS payment instructions are routed via SWIFT to the RTGS system and settled individually across settlement accounts at the Bank of England. All messages are subject to authentication and encryption as provided by SWIFT. Once the payment is settled in RTGS (sending bank debited, receiving bank credited), a confirmation message is returned to SWIFT and the entire payment message is then forwarded to the receiving bank. Finality of the funds transfer between sending and receiving banks is achieved at the moment the payment is settled across the books of the Bank of England.

The design of CHAPS means that credit risks do not arise. Payments are made in real time and are both irrevocable and final at the point at which the relevant member's settlement account is debited. A member cannot make a CHAPS payment unless it has sufficient funds available on its RTGS settlement account with the Bank of England.

The main form of financial risk associated with CHAPS is liquidity risk.

Settlement members pay an annual charge to CHAPS Co to cover their share of the system's operating costs. The Bank of England charges a per-item tariff in respect of each CHAPS transfer settled using the RTGS processor and a yearly account management fee.

The Bank of England has introduced a liquidity-saving mechanism within CHAPS to reduce liquidity costs.

Bacs

Bacs is the United Kingdom's largest retail payment system by volume, providing automated clearing house (ACH) services for bulk clearing of electronic transfers in both debit and credit form. Bacs Payment Schemes Ltd (Bacs) is responsible for the Bacs Direct Credit and Direct Debit payment instruments.

Processing of these payment instruments is outsourced to VocaLink Ltd.

Bacs has been recognised by HM Treasury for oversight by the Bank of England in accordance with Section 185 of the Banking Act 2009. In 2005, the scheme was designated under the FMIRs.

Bacs' 16 members are responsible for settling all settlement obligations arising from the Bacs clearing process. Access to membership is in accordance to criteria set out by Bacs. Direct members are able to sponsor other organisations as service users of the Bacs payment system. Service users are allocated a user number by their sponsor and can submit payment instructions directly to the central infrastructure or enter into an arrangement with one of several hundred bureaux to submit payments on their behalf. The service users of the system include a wide range of commercial and public sector bodies.

In 2005, Bacs introduced a class of membership known as affiliate status. Affiliate status allows stakeholders to contribute views to the Bacs board on issues without taking on operational and settlement responsibilities. There are currently over 40 affiliate members.

Bacs processes sterling-denominated direct debits and Bacs direct credits. Bacs previously processed standing orders; however, these instruments recently migrated to the Faster Payments Service. Although there is a limit of GBP 20 million on the value of individual payment instructions submitted via Bacs, in practice, the vast majority of payments processed are of much lower value.

A high proportion of the transfers handled represent regular disbursements such as wages, pensions, utility bill payments, insurance premiums or subscriptions. There is no general restriction on the purpose of the underlying transaction.

Users submit payment instructions through Bacstel-IP, a bespoke submission channel. Some of the major users of Bacs use direct high-speed links (known as ETS or STS). Bacs has established common standards for the format in which payment information is supplied to the central infrastructure. Users can submit payment instructions between two and 71 days ahead of the payment date.

Payments submitted to Bacs are subject to a three-day clearing and processing cycle. The deadline for the receipt of payment instructions from users is 22:30 on Day 1 of the cycle. Data submitted throughout the day is validated and sorted into bank order by the central infrastructure to be transmitted onwards to the destination. The destination bank may be either a receiving bank or paying bank, depending on whether the transaction is a direct debit or direct credit. Processing of input transactions should be completed by 06:00 on Day 2. On Day 3, transfers are debited/credited to the respective payer/payee accounts, usually at the beginning of the operating day.

The interbank obligations that arise in Bacs are settled at the Bank of England on a multilateral net basis on Day 3 of the clearing cycle. Settlement occurs at 09:30 daily through the posting of multilateral net settlement positions directly to the settlement accounts using the RTGS processor.

Each direct member is responsible for settling payments generated by itself and the users it sponsors. Each member may, set individual item and account limits. Depending on the type of payment, these may generate actionable referrals. An actionable referral requires a positive action from the user before the payment will be processed. The ability of a user to initiate Bacs transfers, and the arrangements for funding the resultant position, are matters to be decided bilaterally with the user's settlement bank.

Bacs levies an item charge on its members to recover processing and other service costs. Sponsoring banks negotiate independently with users and other customers the charges these counterparties will incur as a result of generating transfers or receiving credits through the payment system. Bacs' rules require the direct members to meet the system's operating expenses through payment of an annual fee.

FPS

FPS is an automated retail clearing and settlement system for credit transactions to households and corporates in the United Kingdom. It is managed by Faster Payments Scheme Limited with processing of payment instructions outsourced to VocaLink Ltd.

FPS has been recognised by HM Treasury for oversight by the Bank of England in accordance with Section 185 of the Banking Act 2009. In 2010, FPS was designated under the FMIRs.

