



National Audit Office

Report

by the Comptroller
and Auditor General

**HM Treasury, Bank of England, The Royal Mint,
Financial Conduct Authority, Payment Systems Regulator**

The production and distribution of cash

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Report by the Comptroller and Auditor General

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Comptroller and Auditor General
National Audit Office

11 September 2020

This report examines the role played by the public bodies in operating and overseeing the cash system. The report examines how the cash system currently operates in the UK and whether the various public bodies with key responsibilities for cash are meeting their objectives and whether a system-wide approach is being taken.

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Contents

Key facts 4

Summary 5

Part One

Introduction 17

Part Two

Oversight of the cash system 22

Part Three

The production of coins and notes 36

Appendix One

Our audit approach 52

Appendix Two

Our evidence base 54

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Key facts

59%

decline in the volume of cash payments between 2008 and 2019

17%

decrease in the number of free-to-use automated teller machines (ATMs) in the two years to December 2019, to around 45,000

£143m

public sector cost of producing and issuing notes and coins in 2019-20

65% forecast reduction in the use of cash between 2018 and 2028

71% decline in the market demand for notes and coins from cash centres between early March and mid-April 2020 as a result of the COVID-19 emergency, although demand has since been recovering

5 number of public bodies responsible for administering or overseeing the cash system

65% reduction in annual volume of coins purchased by HM Treasury from the Royal Mint between 2010-11 and 2019-20

£50 billion approximate value of notes in circulation not being used for transactions or identified as savings held by UK households

10 years minimum length of time forecast by the Royal Mint in March 2020 that it would take for stocks of 2p and £2 coins to run out

£590 million income from seigniorage from note production paid by the Bank of England to the National Loans Fund in 2019-20 after deduction of note production expenses

Summary

1 For generations coins and notes have played a central role in society as the primary means of payment. Over £100 billion is spent in shops using coins and notes every year and until 2017 cash was the most frequently used payment method in the UK.

2 The use of cash in transactions is, however, in decline: 10 years ago, cash was used in six out of 10 transactions, and last year it was less than three in 10. Forecasts have suggested that this might fall to one in 10 by 2028. A recent drop in the use of cash during the COVID-19 pandemic may accelerate that trend. The decline in the use of coins and notes has implications for the production of cash and the infrastructure used to distribute cash to citizens and businesses to meet everyday needs. Although many people have become less reliant on cash, most adults still use cash at least some of the time and some sections of society remain largely reliant on cash, for example it is estimated that just over a million UK adults do not have a bank or building society current account or equivalent.

3 The cash system is large and complex. Coins are produced for the whole of the UK by The Royal Mint (the Mint) under a contract with HM Treasury. The Bank of England (the Bank) produces notes for use throughout the UK. Designated commercial banks also produce notes in Scotland and Northern Ireland. Cash is distributed across the country by major commercial wholesale operators, comprising the major banks and Post Office Ltd. There is also a large network of commercial companies operating local cash centres to store cash, transport cash and operate the network of free-to-use and pay-to-use cash machines.

4 Running the cash system incurs costs for both taxpayers and businesses. The production costs of notes and coins are offset by income resulting from their sale to the market at face value. In 2019-20, the Bank incurred note production and distribution expenses of £119 million and HM Treasury incurred UK coin production expenses of £23.6 million. Research commissioned by the finance sector has estimated that the UK's entire cash infrastructure (including cash processing and distribution for private businesses) costs around £5 billion a year.

5 The continuing reduction in the use of cash in transactions is putting pressure on the cash system. Many of the costs of cash production and distribution are fixed. Commercial operators have warned of pressures on their business models, which have previously depended on higher cash volumes to maintain the commercial attractiveness of their operations. Consumer organisations have raised concerns that reductions in the ability of people to access cash, and increasing costs to business of using cash, if not properly managed may increase the risk of financial exclusion for sections of society dependent on cash.

6 The government’s policy is to safeguard access to cash for those who need it, while supporting digital payments. HM Treasury has responsibility for delivering the policy aim. A range of public bodies have responsibility for aspects of the cash system:

- Responsibility for producing and maintaining the integrity of coins and notes sits with HM Treasury and the Mint, and the Bank respectively. This includes responsibility for reducing, through design and innovation, the risk of counterfeiting.
- The wholesale distribution of notes in England is undertaken by four major commercial companies governed by a set of contractual arrangements with the Bank, known as the Note Circulation Scheme.
- The wholesale distribution of coins is carried out solely by the private sector. The Mint has no responsibility for how coins are distributed.
- The Payment Systems Regulator (PSR) is an economic regulator responsible for promoting competition, innovation and the interests of consumers and other users of UK payment systems, including specifically the automated teller machine (ATM) network overseen by LINK, a private not-for-profit company run on behalf of its commercial members.
- The Financial Conduct Authority (FCA) is the conduct regulator for financial markets in the UK. Its strategic objective is to ensure that markets function well. Its role includes protecting consumers and promoting competition between financial services providers.

7 In May 2019, HM Treasury established a new coordinating group, the Joint Authorities Cash Strategy (JACS) Group, to “set up strategy, coordinate work to support nationwide access and help safeguard cash for those that need it”¹ The group is chaired by HM Treasury officials and also comprises the Bank, the FCA and the PSR. The Group published an update in July 2020 on developments within the UK’s cash infrastructure and the work of JACS Group members.²

1 The Joint Authorities Cash Strategy Group terms of reference are available at: www.gov.uk/government/publications/joint-authorities-cash-strategy-group-terms-of-reference

2 Joint Authorities Cash Strategy (JACS) Group, *Safeguarding the UK’s cash infrastructure*, July 2020, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/900535/JACS_Group_Update_July_2020.pdf

8 In its March 2020 Budget, the government announced that it would bring forward legislation to protect access to cash and ensure that the UK's cash infrastructure was sustainable in the long term. In June 2020, the Bank, on behalf of the Wholesale Distribution Steering Group, which includes the major commercial note distributors, issued a public consultation on potential 'end-state models' for the wholesale distribution of cash in the UK, which would support continued access to cash in an environment of declining cash volumes.³

Study scope

9 This report examines the role played by the public bodies in operating and overseeing the cash system at a time of rapid change in society's use of cash. The report examines:

- how the cash system currently operates in the UK;
- whether the key public bodies have clear objectives and responsibilities for delivering the government's aims for the cash system and adequate information on how well the system meets consumer needs, and the action taken to deliver the government's aims; and
- how well the Mint, on behalf of HM Treasury, and the Bank oversee and manage coin and note production respectively, and the extent to which they have reduced the threat of counterfeiting.

Key findings

Oversight of consumer interests

10 The public bodies have improved their joint working but lack a shared view of what a good outcome for the consumer will look like and how the costs of achieving this are to be taken into account. There is no single body with responsibility for overseeing how well the cash system is performing. It is therefore important that the public bodies work in a coordinated way for the government to deliver its aim. The PSR and the FCA have statutory consumer protection objectives and functions, but, while PSR's responsibilities include regulating LINK's oversight of the ATM network, none of the statutory objectives refer specifically to cash. The JACS Group has enabled more formal coordination among its participants, although it does not itself have responsibility for the cash system and is not a decision-making body. We could not see a clear link between the overall government aim for cash and consumers, the outcomes that consumers should expect in terms of access and acceptance of cash and their associated costs, and the statutory responsibilities of the public bodies as set by government and Parliament. No public body has, for example, explicit responsibility for tracking trends in the acceptance of cash, although the FCA has commissioned research in 2020 to improve its understanding (paragraphs 2.3 to 2.6, 2.19 and 2.22, and Figure 4).

³ Wholesale Distribution Steering Group, *Consultation on the Future of the UK's Wholesale Cash Distribution Model*, available at: www.bankofengland.co.uk/banknotes/wholesale-cash-distribution-in-the-future

11 The FCA and the PSR are developing their understanding of which consumers use cash most, and why they need it. Information on consumer needs can help regulators target their actions to help people who would face practical difficulties should their ability to access and use cash become limited. There is no single public body responsible for collecting information on consumer needs. The PSR and the FCA have each commissioned research, some ongoing, aimed at understanding which groups of consumers are most reliant on cash and how they are affected by changing cash availability. Research suggests that cash use tends to be higher among lower income groups and older age groups (paragraphs 1.6 and 2.8 to 2.12).

12 The FCA and the PSR are now drawing together information on locations where access to cash is more limited. There is good information on numbers and locations of cash access points, including ATMs and bank and post office branches, but less information available on cashback facilities. Until recently these data sources were not being brought together to develop a holistic view of areas where provision could be particularly limited. In March 2020, in response to the COVID-19 emergency, the regulators collected data from industry to map access to cash in the UK. They are now building on this, working with the University of Bristol to produce a national map of access to cash and to help assess 'reasonable access' to cash (paragraphs 2.14 to 2.16).

13 At present no public body has been given responsibility for reporting how well the cash system as a whole is meeting the government's aim. The FCA and the PSR collect and produce a range of information about how different aspects of the cash system affect consumers. However, there are no systems in place, or planned, bringing together measurement, analysis and reporting on the performance of the cash system as a whole. The PSR has developed proposals for a 'consumer tracker', which would measure aspects of consumer needs and ATMs coverage. However, the PSR informed us that it has delayed implementing these proposals due to the COVID-19 pandemic (paragraphs 2.3 and 2.13).

