A brief introduction to RTGS and CHAPS

Introduction

Payments are essential to the efficient functioning of the UK economy, underlying core economic activity such as purchasing goods and services or paying salaries. Most payments are now made electronically, with banks and other financial institutions using accounts in RTGS to settle money owed to one another from the payment systems.

Customers and businesses select one or more payment service providers (PSPs) for their needs – such as a bank or building society, or a non-bank PSP (such as an e-money issuer or merchant acquirer). When a customer makes a payment from their account to a business that has an account with another PSP, the customer's PSP needs to both inform the business's PSP of any information attached to the payment, and pay the business' PSP for the money credited to business' account.

A payment system is the set of arrangements to facilitate the transfer of money between different PSPs. Most payment systems are managed by private-sector **payment system operators (PSOs)**. A PSO administers the governance, membership, risk management, rules and standards for the payment system it operates, and may appoint one or more infrastructure providers of hardware, software, and communication networks to support operations (or undertake some of these functions itself).

In order to transfer funds between PSPs, a payment system often uses an intermediary, known as a **settlement agent**, with whom all PSPs hold accounts to enable the final settlement of funds between PSPs. The Bank of England ('the Bank') acts as settlement agent for the majority of UK sterling payments systems. The Bank does this through a piece of infrastructure known as the **Real-Time Gross Settlement** (RTGS) **system,** first introduced in 1996.

In addition to its responsibilities as settlement agent, responsibility for management of the **UK's high-value payment system**, **CHAPS,** was transferred to the Bank in November 2017.

This document provides a brief introduction of RTGS and CHAPS and their integral role in the UK economy. Further information on RTGS and CHAPS can found on our website and in the documents listed in Annex 2.

What is CHAPS?

CHAPS is one of the largest high-value payment systems in the world and provides efficient and irrevocable sterling payments. CHAPS uses **real-time gross settlement** where settlement is risk-free – at the cost of an increased need for liquidity – because each CHAPS payment is settled individually, in real-time, within the Bank's RTGS infrastructure. This model is best suited to high value payments – individual payments each worth millions or even billions of pounds – with the largest potential systemic risk. CHAPS is primarily used for the same-day settlement of **high-value wholesale payments** as well as **time-critical, high value retail payments** like house purchases.

Since November 2017, the Bank has also been responsible for operating the CHAPS system: setting the rules and technical standards for the CHAPS system and acting as an end-to-end risk manager. The Bank made the decision to directly deliver CHAPS to enhance financial stability in the UK, move to the global norm of 'direct delivery' by the central bank (which acts as infrastructure provider and

operator). The Bank now operates RTGS and CHAPS with combined operations, risk and analytical teams, all sitting under an integrated and strengthened set of governance and risk management arrangements.

CHAPS represents around **0.5%** of UK total payment volumes but **93%** of total sterling payment values (this excludes payments internalised within the same PSP). From **March 2020 to end-February 2021**, the CHAPS system settled over **£92** trillion of payments, equating to an average of over **£367 billion** each working day, or equivalent to the GDP of the UK every five working days. The CHAPS system settled an average of around **174,000** payments each day with an average payment value of **£2.1 million**. CHAPS volumes declined year-on-year from March 2020 to February 2021, largely due to the economic disruption caused by the outbreak of Covid-19. Volumes have since increased in line with economic recovery.

Who uses CHAPS and for what?

There are over 35 organisations that access CHAPS directly. A full list is available on the Bank's website, as are details about the requirements for direct access. CHAPS Direct Participants (DPs) include major international payment and custody banks, financial market infrastructures, the traditional UK high-street banks and more recently, 'challenger' banks and non-bank payment service providers. Several thousand financial institutions access CHAPS indirectly by making their payments via one or more of the DPs. This is known as agency or correspondent banking.