At present 10 financial institutions are direct members, and they are responsible for settling payment obligations arising in FPS. FPS has the functionality to allow other participants, sponsored by a direct member, to input transactions directly into the central processing infrastructure; the direct member remains responsible for end-of-cycle settlement with other members. There is only limited participation in FPS via such functionality.

FPS processes sterling credit transactions in the form of single immediate payments, forward-dated payments, or standing orders. All individual payments are subject to a limit of GBP 100,000, although this may rise over time. Approximately half of transactions are standing orders, being regular disbursements for payment of wages, rent, donations to charities etc, or future dated payments. Other transactions are generated via telephone or internet instructions, covering a broad range of retail transaction types. Payments can also be transmitted in bulk by banks or corporates, and are split for settlement by the central infrastructure.

FPS operates on a 24 hours a day, seven days a week basis. Payments are submitted to the central infrastructure (operated by VocaLink) in either single payment or bulk form. All payment messages conform to the ISO 8583 standard, except those bulk payments submitted via the "direct corporate access" channel, which utilises the bespoke format used for Bacs payment messages. FPS is a multilateral deferred net settlement system. There are three interbank clearing cycles each working day, settling at 07:15, 13:00 and 15:45. Settlement occurs across accounts held by direct members in the RTGS system at the Bank of England.

Individual transactions are subject to a limit, currently GBP 100,000, and each member's net debit settlement position is also subject to a cap (the "Net Sender Cap"). The cap for each member is determined by formula; once a cap is reached a member can no longer send payments until its net position recedes (i.e. until it receives payments) or settlement occurs or the cap is increased.

FPS operates on a cost recovery basis. Members pay a fee to FPSL to join FPS and an annual charge to cover their share of the scheme's operating costs. VocaLink charges members a connection fee as well as monthly fees to maintain the connection to the central infrastructure. Processing costs are recovered by VocaLink from members through a per-item charge. Sponsoring banks negotiate independently with users and other customers the charges these counterparties will incur as a result of generating transfers or receiving credits through the payment system.

C&CCC

The Cheque and Credit Clearing Company is the non-profit industry body that has managed the cheque clearing system in Great Britain since 1996.⁸³ C&CCC is not a recognised interbank payment system under the Banking Act 2009. Both the cheque clearing and the credit clearing are designated under the FMIRs.

C&CCC has 10 direct members. Other banks and building societies can access the clearings through agency arrangements with direct members; 400 banks and building societies currently participate indirectly.

The C&CCC system processes paper debit items (i.e. cheques) and credit items (i.e. bank giro transfers). C&CCC processes sterling and euro, as well as US dollar debits, for which it took over responsibility in January 2010. There is no requirement to participate in all four of the clearings operated. Cheques processed through the cheque clearing and paper credits passed through the credit clearing must meet the physical specifications (relating to layout and paper specifications) laid out in the standards of the relevant clearing. There are, however, no restrictions on the value of individual transfers or on the economic nature of the transaction.

The cheque and credit clearings both operate on a three-day payment and settlement cycle. In the case of the cheque clearing, a cheque presented to a member bank during banking hours will be sent to that bank's clearing centre at the end of the working day (T+0), and will arrive late that night or early on T+1. Cheques are evaluated and processed at the clearing centre and the codeline of the cheque and amount are transmitted over the Interbank Data Exchange (IBDE) network to the relevant paying bank by 11:00 on T+1. In parallel, cheques are parcelled up and sent to a clearing exchange centre, where they are passed to the paying bank later in the morning on T+1. The majority of banks have chosen to outsource their processing to third-party service providers. Where the collecting and paying banks use the same processor, the cheque need not pass through a clearing exchange – provided that this arrangement (between two members) is registered with C&CCC as a direct exchange. On T+2, C&CCC calculates the multilateral net amounts for each of the direct members.

Settlement of the sterling clearings takes place at the Bank of England across settlement accounts using RTGS. Settlement of the euro clearing takes place across an account at a commercial bank. US dollar cheques (drawn on a UK bank) are settled using one of the five members of the clearing as a settlement service provider on a rotational basis.

⁸³ In England and Wales since 1985; the clearing of sterling and euro cheques in Northern Ireland is managed by the Belfast Bankers' Clearing Company.

Paper credits follow a reverse process to cheques, in which the collecting bank is generally the payer's bank. The processing procedures for the credit clearing are very similar to those employed in the cheque clearing. However, pre-printed codeline details on credits are not transmitted over the IBDE network.

Changes known as 2-4-6 came into force at the end of November 2007. These changes set a maximum time line of two, four and six working days for each of the stages after paying in a cheque to a current or basic bank account. Interest is received from T+2, the amount can be withdrawn from T+4, and certainty that the money cannot be reclaimed without consent is provided at the end of T+6.

No system of limits or other controls is imposed by the C&CCC to restrict the volume or value of payments for which a particular member is responsible. In May 2005, the C&CCC and its members implemented a legally binding loss-sharing agreement to ensure that settlement can be completed in the event of a member defaulting on its obligations to other members of the payment system.