14 The number of ATMs is decreasing although LINK's actions, backed by steps taken by the PSR, have protected ATMs in specified areas where provision is limited. Most cash withdrawals (90%) are made through ATMs. In the two years to December 2019 the total number of ATMs decreased by 12% to around 60,000 and the number of free-to-use ATMs fell by 17% to around 45,000, although the number of free-to-use ATMs at the end of 2019 remained higher than a decade earlier. In 2018 LINK made a commitment to maintain its existing footprint of free-to-use ATMs where provision was most limited, protecting around 2,900 ATMs at December 2019. The PSR has supported LINK's actions and taken steps to strengthen LINK's commitment and processes. The industry, with the PSR's encouragement, has launched additional initiatives to address cash access needs (paragraphs 2.14, 2.17, 2.18, 2.23 to 2.27 and 2.33, and Figure 5).

15 The PSR has focused on geographical access to free-to-use ATMs but has paid less attention to analysing the impact in more deprived areas. Overall the percentage of ATMs that were free-to-use in England fell from 81% to 76% between 2018 and 2020. The impact of cash system changes on consumers can be measured in a number of ways, including by the number and proportion of free-to-use ATMs available to consumers based on the level of deprivation in their area. Our analysis indicates that there is a much higher number of free-to-use ATMs in more deprived areas and, in the two years to January 2020, the number of free-to-use ATMs fell across all bands, from least to most deprived. During the same period the proportion of free-to-use ATMs declined faster in more deprived areas. Interpreting this requires caution because there is not a simple relationship between the availability of free-to-use ATMs and access to cash or consumer detriment, for example urban areas with a daily influx of commuters may historically have had good access to free-to-use ATMs. Since 2006, LINK has run a scheme aimed at addressing the risk of financial exclusion. The PSR does not have a specific statutory objective for financial inclusion, although it told us that it plans to include the above measures in its consumer tracker (paragraphs 2.24 and 2.28 to 2.31, and Figures 7 and 8).

16 Cash use has declined significantly during the COVID-19 pandemic and this may have a lasting impact on cash access and usage. Data collected by the cash industry suggest that demand for notes and coins declined by 71% between early March and mid-April during the COVID-19 lockdown but has since been recovering. During this period some retail businesses decided to suspend acceptance of cash as a means of payment. It is still too early to assess the longer-term impact of this period on cash access and usage. The experiences of consumers during this period may offer new insights for the future into the potential impact of markedly reduced cash use on vulnerable groups (paragraphs 1.2 and 1.6, and Figure 3).

Production of coins and notes

17 The Mint, on behalf of HM Treasury, and the Bank share largely the same objectives for the production of cash although they manage production in different ways. Both organisations seek to ensure that there is a sufficient quantity of cash to meet the needs of the economy, and to maintain the public's confidence in the UK's coinage and notes. The management and production of coins and notes are organised differently:

- **Manufacturing arrangements:** The Mint produces all of its coins at its site in Llantrisant, South Wales. About one-quarter of its coin-making is for UK circulation with the remainder manufactured for overseas contracts. The Mint operates under a strategic framework set by HM Treasury, which requires it to deliver an overall target profit on each of its business operations. The Mint's UK coin-making activities are determined by a HM Treasury contract, which sets out further operational specifications. Since 2003, the Bank has sub-contracted the printing of notes to De La Rue, a UK-based printing company, at a Bank-owned production site in Essex. Production risk is shared between the Bank and De La Rue: the Bank owns the production machinery and De La Rue pays a charge to use it.
- **Distribution:** Banks and other commercial entities collect coins from the Mint's premises and manage distribution. The Bank operates a different arrangement for notes, known as the Note Circulation Scheme, whereby four commercial entities are permitted to manage the wholesale distribution of notes. The retail distribution of notes beyond the network of wholesale cash centres is left to the market.
- **Financing:** HM Treasury pays the Mint a set price for each coin produced, which includes a profit margin, and also pays for base metal costs. In 2019-20 HM Treasury paid £23.6 million, including £10.4 million for coins and £13.1 million for base metal.⁴ The Bank's note operations are funded by income from 'seigniorage': the Bank sells manufactured notes at face value to members of the Note Circulation Scheme and invests the proceeds in interest-yielding assets. The interest earned is paid by the Bank to the National Loans Fund each quarter, after deducting its notes production and distribution costs. In 2019-20, the Bank paid £590 million to the National Loans Fund, after deducting note expenses of £119 million (paragraphs 3.1, 3.2, 3.15, 3.16 to 3.18, and 3.31 to 3.33).

⁴ Numbers do not sum due to rounding. The total amount paid by HM Treasury was £23.558 million.

18 The volume of coins manufactured by the Mint has begun to fall reflecting the wider decline in the use of cash. Coin production increased between 2012 and 2017 as the Mint issued new types of 5p, 10p and £1 coins. Since 2017, however, coin production levels have fallen rapidly to about 35% by volume of the amounts produced a decade earlier. In 2019-20 the Mint manufactured 383 million UK circulation coins, compared with nearly 1.1 billion in 2010-11 (paragraphs 3.3 and 3.4, and Figure 9).

19 Although the use of cash in day-to-day transactions has fallen, the demand for notes has increased continuously over the past 20 years. In July 2020 the number of notes in circulation reached a record high of 4.4 billion, with a monetary value of £76.5 billion. This compares with 1.5 billion notes worth about £24 billion in 2000. In 2018 the Bank estimated that only 20%–24% of the value of notes in circulation were being used or held for cash transactions, with UK households holding a further 5% as savings. Little is known about the remainder, worth approximately £50 billion, but possible explanations include holdings overseas for transactions or savings and possibly holdings in the UK of unreported domestic savings or for use in the shadow economy. However, the Bank and other government bodies have little reliable information to quantify how much is likely to be held where, or why the demand for notes is increasing. Over the past decade research has identified an increasing use of notes as a store of value across most of the world's major currencies, including the UK. Potential factors contributing to the demand are thought to include low inflation and interest rates, leading to increasing confidence in the real value and lower opportunity cost of holding cash, and also loss of confidence in banks following the 2008 financial crisis (paragraphs 1.4 and 3.19 to 3.21 and Figure 12).

HM Treasury and the Mint's oversight and management of coin production in the UK

20 Forecasting coin demand is inherently challenging, reflecting fluctuations in consumer behaviour and the large volume of coins not in active circulation. The Mint forecasts coin demand each year by estimating likely demand from the network of coin centres which serve banks and other financial institutions. However, coin demand from the cash centres has often varied significantly from the volumes forecast, sometimes abruptly, reflecting fluctuations in consumer behaviour and the ability of cash centres to anticipate requirements. For example, in 2017-18, an exercise to recall the old £1 coin led to an unexpectedly large return of coins of all denominations to cash centres as households and businesses emptied their stocks. In addition, HM Treasury-commissioned research in 2018 estimated that two-thirds of all issued coins were not in active circulation, and that there is little known about the factors that might prompt consumers to re-use their coin stores (paragraphs 3.5 to 3.7 and Figure 10).

21 As a result of both the impact of the 2017 £1 re-coinage exercise, and the rapid decline in coin demand, the Mint has built up significant excess stocks of coins. In 2019-20 HM Treasury required the Mint to keep a target buffer stock of around 11 weeks of annual demand for most denominations. However, in March 2020 stocks of coins exceeded the target buffers in all denominations: with holdings of 1p and 2p six and eight times above target respectively, and £2 coins 26 times over target. While the storage cost of the excess stocks is relatively small, the Mint's production of UK coins will be reduced over the next decade, as it balances maintaining production capability with steady stock reduction. In March 2020, the Mint did not plan to produce any new 2p or £2 coins for at least 10 years (paragraphs 3.8 to 3.10 and Figure 11).

22 The Mint continues to incur losses on its coin-making but has been taking action to improve profitability and efficiency. The Mint's coin-making activities made a loss of £3.9 million in 2019-20, compared with a loss of £13.1 million in 2018-19, and £4.3 million in 2017-18. Since 2018 the Mint has taken action to reduce cost and become more efficient. It has reduced headcount by 22% on coin-making work within its Currency division and mothballed two of its six plating lines. The average reduction in direct manufacturing cost per UK coin, excluding metal costs, has been approximately 23%. Despite these efforts, unit costs of UK coins have nevertheless increased by about 45% on average in three years. This has resulted from a combination of significant increases in metal prices, production of proportionately more coin denominations made of more expensive metal, and the fact that fewer coins were produced for some denominations pushing up marginal prices. The cost of making each 1p increased 69% between 2016-17 and 2019-20. The Mint's forecasts project that its currency operation (UK and overseas currency) may return to profitability by 2021-22, although the forecasts were prepared prior to the COVID-19 emergency (paragraphs 3.11 to 3.15).

Oversight and management of note production

23 Over the past four years the Bank has been replacing cotton paper notes with polymer notes, but it is too early to conclude if this change will meet the Bank's main objectives for the programme and also lead to savings. The Bank introduced the new £5 polymer note in October 2016, the £10 note in September 2017, and the £20 note in February 2020. Polymer notes are inherently harder to counterfeit and the Bank's polymer notes have extra security features, which together the Bank believes should strengthen resilience against counterfeiting. They are expected to last at least 2.5 times longer than paper notes. However, each polymer note costs 60% to 80% more to make than a paper note. The Bank has not formally assessed whether the replacement of existing paper notes with polymer notes will result in net costs or savings, although it did benchmark its cost calculations against a theoretical 'upgraded paper' replacement. Ultimately, the net cost or saving of polymer notes will largely depend on how much longer the new notes last (paragraphs 3.22 to 3.25).