Chart 1: Number of CHAPS Direct Participants
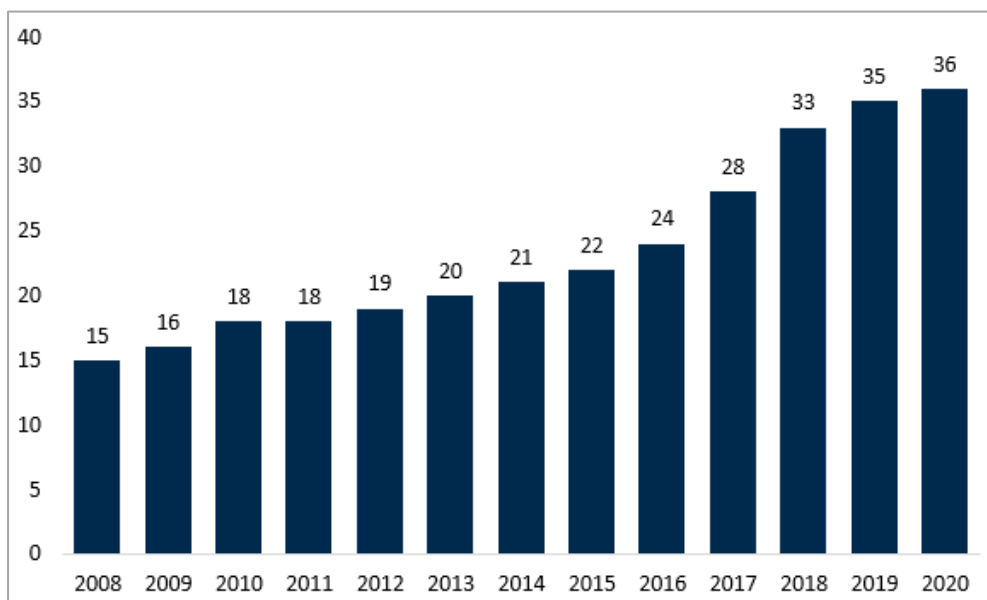
CHAPS payments are used for a variety of different purposes:

- Financial institutions and some of the largest corporates use CHAPS to settle high-value money market and foreign exchange transactions.
- Corporates use CHAPS for high value and time-sensitive payments such as to suppliers or for payment of taxes.

- CHAPS is commonly used by solicitors and conveyancers to complete housing and other property transactions.
- Individuals may use CHAPS to buy high-value items such as a car or pay a deposit for a house.

CHAPS record days

- Thursday 29 March 2018, the day before the four-day Easter break, and the last working day of the quarter, saw a record **320,034** payments, worth **£463 billion** settled in CHAPS. This beat the 11-year volume record by around **38,000 payments** (13% higher).
- The **all-time peak value** day was on 30 November 2020, when **£485 billion** was settled in CHAPS. This was due to a combination of high activity across secured money markets, settlement of foreign exchange, and flows with other Financial Market Infrastructure. This exceeded the previous record of £479bn, on 18 March 2020, by **£6 billion** (1%).

What is RTGS?

The Bank's RTGS infrastructure is an accounting system. It is the infrastructure that underpins settlement of sterling payments, rather than being a payment system itself. Eligible institutions – as defined in the Bank's [Settlement Account Policy](#) - are permitted to hold settlement accounts within RTGS. The sterling balances held in these accounts are used to settle the sterling payment obligations which arise from that institution's direct participation in one or more UK payment or securities settlement systems.

When the Bank acts as a **settlement agent** for payment systems, settlement occurs in **central bank money**. Central Bank money is the ultimate secure and liquid sterling asset as the risk of the Bank defaulting is so low. It therefore offers the lowest-risk way for financial institutions to meet their payment obligations.

As well as providing settlement services, RTGS is also part of how the Bank implements monetary policy decisions as interest on reserves accounts is paid at Bank Rate, and provides secured liquidity to the UK's financial system. Our combined delivery of RTGS and CHAPS therefore contributes to the Bank's mission to promote the good of the people of the UK by maintaining monetary and financial stability.