The C&CCC does not impose a per-item charge on cheques or credits handled; its costs are met through direct contributions by shareholders (the settlement members). Banks negotiate charges with their business customers for processing debits and credits arising from paper instruments; most banks do not impose such direct fees on their personal customers.

LINK

The LINK Scheme is an unincorporated association of members. The Scheme sets the rules and is responsible for the day-to-day management of the ATM network. Central infrastructure and processing services are done by Vocalink Ltd.

The LINK Scheme currently has 38 members; most of these are banks and building societies, although there are also currently 11 non-financial institution members who operate ATMs but do not issue cards.

LINK is the United Kingdom's largest ATM network, enabling 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. The primary use of the LINK network is to withdraw cash, but the system also supports other services such as balance enquiries and mobile phone top-ups.

LINK is a deferred multilateral net settlement system, with a two-day clearing cycle. The LINK infrastructure retains a record of transactions conducted on T+0 and calculates net settlement obligations. These are passed to the Bank of England for settlement across settlement accounts using RTGS.

Vocalink Ltd applies an annual tariff to the direct members of LINK to recover processing and other service costs. The LINK network allows both free and "pay-to-use" cash machines, but sets rules on charging and transparency that apply to all cash machine and card issuers.

Other

Payment cards

Payment cards were originally devised as a form of effecting electronic funds transfer at point of sale (EFTPOS) but are increasingly also used for remote payments of many different types.

A payment card system offers the brand, systems, services, and rules that help make electronic payments happen between consumers, retailers (and other merchants), businesses and governments. International card schemes such as Visa make use of very large communications networks which not only transmit payments information but also must provide a basis to keep every transaction safe, and to support new and innovative ways to pay.

All credit and debit cards in the UK are issued with chip and PIN technology since February 2006. Contactless card payments were launched in the UK in 2007 enabling card payments of GBP 20 or below to be made without entering a PIN.

Debit cards

Visa and MasterCard are the two main debit card schemes in the United Kingdom. Visa has been issuing debit cards under different brand names since 1987; its cards are currently issued under the Visa Electron and Visa Debit brands. The SWITCH scheme was launched in October 1988, and was rebranded as Maestro by MasterCard in July 2004. The Solo brand was launched by SWITCH in 1997.

Visa Electron and Solo cards work in the same way as conventional debit cards, except that they require every transaction to be authorised online, regardless of value. This has widened the range of users, particularly to younger customers and holders of investment and savings products. Maestro, Solo and Visa branded cards can be used at EFTPOS terminals and remotely (by phone, mail or internet). Solo and Visa Electron are primarily domestic schemes.

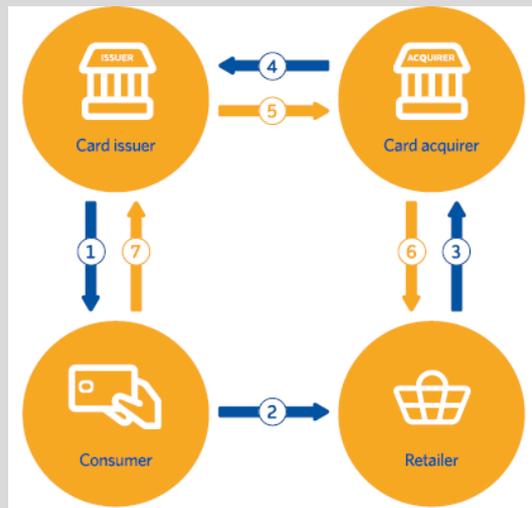
The total volume of debit card purchases has risen markedly in recent years and is now much larger than the number of credit card transactions.

Credit and charge cards

Apart from MasterCard and Visa, the main credit card schemes operating in the UK, we have American Express and Diners Club International. Credit cards typically fall into three categories: standard cards, issued to anyone over 18 (subject to acceptance); premium cards (which carry extra benefits and rewards and generally have stricter requirements); and charity/affinity cards (which are issued on behalf of charities or other organisations and generate a donation to the charity/organisation when the card is issued and/or each time the card is used). Cardholders may pay off the full amount of the balance, or they may choose to pay a portion of the total amount outstanding (usually subject to a monthly minimum).

The two largest charge card companies in the United Kingdom are American Express and Diners Club International; some banks also issue Visa and MasterCard branded charge cards. Charge cards require the balance to be paid off in full each month. Most charge card companies also offer reward schemes; in return for providing these an annual fee is usually levied.

Box 15: Four-party card systems



Operational steps in a four-party card system:

- 1) The issuer provides the consumer with a card account (debit, credit or prepaid). Typically a physical card is issued but it could be online only.
- 2) The consumer selects goods to buy and selects to make a card payment
- 3) The retailer submits the transaction to the acquirer
- 4) The acquirer submits the transaction to the issuer
- 5) The issuer approves the transaction and remits the retailer price to the acquirer less an interchange fee
- 6) The acquirer pays the retailer the price less a merchant service charge (which is negotiated directly between the acquirer and the retailer)

The consumer's account is debited the retailer price

Source: Visa

Prepaid cards

Prepaid cards are a small but growing segment of the UK card market. The majority of prepaid cards are closed-loop gift cards, which can only be used at certain retailers. Visa and MasterCard are increasing their presence in the open-loop market; these cards provide access to funds at multiple points of sale and include ATM functionality. The prepaid card market is being led by banks not historically associated with the issuance of mainstream credit and debit cards.