24 At March 2020 the Bank's contingency holding of notes significantly exceeded its minimum guidance levels, which was partly affected by the launch of the new £20 note. The Bank forecasts the likely demand for notes but actual demand can depart significantly from expectations. To avoid shortages, the Bank sets out to hold contingency stocks of all notes. These contingency stocks are in addition to its normal bond stocks which are used to meet day-to-day and seasonal fluctuations in demand. Its minimum contingency stock in March 2020 was set at 11 months of annual demand for £5 and £10 notes, enough £50 notes to meet a spike in demand, for example such as that experienced in the 2008 financial crisis plus 50%, and enough £20 notes to meet six months of forecast demand for the new notes during its launch phase. In March 2020, contingency stock levels were above minimum levels for all denominations, with a total value of £39 billion, against its minimum contingency guidance level of £20.5 billion. The contingency stocks above minimum levels cost about £35 million to produce, before taking account of fixed costs, such as depreciation of machinery. It was not clear from the documentation shown to us what process the Bank operated to decide upon adequate stock levels, and how the cost implications of doing so were taken into account when building up stocks. The Bank considers the stock levels at March 2020 to have been prudent to remove any possibility of running out of notes, especially during the launch phase of the £20 polymer note, which accounted for more than half of the value of holdings above the minimum guidance levels (paragraphs 3.26 to 3.30).

25 Efficiency of note production conducted under the contract with De La Rue has improved in recent years. The Bank entered into the current 10-year contract with De La Rue in 2015. The Bank has an objective to promote the efficiency of note production, and it pursues this within the contract using two 'built-in' performance mechanisms, which each year gradually reduce allowable spoilage (that is, defective notes) and gradually increase utilisation rates of production machinery. De La Rue earns greater profits if it exceeds the tightening year-on-year targets, which it did for about half of the targets in the first five years of the contract. The resulting efficiency improvements from these arrangements have enabled unit cost reductions in note production of between 5% and 17% over the past four years (paragraphs 3.33 and 3.34, and Figure 14).

Reducing the risk of counterfeiting

26 Recent anti-counterfeiting work by both the Bank and the Mint is delivering improvements. Low counterfeiting rates help ensure the public have confidence in the use of cash:

- **The Bank** estimates that one in 10,000 notes are counterfeit, costing consumers and businesses about £10 million a year. This is higher than international comparators we have data for, for example it is three times the average in the eurozone. The Bank attributes this difference to counterfeiting in the UK having greater involvement from organised crime than in other jurisdictions. Indications so far are that £5 and £10 polymer notes, with new security technology, have reduced the incidence of counterfeiting of equivalent paper notes, although in early 2020 a small number of counterfeit polymer £10 notes were used successfully in some retail outlets. The real test for polymer's resilience to counterfeiting will be the new £20 as the traditional target note for counterfeiters.
- **The Mint** has taken action against previously high counterfeiting rates. In 2016 about one in every 30 £1 coins was a counterfeit. In developing a replacement, the Mint introduced new advanced security technology. Surveys since 2018 have found very low counterfeiting rates for the new £1 and other denominations (paragraphs 3.35 to 3.38 and figures 15 and 16).

Conclusion on value for money

27 The declining use of cash is placing increasing pressure on the sustainability of the infrastructure for producing and distributing cash. The current approach to overseeing the cash system is fragmented with no clear link between HM Treasury's overall objective of safeguarding access to cash for those who need it, the outcome that public bodies want to see and the costs associated with that outcome, and the responsibilities of the individual public bodies involved in the cash system. The creation of the coordination group has brought together the key public bodies and helped improve their understanding of the end-to-end cash system. They have been commissioning research to understand consumer needs, but they have yet to establish information systems to track the impact of a rapidly changing cash system on consumers, particularly for disadvantaged consumers whose needs may be greater. The government's recent announcement to introduce legislation with regard to access to cash, alongside other measures, may provide an opportunity to address some of the issues raised in this report.

28 The Mint and the Bank share similar objectives for the production of coins and notes but deliver against those objectives in very different ways. Both have been successful in maintaining public confidence in cash against the threat of counterfeiting. However, both have accumulated significant stocks of coins and notes in the face of very different patterns of demand. With the use of cash in transactions in rapid decline, and with the recent renewal of coins and note types now almost complete, the Mint and the Bank need to align their production operations much more closely to likely future needs if they are to demonstrate value for money.

Recommendations

29 We make the following recommendations:

- a** **HM Treasury should set out more clearly the specific outcomes it wants the cash system to deliver for consumers and small businesses and how this should be balanced against the costs of doing so.** It should review and where necessary amend the roles and responsibilities of participants in the cash system to ensure that individual responsibilities will, in aggregate, deliver the overall outcome.
- b** **HM Treasury should assign clear responsibility for bringing together and reporting information on how well the cash system overall is performing in meeting the government's policy objectives.** HM Treasury, working with the regulators, should develop a system for monitoring and reporting progress across the whole cash system. The system should include a better understanding of the impact of a changing cash system on:
 - different groups in society and on different parts of the country; and
 - businesses wishing to use cash and on trends in the acceptance of cash by businesses more generally.
- c** **HM Treasury, working with the public bodies and learning lessons from recent experience during the COVID-19 emergency, should have a plan in place to take action if some groups become left behind as the cash system changes.** The plan should include, for example, taking a more systematic approach to addressing some of the barriers that might lead to exclusion or detriment, raising awareness of the range of options for accessing cash and facilitating access to other payment methods.
- d** **The Mint and the Bank should maximise opportunities to learn from each other's experiences of cash production and work with the wider distribution system,** for example working closely with industry, and making best use of available production capacity.

- e **The Bank, working with other public authorities, should improve its understanding of both the factors that are driving the increase in demand for notes, and also who is holding the approximately £50 billion worth of notes where there is currently a lack of information.** This work might help inform wider policy, for example on tax evasion.
- f **The Bank should review its processes for deciding the appropriate level of contingency stocks** and ensure that the factors weighed in reaching those judgements, along with the associated cost implications, are brought together and fully documented.

Part One

Introduction

1.1 Since the 1980s, innovation in payment methods has offered consumers and businesses increasing choice and greater convenience. This has led to a sustained switch from cash to debit and credit card payments for goods and services (**Figure 1** overleaf). This trend has accelerated in recent years, with the increase of digital payments online, and the increasing uptake of contactless payments.

1.2 According to data from the banking and financial services trade association (UK Finance), total cash payment values fell from £267 billion in 2008 to £141 billion in 2019 and were forecast to fall to £59 billion by 2028. Cash payment volumes declined by 59%, from 22.6 billion to 9.3 billion over the period 2008 to 2019, with a 15% drop in cash payment volumes between 2018 and 2019 alone (Figure 1). Early indications suggest a substantial further reduction in cash use over and above these forecasts resulting from the COVID-19 emergency, as many consumers and businesses switched away from cash during the lockdown, although it is unclear yet if this is a permanent switch or a temporary effect. Data collected by the cash industry suggest that the demand for notes and coins declined by 71% between early March and mid-April during the COVID-19 lockdown but by early August had recovered to 77% of pre-lockdown demand.

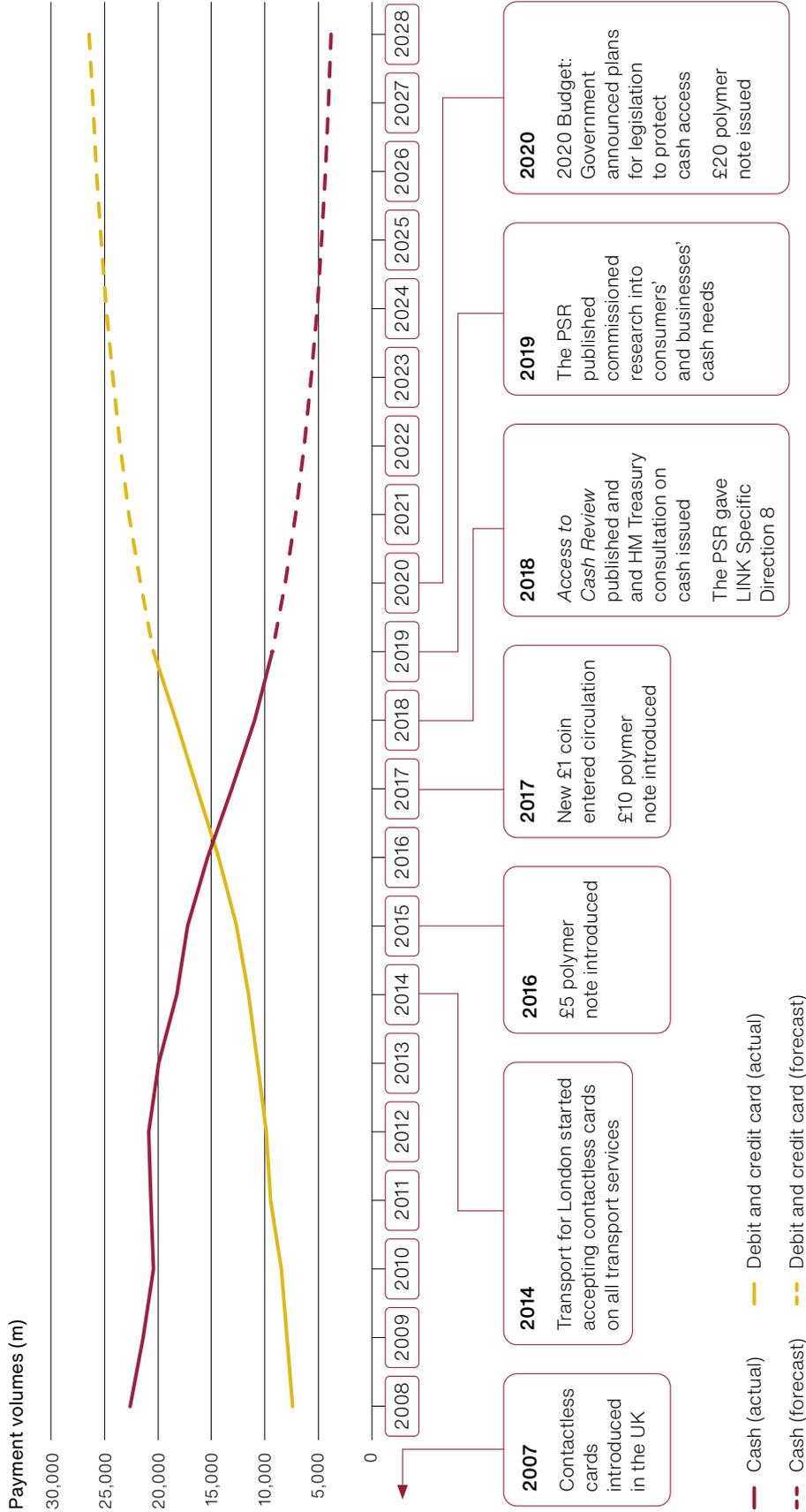
1.3 Countries around the world are also moving from cash to digital payments, but at very different speeds. The UK is among a group of countries, including South Korea and Saudi Arabia, where the value of card payments relative to GDP was more than 40% in 2018. In Germany, Japan and Mexico, among others, it was around 10%.⁵