Table 1. March 2020 – June 2021 daily average RTGS settlement values and volumes

Payment System	March 2020 – June 2021
CHAPS values (£mn)	£358,914
CHAPS volumes	179,078
CREST DvP values (£mn)	£381,158
CREST DvP volumes	13,019
FPS net values (£mn)	£1,166
Bacs net values (£mn)	£4,737
Cheque imaging net values (£mn)	£67
LINK net values (£mn)	£203
Visa Europe net values (£mn)	£2,399
Total values (£mn)	£748,644

RTGS settlement services for payment systems and other Financial Market infrastructure (FMI)

Through RTGS, the Bank currently provides settlement facilities to directly-settling participants of the CHAPS payment system, the payment system embedded within CREST,[1] six retail payment systems (Bacs, Image Clearing System (ICS) for cheques, Faster Payments, LINK, Mastercard Europe and Visa Europe), as well as the Bank's Note Circulation Scheme.[2] CREST and the six retail payment systems are operated by external institutions, and not the Bank.

A number of other FMIs also use direct or indirect access to CHAPS to complete the respective payment obligations. Final sterling settlement for CLS, a foreign exchange settlement system that eliminates settlement risk in participating currencies, is carried out through CLS's direct participation in CHAPS. LCH (a central counterparty) and Euroclear Bank are also CHAPS Direct Participants. (Figure 1 outlines the interlinkages between RTGS, CHAPS and FMIs).

The Bank's RTGS currently supports four settlement models: real-time gross settlement, delivery versus payment (DvP), as well as prefunded and standard deferred net settlement.

Real-time gross settlement

The real-time gross settlement model – where payment obligations between settlement participants are settled individually on a gross basis in RTGS throughout the business day - is only used by CHAPS.

Delivery versus Payment (DvP)

DvP is currently only used to support final settlement in CREST. Sterling settlement in CREST takes place in a series of very high-frequency cycles throughout the day. After each cycle, RTGS is advised of the debits and credits to be made to the CREST settlement banks' accounts. We support settlement in CREST by providing intraday liquidity to the CREST settlement banks (a process known as auto-collateralisation). Settlement risk is eliminated as transactions are settled with finality in real time against segregated liquidity.

Net Settlement

The majority of sterling electronic payments (by volume) are ultimately settled using the Bank's net settlement service. Net settlement systems operate in regular (e.g. daily) settlement cycles. At the end of each cycle the operator calculates each settlement participant's obligations on multilateral net basis, so that each settlement participant either owes or is owed a single value. The operator then sends instructions to the Bank to settle the obligations. The current norm in the UK is for this settlement to take place after information is exchanged on individual payments, and after customers are debited/credited i.e. deferred net settlement

The Bank offers **prefunded** service to support net settlement. This eliminates settlement risk between settlement participants by allowing the payment system operators to cap the maximum possible net debit position of those settlement participants to the amount of cash held by that participant in a segregated 'prefunding' account in RTGS.

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[1] The UK's securities settlement system (CREST) is operated and managed by Euroclear UK & Ireland (EUI). CREST settles UK securities such as gilts, equities and money market instruments in sterling, euro and US dollars.

[2] Payments under our Note Circulation Scheme (NCS) are also settled in RTGS. NCS allows its members – wholesale cash operators – to hold notes in custody for us within their network of cash centres.