Retailer cards

Some retailers issue their own in-store cards. These typically only serve one store group and some operate on the basis of a monthly subscription and a revolving credit facility. Other retailer cards operate in the same way as prepaid or bank charge cards.

e-money⁸⁴/ digital wallet

Electronic money (e-money) is broadly defined as an electronic store of monetary value on a technical device that may be widely used for making payments to entities other than the e-money issuer. The device acts as a prepaid bearer instrument which does not necessarily involve bank accounts in transactions.

E-money products can be hardware-based or software-based, depending on the technology used to store the monetary value. In the case of hardware-based products, the purchasing power resides in a personal physical device, such as a chip card, with hardware-based security features. Monetary values are typically transferred by means of device readers that do not need real-time network connectivity to a remote server. Software-based products employ specialised software that functions on common personal devices such as personal computers or tablets. To enable the

⁸⁴ From the ECB website: <https://www.ecb.europa.eu/stats/money/aggregates/emon/html/index.en.html>

transfer of monetary values, the personal device typically needs to establish an online connection with a remote server that controls the use of the purchasing power. Schemes mixing both hardware and software-based features also exist.

PayPal is an example of e-money. Created in 1999 to service eBay, over 70% of PayPal's payment volume now comes from outside eBay. PayPal is still primarily a way to pay and get paid online, but can also be used via a mobile device and in store. The service gives users an alternative to send money without sharing financial information, and with the flexibility to pay using their account balances, bank accounts, credit cards or promotional financing.

More recently, PayPal has also expanded from e-commerce payments into a full service offering including 'face-to-face' payments. For example, PayPal can today be used to pay via mobile phone at over 2,000 UK retailers. 'PayPal Here' has also been launched allowing small businesses, via an iPad or smartphone, to accept payments from customers PayPal accounts. In its 2012 response to the European Commission's Green Paper, PayPal referred to itself as a "three-party payment scheme".⁸⁵

Mobile payments

Zapp is an example of an upcoming mobile-based payment system (predicted to start operation towards the end of 2014) which seeks to compete directly with cards at the point at which consumers decide how to make a payment to a retailer. It has publicly announced its scale will be immediately significant from the outset given that it will be available to 18m UK current account holders across five banks (HSBC, First Direct, Nationwide, Santander and Metro Bank). It initially will be available for online purchases, and will be enabled for at least one in five face-to-face payments to retailers from late 2015. Zapp is being developed by VocaLink.

Postal instruments

Cashless payments can also be made through the Post Office. Small-value payments can be made using postal orders, which are particularly convenient for those who do not have access to a bank account.

⁸⁵ PayPal payments totalled \$27bn in 2013. PayPal has over 146m account holders worldwide, of which 18m are in the UK. By comparison, American Express has 4.1m UK cards and MasterCard 40m UK cards.

Annex 2 Models of competition and collaboration

A2.1 Economic modelling of boundaries between competition and collaboration

Competitors often have or need to develop complementary assets that, through collaboration, can be exploited to the benefit of both the competing firms and their customers. Complementarities may exist in production, distribution, purchasing, or in developing new products or technologies.

In some cases, collaborations among competitors may allow a number of otherwise unattainable market efficiencies. For example, firms may achieve economies of scale, resulting in the provision of services at lower cost or of greater value to consumers. Collaboration enables participants to combine research and marketing activities to reduce the time needed to develop new products and lower the costs of bringing those products to market. By allowing firms to make better use of existing assets, collaboration facilitates the expansion of participant businesses into new product, services, and geographic markets. When these market efficiencies are realized, competition is enhanced and consumers benefit.

Under what conditions should a firm enter into an operational collaboration with its competitor? The general answer is that there must be cost or sales complementarities across competitors so that each can benefit from the costs incurred or investments made by others. This is the mechanism by which collaboration reduces marginal costs. It is similar to economies of scope or, more generally, a positive cross-supply-cost elasticity.

A2.2 Collaboration and collusion

Despite the benefits, collaborations between competitors also carry risks for the firms. Because the firms' cost structures change, so do the competitive dynamics in the industry. The benefit of reducing costs through collaboration may be outweighed by the downside of facing a more efficient competitor.

In addition, and crucially, collaboration among competitors has the potential to harm competition. When competitors collaborate, their ability and incentive to compete against one another may be compromised. For example, depending on the level of competition in the relevant markets, parties to a joint venture may be able to raise prices above or reduce output, quality, service, or innovation below what likely would prevail in the absence of their collaborative arrangement. Collaborations also have the potential to limit participants' independent decision making by combining control of or financial interest in production, key assets, and other competitively sensitive variables. They may therefore increase the risk of collusion being successfully sustained in the market.