1.4 In parallel with the increasing use of card payments, a common trend in many countries has been an increase in the demand for physical cash as a store of value. In 2018 the Bank for International Settlements reported a similar trend across more developed countries, driven in part by lower interest rates and the lower opportunity cost of holding cash.⁶ The growth in demand for UK notes is considered further at paragraphs 3.19 to 3.21.

⁵ Bank for International Settlements, *Payments are a-changin' but cash still rules*, BIS Quarterly Review, March 2018, page 69, available at: www.bis.org/publ/qtrpdf/r_qt1803g.pdf

⁶ See footnote 5.

Figure 1 Events and trends in the use of cash as a payment mechanism in the UK since 2008 and forecast cash use to 2028
 Over time cash has been increasingly replaced by cards as the preferred payment mechanism among consumers. The graph illustrates some key developments in the use of cash and payment volumes over time



Notes
 1 The forecast data for 2020-28 are taken from the UK Finance 2019 Payment Markets Report as the 2020 report did not provide forecast data. The forecast data have not been updated to reflect the impact of COVID-19, neither the impact during the peak of the pandemic nor any anticipated long-term impact. The historical data for 2008 to 2019 are taken from the 2019 and 2020 Payment Markets Reports.
 2 PSR refers to the Payment Systems Regulator.

1.5 The UK's cash system involves largely public sector production and private sector distribution based on a complex, largely fixed asset infrastructure. The UK's entire cash infrastructure (including cash processing and distribution for private businesses) has been estimated to cost around £5 billion a year.⁷ There is no single public sector regulator in the UK for the cash system. Five public bodies have responsibilities for overseeing and managing different aspects of the UK's cash system (**Figure 2** overleaf).

1.6 The reduction in cash use is putting pressure on the cash system's infrastructure. Commercial operators have previously relied on high cash volumes to cover large fixed costs, and small businesses incur fixed costs in handling smaller amounts of cash (**Figure 3** on page 21). In 2018, LINK commissioned and funded an independent *Access to Cash Review* led by Natalie Ceeney CBE, a former Chief Executive of the Financial Ombudsman Service.⁸ This brought together the views of consumers and businesses, as well as insights from a UK-wide survey examining cash use. The Review noted that older age and lower income were the main factors determining cash use. It concluded that the UK's cash infrastructure was becoming unsustainable and called for reform. UK Finance estimates that, in the UK, 2.1 million people are still choosing to use cash for their day-to-day shopping. Which?, the consumer campaigns group, has stated concerns that changes in the cash system increase risks of financial exclusion, particularly to vulnerable consumers and those on lower incomes who are more likely to need or prefer to use cash.⁹

1.7 In response to the Review and its own assessment of the role of cash in the economy, HM Treasury established in May 2019 a Joint Authorities Cash Strategy (JACS) Group. The group comprises: HM Treasury, the Bank of England, the Payment Systems Regulator (PSR) and the Financial Conduct Authority (FCA). The group's goal is to inform and coordinate its individual cash activities, in order to ensure that regulatory oversight and activity supports an end-to-end cash infrastructure that remains resilient, cost-effective, sustainable and can meet the needs of users.

Study scope

1.8 This report examines the cash system at a time of great change. In the following Parts we consider:

- Part Two: the responsibilities for overseeing the cash system and the delivery of the government's overall objective, including the quality of information on performance and the action taken to address access; and
- Part Three: the production of coins and notes by the Royal Mint and the Bank of England.

⁷ Access to Cash Review, *Access to Cash Review – Final Report*, March 2019, page 7, available at: www.accesstocash.org.uk

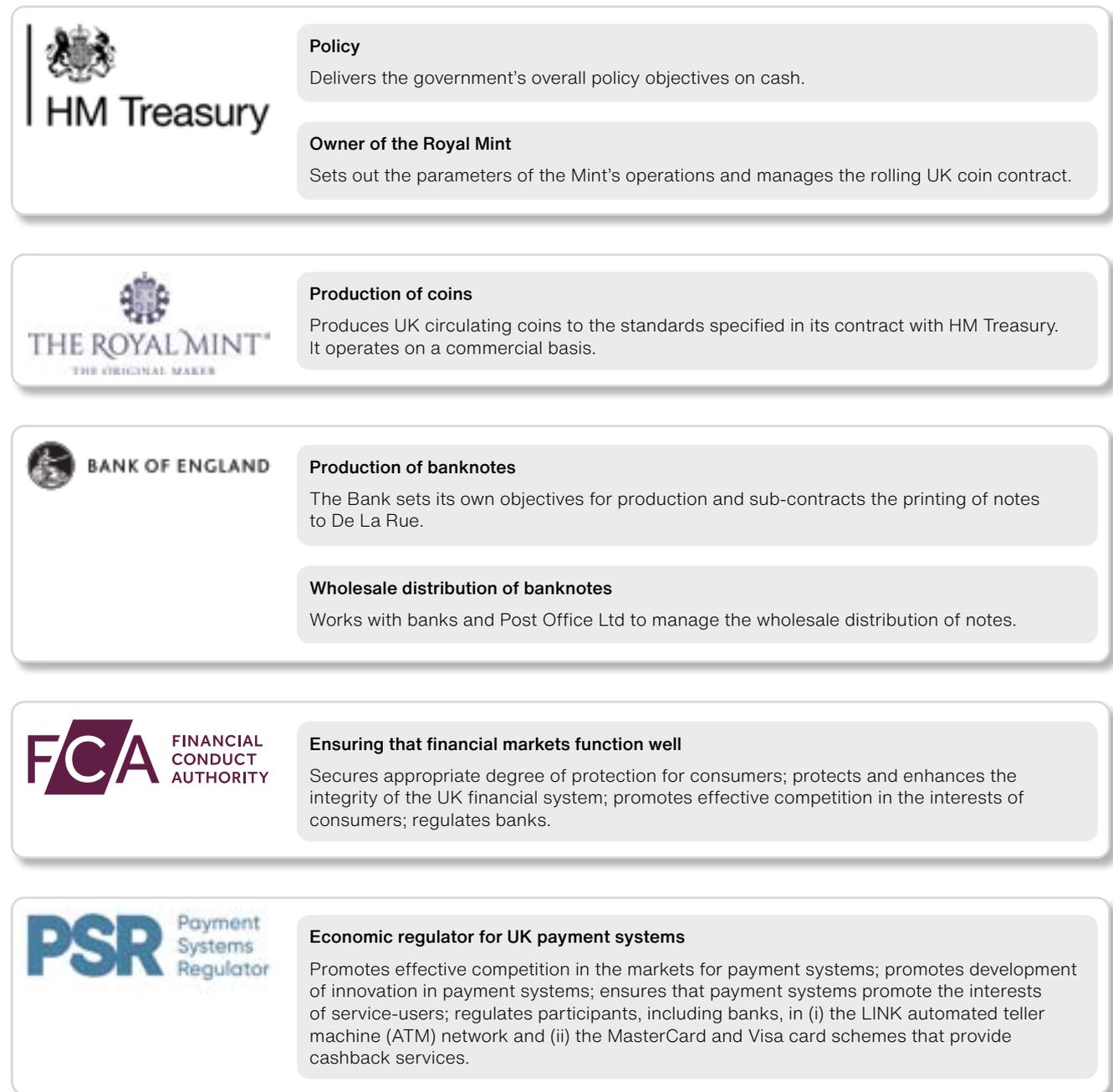
⁸ Access to Cash Review, *Access to Cash Review – Final Report*, March 2019, available at: www.accesstocash.org.uk