Figure 1: Interlinkages between RTGS, CHAPS and Financial Market Infrastructures
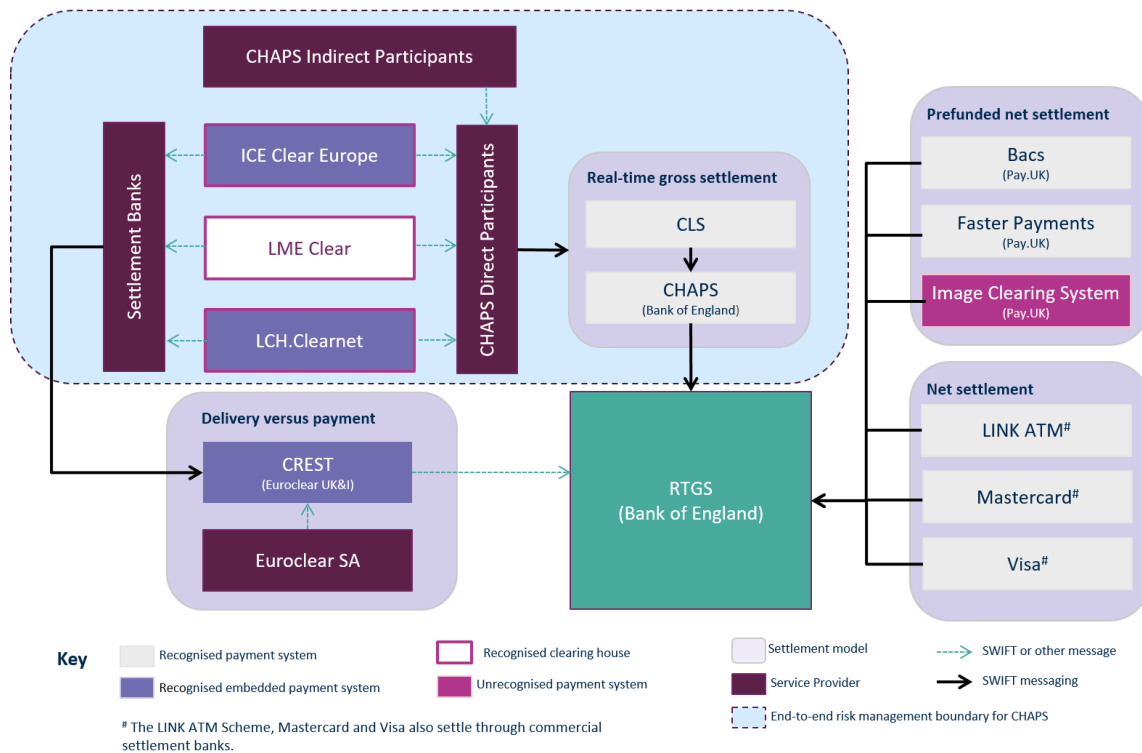
RTGS and the Sterling Monetary Framework

In addition to its settlement functionality, RTGS also plays an important role in the implementation of monetary policy, and therefore directly contributes to the Bank's monetary stability objective.

Where an institution is eligible for the Sterling Monetary Framework (SMF), the Bank permits it to hold a 'reserves account' in RTGS. Balances on these accounts can be held overnight in RTGS, and are **remunerated at Bank Rate**, as decided by the Bank's Monetary Policy Committee (MPC). Reserves accounts can also be used by SMF participants for settlement of obligations arising as a result of participation in UK payment systems.

Reserves account holders must be banks or building societies that are authorised to take deposits in the UK, investment firms authorised by the Prudential Regulation Authority, or certain central counterparties or international central securities depositaries. Institutions that are not eligible for the SMF, but are eligible for an account in RTGS (according to the Bank's Settlement Account Policy), can hold settlement accounts; this includes payment system operators and non-bank PSPs.

Conclusion: How RTGS and CHAPS contribute to the Bank's mission

The successful management and operation of RTGS and CHAPS directly supports the Bank's mission to promote the good of the people of the United Kingdom by maintaining monetary and financial stability in three main ways:

1. By offering settlement accounts to eligible institutions, RTGS plays a vital role in the functioning of the UK economy through supporting safe and efficient settlement of obligations in central bank money across a wide range of payment systems.

2. Reserves held in the RTGS infrastructure – under the Bank's Sterling Monetary Framework – are remunerated at Bank Rate. RTGS therefore acts as the platform through which the transmission of monetary policy decisions is implemented.

3. CHAPS provides a safe and efficient system for individual high value and often time-critical transactions to settle. The Bank also acts as the end-to-end risk manager for CHAPS with the objective of reducing risks to financial stability. The risk tolerance for the CHAPS system is within the Bank's overall risk tolerance and the Financial Policy Committee's (FPC) proposed 'complete by end of the value date' impact tolerance for critical payments.