In 2010, the European Commission revised its rules for the assessment of co-operation agreements between competitors. Some of these so-called "horizontal agreements" have the potential to reduce competition (and thus harm consumers); it is certainly so when the agreements involve price fixing or limiting production; such agreements are per se prohibited. On the other hand, other types of agreements may promote innovation and competitiveness and should instead be facilitated. This is the rationale behind the Block exemption of R&D agreement:

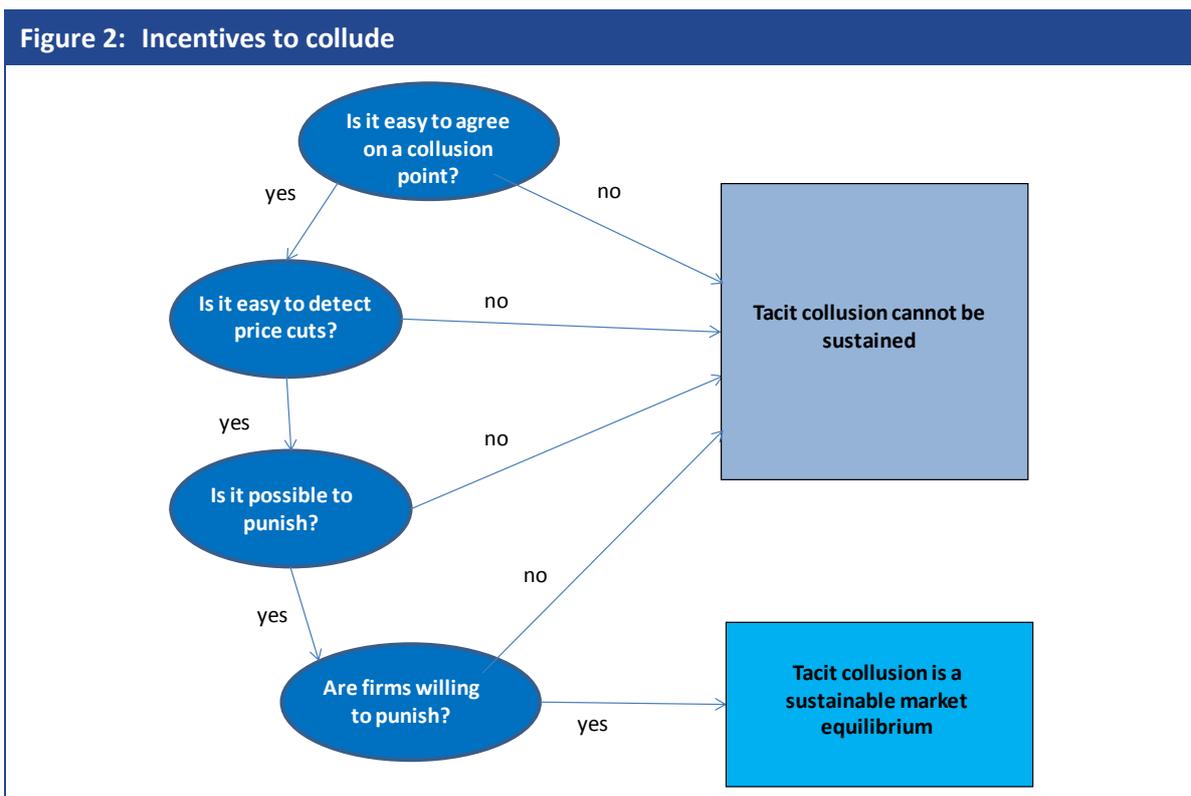
“Since cooperation on R&D generally helps to promote the exchange of know-how and technologies, to facilitate technical and economic progress, and to rationalise the manufacture and use of products that benefit consumers among others, this Regulation exempts not only agreements the primary object of which is R&D but also all agreements directly related to and necessary for the implementation of cooperation in R&D, provided that the combined market share of the parties does not exceed 25% of the relevant market.”

In 2010, the Commission extended the scope of this regulation:

“With a view to facilitating innovation in Europe, the Commission has considerably extended the scope of the R&D Block Exemption Regulation, which now not only covers R&D activities carried out jointly but also so-called ‘paid-for research’ agreements where one party finances the R&D activities carried out by the other party. In addition, the new Regulation gives parties more scope to jointly exploit the R&D results.”

It is however crucial to assess to what extent R&D agreements, and indeed other forms of collaboration, may facilitate collusive behaviour. Answering this question requires one to isolate the impact of the returns to collusion on the decision to join a collaborative agreement from the other factors determining this decision.

The question of whether specific forms of collaboration facilitate collusion can be broken down into the individual factors that are required for collusion to be a market equilibrium. The graph below depicts these in schematic form. It is advisable to analyse for each of these elements whether the collaboration in question makes feasible or facilitates collusion.