⁹ Which?, *Cash-strapped communities: the loss of free access to cash in Britain*, September 2019, page 3, available at: <https://campaigns.which.co.uk/freedom-to-pay/wp-content/uploads/sites/20/2019/10/Cash-strapped-communities.pdf>

Figure 2

Public sector organisations' responsibilities in the cash system

Five public bodies have responsibilities for overseeing and managing different aspects of the UK's cash system



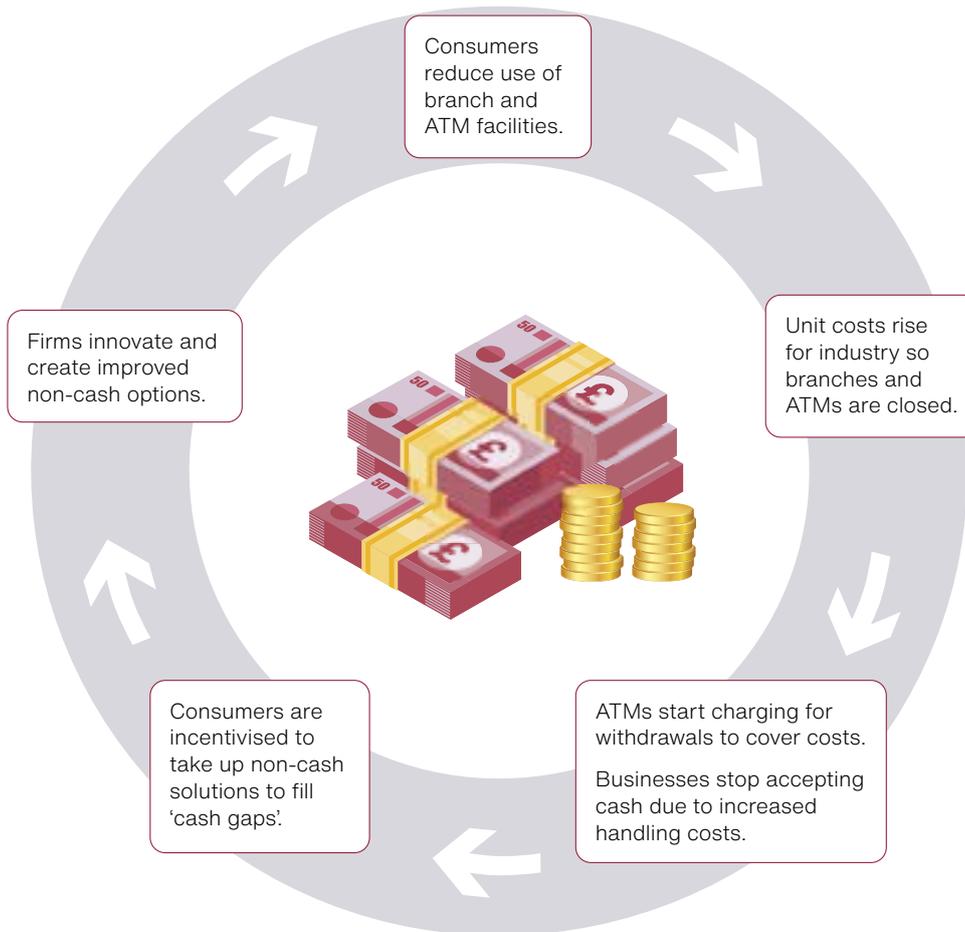
Note

- 1 Additionally, Post Office Ltd provides cash services from its local branches and is a member of the Note Circulation Scheme; the Department for Business, Energy & Industrial Strategy is the sole shareholder in Post Office Ltd.

Figure 3

The move away from cash and its impact

The declining use of cash can create a negative cycle of cash use



Notes

- 1 ATM = automated teller machine.
- 2 Many consumers are able to adapt to non-cash payments, but there is a risk that other consumers will be left behind.

Source: The Financial Conduct Authority

Part Two

Oversight of the cash system

2.1 This Part examines whether HM Treasury and the other public bodies have individually and collectively:

- established clear objectives and responsibilities for delivering the government's aims for the cash system, in particular with regard to meeting consumer needs;
- whether there is adequate information on how well the cash system is meeting consumer needs; and
- whether action has been taken to deliver the government's aims.

Roles, responsibilities and objectives

2.2 The government's policy is to safeguard access to cash for those who need it, while supporting digital payments. When it announced the establishment of the Joint Authorities Cash Strategy (JACS) Group in May 2019, the government stated that the future of cash would be protected to ensure the UK public continued to have choice over how they spend their money, and to help safeguard cash for those who need it. In its March 2020 Budget, the government announced that it would bring forward legislation to protect access to cash and ensure that the UK's cash infrastructure was sustainable in the long term. In July 2020, the JACS Group published an update on developments within the UK's cash infrastructure and the work of JACS Group members. This update included setting out key trends in the use of cash and in cash withdrawals and deposits; the state of the UK's end-to-end cash infrastructure; current regulatory responsibilities and where these lie in regard to the UK cash system; and what actions JACS Group members are undertaking, including action with industry.

2.3 No single body has responsibility for overseeing the relationship between the cash system and consumers (**Figure 4**). The landscape of cash provision is diverse and complex, spanning a range of markets and participants. The Financial Conduct Authority (FCA) regulates the conduct of banks and the Payment Systems Regulator (PSR) regulates payment systems designated by HM Treasury, including LINK, Mastercard and Visa. It is therefore important that the public bodies work in a coordinated way to deliver the government's aim. At present no public body has responsibility for reporting how well the cash system as a whole is meeting the government's aim.

Figure 4

Responsibilities of public sector organisations for different elements of the UK cash system

	HM Treasury	Bank of England	Royal Mint	Payment Systems Regulator	Financial Conduct Authority
Defining and allocating responsibilities for the cash system	✓	✗	✗	✗	✗
Efficient and sustainable cash production ¹	✓	✓	✓	✗	✗
Enough cash in circulation to meet needs of the economy	✓	✓	✗	✗	✗
Latest anti-counterfeiting technology in currency	✗	✓	✓	✗	✗
Public confidence in the use of the currency	✗	✓	✓	✗	✗
Wholesale distribution of banknotes ²	✗	✓	✗	✗	✗
Financial inclusion	✓	✗	✗	✗	✓
Promote competition in payments market	✗	✗	✗	✓	✓
Promote innovation in payments market	✓	✗	✗	✓	✓
Regulation of LINK ATM network	✗	✗	✗	✓	✗
Regulation of banks ³	✗	✓	✗	✓	✓
Protect and promote the interests of consumers of payment systems	✗	✗	✗	✓	✓
Resilient end-to-end cash infrastructure ⁴	✗	✗	✗	✗	✗

Notes

- 1 The Royal Mint is responsible for coins production and the Bank of England is responsible for notes production.
- 2 Wholesale distribution of coins and retail distribution of notes/coins is carried out by the private sector.
- 3 The Financial Conduct Authority regulates the conduct of banks and the Payment Systems Regulator regulates payment systems designated by HM Treasury, including LINK, Mastercard and Visa.
- 4 No single public body is responsible for ensuring the continuous availability of cash to consumers across the whole cash infrastructure. The Bank of England, the Payment Systems Regulator and the Financial Conduct Authority have responsibilities for resilience of parts of, but not all, the end-to-end infrastructure. HM Treasury allocates responsibilities to individual bodies to enable them to perform their functions.

Source: National Audit Office analysis

2.4 We could not see a clear link between the overall government aim for cash and consumers, the outcomes that consumers should expect in terms of access and acceptance of cash from the overall cash system, and the statutory responsibilities of the public bodies for making the overall cash system work well for consumers. In May 2019 HM Treasury announced that the JACS Group would set strategy and coordinate work to support nationwide access to cash; however, it is not a decision-making body. The FCA and the PSR are independent of government and must work within their statutory remits and objectives as described in Figure 2, which, while PSR's responsibilities include regulating LINK's oversight of the automated teller machine (ATM) network, do not refer specifically to cash. HM Treasury writes to the FCA during each Parliament requiring it to take account of government policy when taking forward its responsibilities, but to date no specific reference to the cash objective has been included in HM Treasury's letters.

2.5 In January 2019, the PSR adopted its own broad objective "to support cash access which meets the needs of anyone making payments, including widespread geographic access, for UK consumers who need or want to use it as a payment method". The PSR is able to pursue this objective through its oversight of the participants in the LINK ATM network and the main card schemes that provide cashback services. However, the PSR, working alone, does not have the power to ensure that cash access overall meets the needs of consumers. In March 2020 the FCA articulated its aim "to ensure that consumers can rely on safe and accessible payments to receive their pay or benefits, settle their bills and access cash when they need it".¹⁰

2.6 There is no single public body responsible for overseeing how the cash system maintains provision of a continuous day-to-day service to consumers. An update published by the JACS Group in July 2020 highlighted that group members were focused on the ability of commercial operators to react to incidents in the system. The Bank of England (the Bank) places some business continuity requirements on large operators, and it has worked with the industry to develop a Cash Industry Incident Response Playbook. The playbook establishes a high-level coordinated response framework in the event of a cash-related incident or economic failure of major cash industry stakeholders.

¹⁰ The Financial Conduct Authority, *Business Plan 2020/21*, March 2020, page 4.