The Bank, through its operation of RTGS and CHAPS, also seeks to promote efficiency, innovation and competition in sterling payments, wherever that can be safely done without impairing stability.
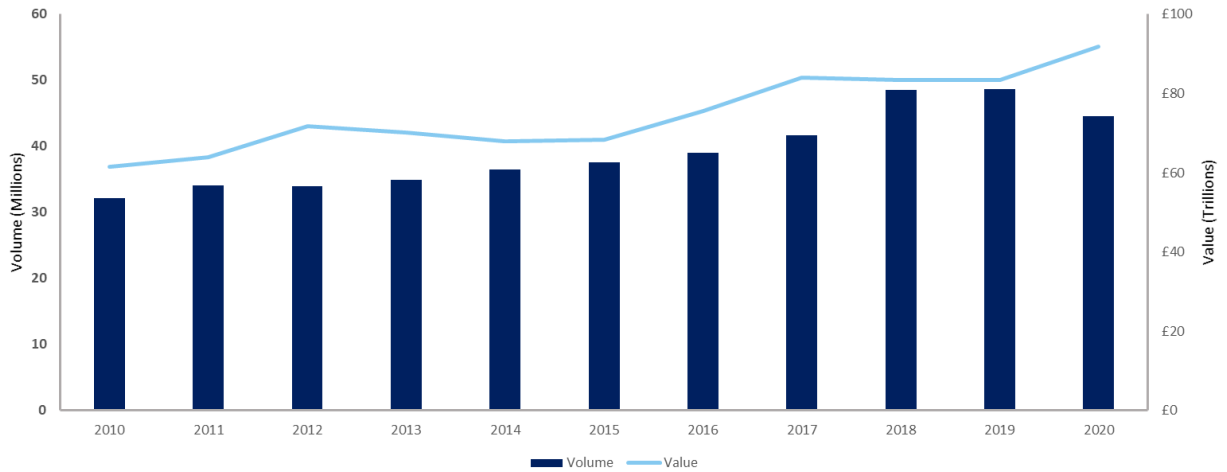
Annex 1. CHAPS statistics

The charts below show the payment profiles, values and volumes for the periods noted. CHAPS volumes are lower than other payment systems, but are typically of much higher value, as Chart 2 shows.

Chart 2: CHAPS payment band profile (March 2020 – February 2021)
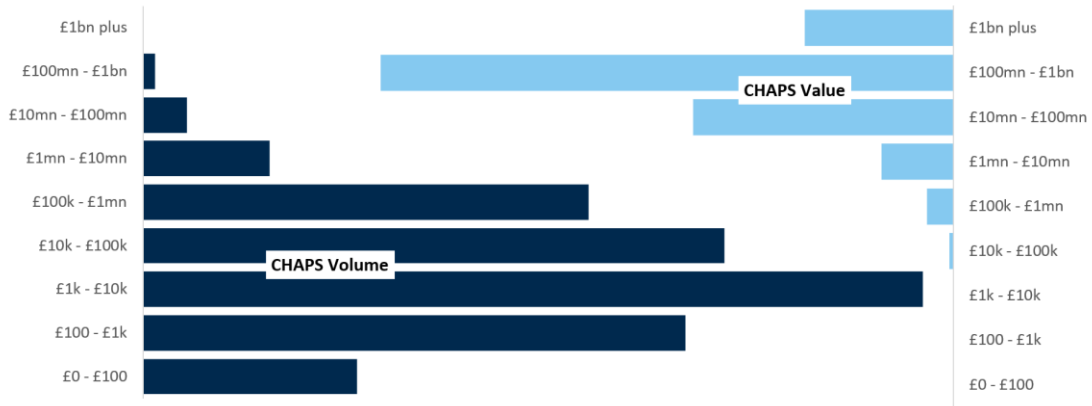
Chart 3: CHAPS annual values and volumes (calendar years 2010 – 2020)

Annex 2. Further Reading

The Bank of England's Real-Time Gross Settlement Infrastructure

Bank of England Settlement Account Policy

Access for non-bank payment service providers

Cost of Direct Access to CHAPS and RTGS

Historic monthly CHAPS statistics (updated to Nov 2021)

How has the liquidity saving mechanism reduced banks' intraday liquidity costs in CHAPS?

Self-assessment of RTGS and CHAPS – December 2020

Enhancing the resilience of the Bank's RTGS infrastructure

RTGS and CHAPS service description

Payment and Settlement page on Bank's website

Payment and Settlement statistics

RTGS Renewal Programme pages on Bank's website

ISO 20022 information

The Bank of England Market Operations Guide