Source: London Economics

The collusive potential of research collaborations is particularly pronounced when members are product market rivals, as is frequently the case. Examples of direct product market competitors involved in joint research JVs include Xerox and Dupont who formed a research JV to develop copying equipment; Shell and Texaco to refine crude oil; General Motors and Toyota to produce a new type of car; Merck and Johnson & Johnson to develop new over the counter medicines; MCI and Sprint to provide enhanced telecommunications services; Samsung and Sony to develop LCD panels; and SEMATECH, a consortium of leading semiconductor manufacturers established to improve semiconductor manufacturing technology.

A2.3 Collaboration and exclusion

Collaboration among competitors that leads to exclusion can harm consumers in essentially three ways. Compared to a competitive outcome, consumers could face higher product prices, lower quality or variety of products, or reduced expected innovation in the future. The first two types of harm can be an effect of hold-up. The third type of harm is, instead, an effect of ‘reverse hold-up’.

Hold-up, in this context, occurs when the owner of a set of patents that are essential for a particular technology is able to use the market power that this ownership conveys to charge licensees a fee which is higher than FRAND.⁸⁶

Reverse hold-up, in contrast, results when the patent holder has a relatively weak bargaining position and the licensee for example uses the threat of going through costly court proceedings as a means to extract fees that are below FRAND. The result is that the inventor has dampened incentives to invest in innovation because of the subsequent risks of low returns caused by the actions of the licensee.

Standards set out information about the configuration of a product or a service with the intent to provide common ground for players in the market. In most cases, they set out this information with the expectation that most market players will conform to the standard because it is “correct.” Standards-setting is not a passive activity, but rather a consciously proactive process that seeks to control their relevant market.

Hovenkamp describes the benefits of standards and standard-setting organisations in the following terms:

“The most likely economic effect of private standard setting is increased social value. By promulgating standards, producers can increase both horizontal and vertical compatibility. By “horizontal” compatibility, I refer to compatibility as between competing goods that are subject to a standard. For example, a user can substitute one brand of compact disc, computer monitor, or shotgun shell for another in the same computer or shotgun. By “vertical” compatibility, I refer to the ability of goods to use the same inputs. For example, all Windows computers run the same software, and all automobiles burn the same gasoline. Standards also can reduce consumer search costs, increase consumer confidence, significantly reduce the costs of input suppliers, make

⁸⁶ FRAND stands for fair, reasonable and non-discriminatory. The term “hold-up” is used when specific investments are made by one of the bargaining parties and these investments are “sunk” at the time of bargaining.

*networking possible or at least much more efficient, or facilitate the achievement of scale economies.*⁸⁷

But he goes on to say

“ (...) Standard setting (...) can facilitate both of antitrust's twin evils: collusion and exclusion. (...) Collusion is possible when standards are created or enforced by competing producers. Exclusion is possible when standards are used to keep some producers out of the market.”

Before firms can raise prices above competitive levels, they must be able to limit output of the group and prevent output increases or entry by those from outside the group.

Standard setting can accomplish the latter by setting standards such that only a small number of firms meet the standard, or that the standard is licensed only to such firms. Indeed, a standard-setting process generally implies that one or more firms will either be unable to meet the standard or have to make a significant investment to comply with it. A common antitrust claim involving standard setting is that it limits competition by excluding rivals. For example, product safety standards and network standards can protect incumbents from threatening technologies and/or keep some firms off the market by imposing prohibitive costs of access.

Closely related is the proprietary standard protected by IP rights, whose licensing costs imposed on rivals create a price umbrella protecting the IP holders.

One problem, for both sectoral regulators and antitrust enforcement is that these authorities are not really equipped to evaluate standard setting in terms of their technological merits when the standard is challenged by other competitors or potential entrants.

A2.4 European and US jurisprudence

European Commission Guidelines published in 2011 on the application of Article 101 of the Treaty on the Functioning of the European Union (TFEU) to cooperation agreements dedicate an entire section to standardisation. The guidelines lay down the conditions under which joint standard-setting may not infringe competition rules. The risk is minimised in particular by allowing unrestricted participation by any willing party and by ensuring that the standard setting process is fully transparent and that access to standardised patents is provided on fair terms.

A selection of EU antitrust cases

Rambus

Rambus Inc., a US licensing company active in the semiconductor industry, was accused by the EU and US antitrust authorities to have engaged in ‘patent ambush’, i.e. a type of exploitative behaviour by which a participant to a standard-setting process intentionally withhold information regarding patents which are later claimed to be relevant to the standard. In its Statement of Objection, the EC took the view that Rambus abused of its dominant position, as in the absence of the ‘patent ambush’ it would not have been able to ask the royalty rates it then required.

⁸⁷ Herbert Hovenkamp, Standards Ownership and Competition Policy, 48 Bost. Coll. L.Rev. 87 (2007).

The EC case resolved in Rambus committing to a five year cap on its royalty rates for products compliant with the standards.