Whether there is good information on how well the cash system is meeting consumers' needs

2.7 To ensure the government's cash objective is achieved the public bodies require good information on how the cash system is performing in meeting the needs of those who use cash. This section examines the quality of information available to the public bodies, in particular information on:

- how changes in the cash system impact on consumers who are reliant on cash; and
- how changes to the infrastructure supporting the distribution of cash are impacting on access, and the willingness of businesses to accept cash.

Consumer needs and detriment

2.8 In March 2019, the *Access to Cash Review* concluded that Britain was not ready to go cashless and that the consequences to society and individuals of not having a viable way of paying for goods were potentially significant. The review noted data from the FCA which suggested that, in 2017, 1.3 million people did not have a bank or building society current account or equivalent.¹¹ The review also highlighted a lack of good broadband coverage in some areas, limiting the ability of consumers to use digital payment methods and making them more reliant on cash payments.

2.9 There is no single public body responsible for collecting information on consumer needs. Information on consumer needs can help regulators target their actions on people who would face practical difficulties and a risk of exclusion, should a shift to a cashless society occur rapidly and without mitigations. Individually, the regulators have commissioned research, some ongoing, aimed at understanding which groups of consumers are most reliant on cash and how they are affected by changing cash availability.

2.10 In June 2018 the PSR commissioned qualitative and quantitative market research from BritainThinks on cash access, use and acceptance, with the results published in July 2019. The findings from the *Access to Cash Review* and the PSR's research were broadly in line. The PSR undertook a further period of engagement with stakeholders in late 2019, and it has visited some areas to understand cash system issues at a local level.

¹¹ More recent research estimates that now just over a million UK adults do not have a current account or alternative e-money account. The FCA data also found that a small number of people had neither type of account but did have another account that could be used for day-to-day spending, such as a savings account that came with a payment card.

2.11 The BritainThinks research concluded that relatively few people are completely dependent on cash use, and that 95% find cash easy to access and use. It also found that 16% of people said they needed to travel out of their way to access cash. A significant proportion (28%) of people preferred using cash over other payment methods. The research found that people who preferred cash often cited budgeting and control over spending, with other reasons including security concerns about digital payments.

2.12 In February 2020, the FCA commissioned two market research exercises with the aim of building on the PSR's research and developing a more detailed understanding of which consumers need cash and why they need it. Part of this research involves a 'deep dive' to target the needs and experience of eight specific categories of consumers, including those with long-term medical conditions and physical or cognitive disabilities.

2.13 There are no routine systems in place, or planned, for measurement, analysis and reporting of how well the cash system as a whole performs for consumers. The PSR has developed proposals for a 'consumer tracker', which would measure aspects of consumer needs and ATMs coverage. However, the PSR told us it had to delay implementing these proposals due to the COVID-19 pandemic.

Infrastructure for accessing cash

2.14 Consumers predominantly use ATMs to withdraw cash – around 90% of total cash withdrawn was from ATMs in 2019. Most ATM providers and card issuers are members of LINK. Consumers can also make cash withdrawals through bank branches and post offices, and from retailers offering cashback when consumers make purchases.

2.15 There is good information on much of the cash infrastructure. LINK and Post Office Ltd hold up-to-date information on cash access points in (respectively) the ATM and post office networks. The PSR collects and analyses monthly information from LINK on the ATM network, including ATM closures data. There is also some good information to help consumers in looking for locations where they can access cash. The main source for the public on the nearest ATM is the LINK ATM Locator on their website, and on mobile phone applications.¹² Post Office Ltd has a 'branch finder' on its website where consumers can search for the nearest post office providing access to cash over the counter. There is less good-quality information on other cash access channels, for example on locations and opening hours where retailers offer cashback facilities. Until recently these data sources were not being brought together to develop a holistic view of areas where provision could be particularly limited.

12 The Locator is available on LINK's website: www.link.co.uk/consumers/locator/

2.16 The regulators have started bringing together different information sources on cash access points to help them understand where there could be gaps in provision. Since March 2020 and the start of the COVID-19 emergency, the regulators have worked with industry to collect information on cash access to identify ‘cold spots’ where access points may have closed due to government lockdown restrictions (for example, ATMs located within retail stores). The regulators are also working with the University of Bristol to build on this COVID-19 work and draw together more comprehensive information on the nature and location of cash provision to consumers, including cashback. This will be analysed using indicators of consumer demand to help assess what ‘reasonable access’ may look like for UK consumers.

2.17 As society has switched to other payment methods the infrastructure used by consumers to access cash has fallen in size, with particular decline in free-to-use ATMs since 2017 (**Figure 5** on pages 28 and 29). The number of ATMs reached a peak in 2015, when cash use had already been declining for some years. Since 2015 the number of ATMs has fallen, to around 60,000 in December 2019, with around 45,000 free-to-use ATMs. The rate of decline accelerated in the two years to December 2019, with a 12% reduction in total ATM numbers and a 17% reduction in free-to-use ATMs. The volume of cash payments fell by 29% between 2017 and 2019.

2.18 There has been a longer-term reduction in the availability of other means of accessing cash. The number of bank and building society branches decreased by 39% between 2010 and 2019. Some ATMs closed as a result of bank branch closures. The number of post offices has remained stable since 2010, when Post Office Ltd committed to maintaining a network of at least 11,500 branches.¹³

Acceptance of cash by businesses

2.19 The regulators currently have limited up-to-date data on cash acceptance by businesses, and no data on trends in acceptance. For a cash system to function, people need to be able to use cash to make purchases. Businesses’ willingness to accept cash depends on factors such as how easy and how costly it is to deposit cash with their banks. No public body has, for example, explicit responsibility for tracking trends in the acceptance of cash. **Figure 6** on page 30 includes examples of evidence on access to and acceptance of cash.

2.20 The research undertaken by BritainThinks for the PSR collected the views of businesses on accepting cash between January and June 2019. The survey found that around 75% of businesses had in the last month deposited the cash they received from consumers. It noted that there are costs associated with depositing cash and while this is not burdensome for most, cash accepters do not see processing and depositing cash as a straightforward cost to their business.

¹³ Post Office Ltd, which is 100% owned by the Department for Business, Energy & Industrial Strategy, is responsible for the operation of the post office network.

Figure 5
 Numbers of automated teller machines (ATMs), bank branches and post offices between 2010 and 2019

The charts show changes to the cash access infrastructure. The total number of ATMs started declining from 2015 onwards. Since 2010 bank branch numbers have declined, whereas post office numbers have remained stable

Trend in ATM numbers between 2010 and 2019

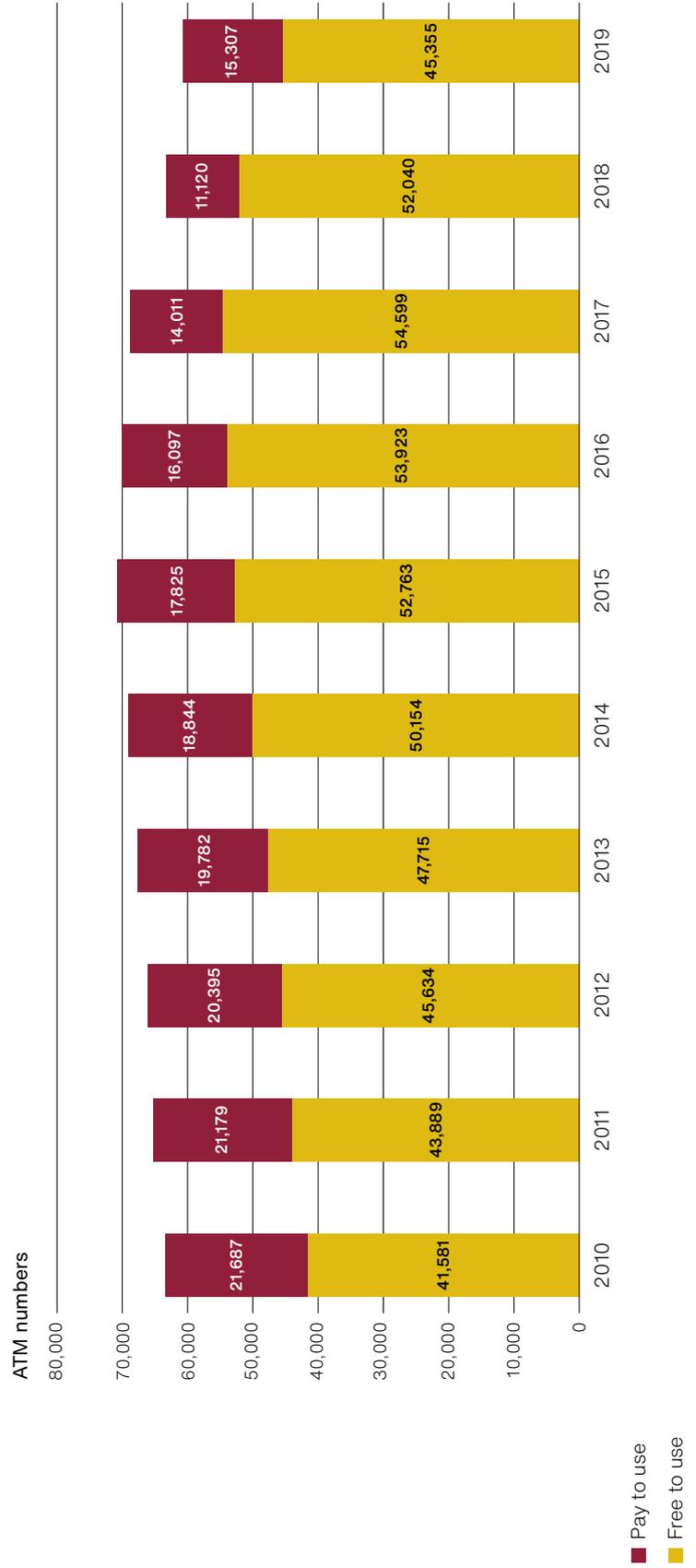
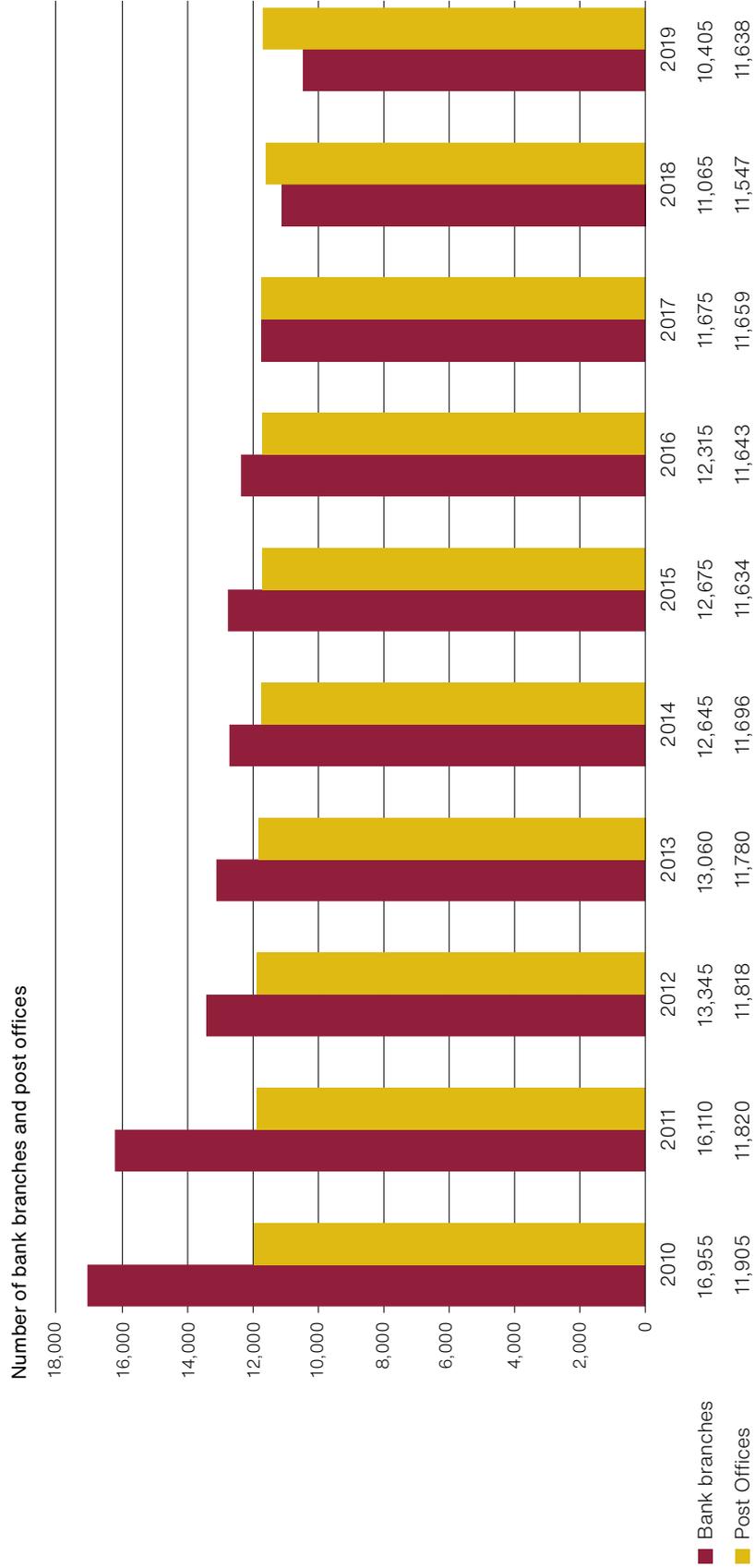


Figure 5 continued
 Numbers of automated teller machines (ATMs), bank branches and post offices between 2010 and 2019

Bank branch and post office numbers between 2010 and 2019



Note

1 ATM numbers are stated at the end of each year; bank branches and post office numbers are from March in each year.

Source: National Audit Office analysis of LINK's ATM information, estimates of bank branch numbers from the Office for National Statistics UK Business Counts dataset and House of Commons Library information on post offices

Figure 6

Evidence on access to and acceptance of cash

Both the ability to access cash and use it as a payment mechanism are important to consumers; considerably more is known about access (range and trends) than is known about acceptance by businesses



Source: National Audit Office analysis of Payment Systems Regulator documents, including research conducted by BritainThinks in January 2019, and of research for the Access to Cash Review conducted in November 2018 and media coverage

2.21 In February 2020, the FCA commissioned research on cash acceptance by small businesses. The FCA informed us that this was put on hold as many small businesses were shut during the COVID-19 lockdown, but that the work has since restarted and it expects a final report on the research in February 2021. The FCA is also seeking to collect regular information from banks on the charges they make to small businesses for cash transactions.

Whether action has been taken to deliver government aims

2.22 Beyond the currently stated government aim (paragraph 2.2), there is no shared view among the public bodies of what a good cash system outcome for consumers looks like, and how the costs of delivering those outcomes should be considered. This makes it difficult to judge how well the public bodies are performing against what was intended in terms of maintaining access.

Protected ATMs

2.23 The decline in the number of ATMs and bank branches reflects commercial decisions made by owners and operators of the cash infrastructure. Maintaining networks of channels for accessing cash involves significant cost to providers of those channels. The costs of funding a free-to-use ATM network are largely met by card issuers who pay an 'interchange' fee to ATM providers when a cash withdrawal is made over the LINK system.

2.24 In January 2018 LINK made a public commitment to maintain the broad geographic coverage of the ATM network in the UK. The commitment includes specific arrangements to protect free-to-use ATMs more than one kilometre away from the nearest ATM ('Protected ATMs'). This supplemented a scheme LINK has run since 2006, aimed at addressing the risk of financial exclusion. LINK introduced the commitment alongside the start of a phased reduction in the interchange fee, which would not apply to Protected ATMs.

2.25 Under LINK's commitment Protected ATMs that close may not be replaced in specified circumstances, for example where there is alternative provision through a post office. In areas where ATMs are at risk of closure and there is limited alternative provision LINK provides financial incentives, in the form of additional fees payable, to encourage providers to keep a Protected ATM open. LINK also operates a process of direct commissioning of new ATMs in areas of under-provision. In July 2020, the FCA consulted on guidance covering its expectations of banks when they are deciding whether and how to reduce their physical branches or the number of free-to-use ATMs.¹⁴

2.26 The PSR supported LINK's introduction of its commitment to Protected ATMs in January 2018. In October 2018 the regulator issued a direction to LINK requiring it to strengthen its policies and processes around the commitment. The direction also requires LINK to provide the regulator with information on these policies and processes and developments in Protected ATMs. Since then, the PSR has worked closely with LINK to put in place additional enhancements to its Protected ATM policy.

2.27 The actions taken by LINK and reinforced through steps taken by the PSR have protected free-to-use ATMs in specified areas where access to cash is limited. The number of Protected ATMs increased between September 2018 and December 2019 by 23% to 2,900. This accounted for 6% of the total number of free-to-use ATMs in December 2019. By that date around 220 Protected ATMs had closed, mostly in areas where post offices provided an alternative option to access cash.

¹⁴ Financial Conduct Authority, Guidance consultation – GC 20/2: Branch and ATM closures or conversions, July 2020.

Payments for accessing cash and disadvantaged areas

2.28 The regulators, in specific circumstances, have looked at how changes in access to cash might impact on economically less-advantaged areas. The FCA carried out research in 2018 that found local authority districts most affected by bank branch closures had slightly higher unemployment rates than those local authority districts less affected. The PSR has focused on widespread geographical access to ATMs. The PSR does not have a specific statutory objective for financial inclusion.

2.29 There is not a simple relationship between the availability of free-to-use ATMs in an area and access to cash or consumer detriment. As a result, interpreting analyses may require some caution. Different consumer groups have differing ability to access these cash outlets through their mobility and daily patterns, for example, urban areas with a daily influx of commuters may historically have had good access to free-to-use ATMs.

2.30 Measures that can be used to help assess the impact of cash system changes on consumers include the number and proportion of free-to-use ATMs available based on the level of deprivation in the area. The PSR told us that it plans to include these measures in a 'consumer tracker', which would measure aspects of consumer needs and ATM coverage. Our analysis of ATM numbers by local areas in England shows that the average number of free-to-use ATMs has decreased between 2018 and 2020, from least to most deprived. Despite this overall decline, the average number of free-to-use ATMs in more deprived areas remained much higher than in more affluent areas over this period (**Figure 7**).