Qualcomm

Qualcomm Inc., a US licensing company, was involved in 2007 in investigations by the EC concerning an alleged abuse of dominant position, following complaints filed by six mobile phones manufacturers. The EC investigated whether royalties that Qualcomm charged after its patent technology became part of EU's 3G standard were unreasonably high despite its FRAND commitments. However, by the end of 2009, all complainants withdrew their complaints and the EC closed the proceeding.

Nokia vs ICom

In June 2008 Nokia filed a complaint to the EC against ICom, the owner of a portfolio of standard-essential patents that the company had previously purchased from Bosch. Nokia alleged that ICom was infringing competition law by asking excessive royalties in breach of FRAND commitments that Bosch made before selling the patents to ICom. In December 2009, ICom declared it was ready to take over Bosch's commitments to grant licenses under FRAND. The EC welcomed ICom's public declaration and, after Nokia withdrew the complaint, decided not to open the investigation initially sought by the company.

Samsung

In January 2012, the EC opened an antitrust investigation over Samsung alleged abuse of dominant position due to the infringement of FRAND commitments related to patents essential to the 3G standard. A formal complaint filed by Apple, due to the injunction reliefs sought by Samsung in several EU countries, which were seen as an attempt to block Apple's mobile phone sales. Despite the withdrawal of Samsung's injunctions in December, the EC took a formal step in the investigation procedure by issuing a Statement of Objections.

Google – Motorola

In April 2012, the EC opened proceeding against Motorola Mobility Inc., which has been recently purchased by Google, to assess whether the company has infringed FRAND commitments over the use of essential patents by seeking injunctions against Apple and Microsoft in several EU countries. The case is still ongoing against 'willing licensee'. In January 2013, a settlement between Google and the Federal Trade Commission in the US FTC limiting Google's ability to seek injunction relief was signed.

US DoJ Guidelines

On April 7, 2000, the Federal Trade Commission and the Antitrust Division of the U.S. Department of Justice issued their "Antitrust Guidelines for Collaboration among Competitors." These outline a comprehensive methodology for assessment of potential competition harm stemming from the agreement. The Box below provides a summary of the DoJ approach.

Box 16: DoJ 2000 Guidelines on collaboration among competitors**Phase One: Per Se Analysis**

- Does the agreement contain per se illegal elements? Does the agreement fix price, fix output, or allocate customers, suppliers, territories, or lines of business?
- Is there efficiency enhancing integration, such as: production (expanded output); marketing (enhanced service or reduced distribution costs); joint purchasing (cost reduction for collaboration input (raw materials)); or research and development (R&D) (innovation efficiencies)?
- Are these efficiency enhancements more than simple coordination?
 - Is the agreement simply an attempt to avoid competition? Cost savings without integration are per se illegal.
- Are less restrictive alternatives available?
 - Restrictions are not reasonably "necessary" if less restrictive alternatives exist.⁹
 - If not per se illegal, proceed to Phase Two analysis.

Phase Two: Rule of Reason Analysis

- Define relevant markets.
- Identify market participants and calculate market shares and concentration to assess market power.
- What is the business purpose of the agreement?
 - Is the business purpose pro-competitive?
 - What rationale is explicitly stated by the participants?
 - What is the "subjective intent" of the participants?
 - If the agreement is in effect, has it caused anti-competitive harm?
- Does the agreement inappropriately limit independent decision making or combine control or financial interests?
 - Production collaborations. Does the collaboration control assets necessary for the participants to compete independently or that undermine incentives to compete independently? Does the agreement set the level of production, product price, or otherwise unnecessarily limit post-production competition?
 - Marketing collaborations. Does the agreement restrict competitively significant variables, such as price production levels or competitive advertising?
 - Buying collaborations. Does the collaboration have monopsony power to purchase at sub-competitive prices? Does the buying collaboration facilitate collusion through standardizing costs and ability to monitor participants' production through knowledge of raw material (input) purchases?
 - Research and Development collaborations. Does the R&D agreement inappropriately limit independent decision-making or a participant's ability to conduct independent R&D?
- Does the relevant agreement facilitate collusion?
- Does the information-sharing aspect of the collaboration "increase the likelihood" of collusion on price, output or other competitively sensitive variables?
- Is information shared on individual participant's current operations or future business plans?
- What are the competitive effects in all of the relevant product and geographic markets?
 - The fundamental question compares the state of competition with and without the agreement in all relevant markets.
 - What goods and services are affected by the collaboration?
- What technology markets, consisting of the intellectual property that is licensed and its close

- substitutes, will be affected?
- R&D and Innovation. Will agreements harm innovation or have innovation market power through control of specialized assets or industry resources?
 - Looking beyond the formal terms of the agreement, what are the competitive benefits and harms of the relevant agreement?
 - Exclusivity: can the participants continue to compete independently outside the collaboration? Is such independent competition likely?
 - Control over assets: does each participant retain independent control of assets necessary to compete?
 - What is the size and nature of each participant's financial interest in the collaboration? Will this financial interest adversely affect any participant's independent business operations and judgments?
 - How is the collaboration organized and governed? Can the collaboration act as an independent decision-maker?
 - Is information sharing likely to produce anti-competitive results?
 - What is the term of the collaboration? Within the market context, is the term short enough so that participants are likely to compete against each other and the collaboration?
 - Is the duration so long that the collaboration should be analyzed as if it were a merger?
 - Ease of entry: what are the barriers to market entry? What is the timeliness, likelihood and sufficiency of committed entry by potential competitors?
 - In buying collaborations, is it likely that the exercise of monopsony power be deterred or counteracted by the entry of new purchasers?
 - What are the pro-competitive benefits of the collaboration?
 - What are the efficiency-enhancing integrations in production, marketing, purchasing, R&D or other business activities?
 - Are the efficiencies "cognizable," meaning that the efficiencies do not arise from anti-competitive reductions in output or service and cannot be achieved through practical, significantly less restrictive means?
 - Can the cognizable efficiencies be verified and validated as potentially pro-competitive?
 - What is the overall competitive effect?

Source: US Department of Justice, 2000

In sum, the principles that would be considered in respect of competition law assessment of collaborative arrangements are likely to entail the following:

- A careful definition of relevant markets, considering potential developments in the markets; competitive assessment must cover all related markets
- Both actual and potential market power of the parties and competitors should be determined; competitive market structures can only be achieved by preventing gatekeepers from further strengthening their positions or preventing dominant operators from moving into other related fields
- Extent of infrastructure and costs shared should be assessed in terms of whether it is likely to cause coordinated effects via restricting price and other forms of competition
- Restrictions on access and unreasonable access conditions should be examined
- The possible impacts of exclusivity clauses on competition in the markets should be examined in respect of concept and duration.

A2.5 Sectoral example: co-investment in telecom infrastructure

The Telecom sector provides a closely comparable example of the benefits and pitfalls of cooperation at the level of infrastructure investments. The sector has seen a number of cases where competition authorities and regulators have been called upon to rule whether particular agreements were allowable under competition rules. We review some cases from this and a few other sectors below.

Examples of infrastructure collaboration cases ruled by the EC

In February 2002, T-Mobile and O2 notified two agreements that provided for the parties to cooperate by way of network sharing (radio access network, or RAN, sharing) in the build-out of their 3G networks in the UK (and Germany) and to provide reciprocal roaming services to each other's customers.

As regards the network sharing aspect of the agreement, the Commission raised four main areas of concern with respect to Article 101(1):

- on shared network components, the Commission pointed out the risk of limitation of the price competition on retail markets and coordinated effects which might result due to the high degree of common costs between T-Mobile and O2
- on the parties' project to adopt a joint and common radio plan, the risk of limiting network competition as parties would roll out similar networks
- on the exclusivity granted to the parties over sites, the Commission underlined the possible foreclosure effects on operators that are left outside the sharing agreements
- on the network sharing, the Commission investigated whether entry costs were increased by the agreement which provided for the third parties to pay a licence fee equal to or higher than that of the parties; this looked in addition as an agreement to set a minimum price.

The Commission accepted that site sharing between mobile operators did not restrict competition since the cooperation extended only to basic network elements and the parties retained independent control of their core networks. More in-depth cooperation such as RAN sharing⁸⁸ could raise greater concerns, but this was not specifically addressed since the parties were not planning to implement the technology in the foreseeable future.

Another important case was decided by the Commission in 2000 regarding cooperation by competitors in a vertically related market.⁸⁹ Vizzavi was established by Vodafone (mobile network operator), Vivendi (communications operator) and Canal+ (engaged in audio-visual activities such as broadcasting and content producing). The Joint Venture aimed to provide a multi-access horizontal Internet portal in Europe and to provide customers with a seamless environment for web-based interactive services, across a variety of platforms, such as fixed and mobile telephone

⁸⁸RAN refers to radio access network, an important component of the infrastructure over which mobile telephony operates. It is the most comprehensive form of access network sharing. It involves the sharing of all access network equipment, including the antenna, mast and backhaul equipment.

⁸⁹ Commission Decision, COMP/JV.48, Vodafone/Vivendi/Canal Plus, 20.7.2000

networks, PCs, palm-top computers and television sets. In addition, the parties agreed to develop and supply content and act as an ISP with the new entity.

The Commission's analysis focused on whether the JV was likely to give rise to a dominant player in a market on the boundary between infrastructure and e-commerce and in terms of infrastructure control (mobile network infrastructure of Vodafone and set-top box infrastructure of Canal+). The Commission's investigation found reasons for concern but allowed the JV due to its efficiencies, albeit subject to a package of commitments designed to eliminate potential foreclosure effects of the JV in the relevant markets. In particular, the Commission wanted to ensure that, going forward, consumers would be able to choose their content provider independently of their access provider, as they had been able to in relation to internet access services.



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