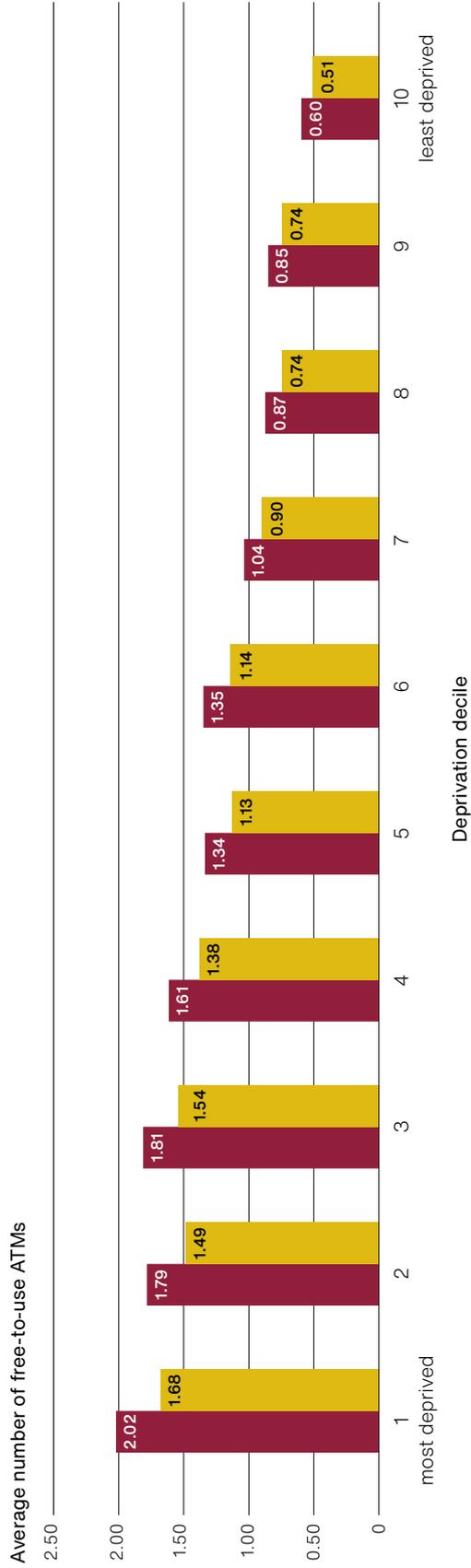
2.31 While there is a higher number of free-to-use ATMs in more deprived areas, the proportion of free-to-use ATMs declined faster there than in less deprived areas between 2018 and 2020. Over this period, the proportion of free-to-use ATMs in the most deprived local areas fell by 8 percentage points, from 78.6% to 70.5%. Better-off areas experienced a significantly smaller decline in the share of free-to-use ATMs of 1 percentage point. (**Figure 8** on page 34). Overall the percentage of ATMs that were free-to-use fell from 81% in 2018 to 76% in 2020.

Consumer awareness

2.32 Not all consumers are aware of the range of options for accessing cash. A Which? commissioned survey, for example, found that in 2018 only 55% of adults knew they could use post offices for banking. In 2018 Post Office Ltd agreed a five-point action plan with UK Finance to raise the profile of its banking services. Post Office Ltd told us that, when closing branches, banks could do more to make consumers aware that they can access banking services at post offices, and that the FCA could take a lead in promoting such actions.

Figure 7
 Change in average number of free-to-use automated teller machines (ATMs) in local areas in England by deprivation decile between January 2018 and January 2020

The average number of free-to-use ATMs decreased across all deprivation deciles between January 2018 and January 2020. However, the average in more deprived areas remained higher than in less deprived areas over the period



■ January 2018
 ■ January 2020

Notes

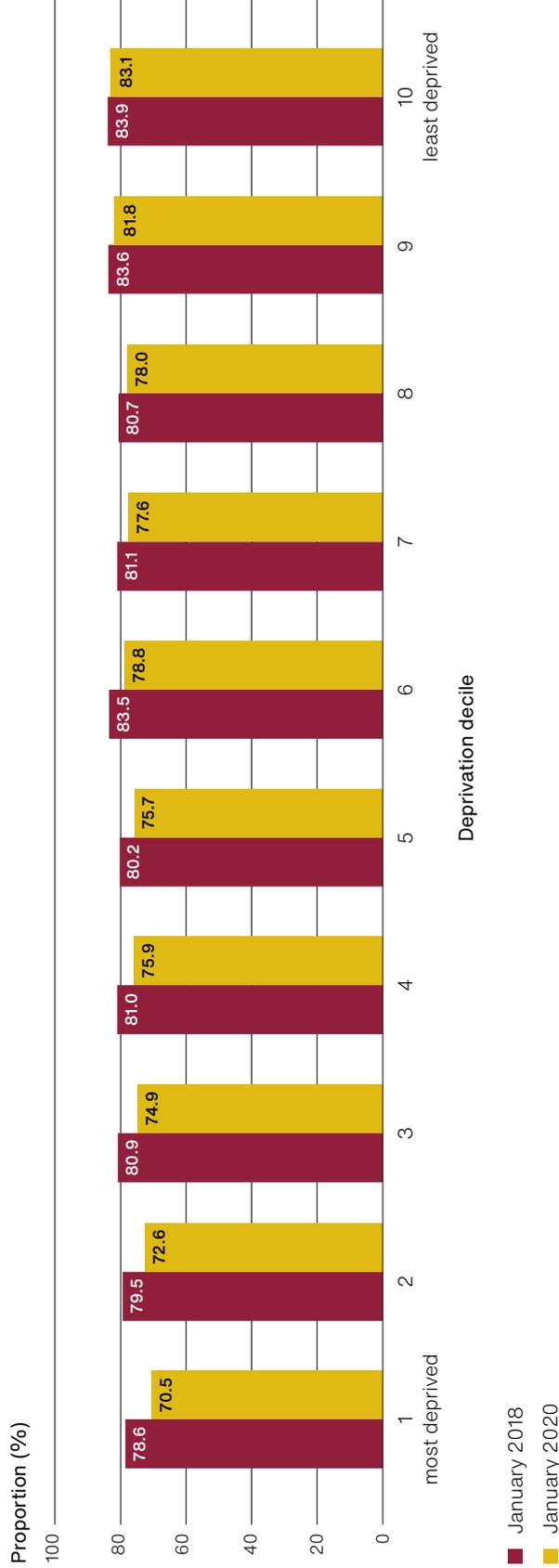
- 1 The local areas used are Lower Layer Super Output Areas (LSOAs), which have an average population of 1,500 people. There are 32,844 LSOAs in England.
- 2 Interpreting this analysis may require some caution because there is not a simple relationship between the availability of free-to-use ATMs and access to cash or consumer detriment. For example, urban areas with a daily influx of commuters may historically have had good access to free-to-use ATMs.

Source: National Audit Office analysis of LINK's information on ATMs by Lower Layer Super Output Areas and Office for National Statistics 2019 English Indices and deciles of deprivation

Figure 8

Change in the proportion of free-to-use automated teller machines (ATMs) in local areas in England by deprivation decile between January 2018 and January 2020

The difference between the proportions of free-to-use ATMs in the most and least deprived areas increased from 5% in January 2018 to 13% in January 2020



Notes

- 1 The local areas used are Lower Layer Super Output Areas (LSOAs), which have an average population of 1,500 people. There are 32,844 LSOAs in England.
- 2 Interpreting this analysis may require some caution because there is not a simple relationship between the availability of free-to-use ATMs and access to cash or consumer detriment. For example, urban areas with a daily influx of commuters may historically have had good access to free-to-use ATMs.

Source: National Audit Office analysis of LINK's information on ATMs by Lower Layer Super Output Areas and Office for National Statistics 2019 English Indices and deciles of deprivation

Recent developments

2.33 More recently the industry has launched new initiatives to develop cash access solutions at local level, with the PSR's encouragement:

- In August 2019, LINK introduced a process for considering installation of a free-to-use ATM in some retail locations where the market does not currently deliver the right result for consumers in terms of free access to cash.
- In October 2019, LINK launched a Community Access to Cash Delivery Fund whereby consumers can make a request for a new ATM. Which?, the consumer group, also hosts an ATM request tool on its website that feeds-in to LINK's scheme. At December 2019 LINK had received 2,700 requests and LINK expects to commission 100–150 new ATMs.
- UK Finance is sponsoring a Community Access to Cash Pilots initiative, whereby communities can apply to work alongside payments experts and others to develop innovative access to cash solutions in their areas. The initiative set a deadline of June 2020 for submission of applications and it has subsequently announced that an initial eight locations across the UK will be participating in the scheme.

2.34 During the COVID-19 emergency period some retail businesses decided to suspend acceptance of cash as a means of payment. The experiences of consumers during this period may, once the emergency eases, offer insights into the potential impact of reduced cash use on groups usually heavily reliant on cash and issues that may need to be tackled if the decline in cash use continues and the infrastructure supporting access to cash becomes difficult to maintain.

Part Three

The production of coins and notes

3.1 The Royal Mint Limited (the Mint) and the Bank of England (the Bank) work to ensure that there is a sufficient quantity of cash to meet the needs of the economy, and to maintain the public's confidence in its use. Their manufacturing arrangements, financing and distribution are organised differently. This Part examines:

- HM Treasury and the Mint's oversight and management of coin production in the UK;
- the Bank's oversight of note production for England and Wales; and
- the extent to which the Mint and the Bank have been able to minimise the threat posed by counterfeiting.

Oversight and management of coin production

3.2 The Mint produces coins for the whole of the UK at its site in Llantrisant in South Wales. The manufacturing process has two main stages: creating 'blanks' from punching clean disks in metal strips, and engraving the blanks with designs, known as 'striking'.

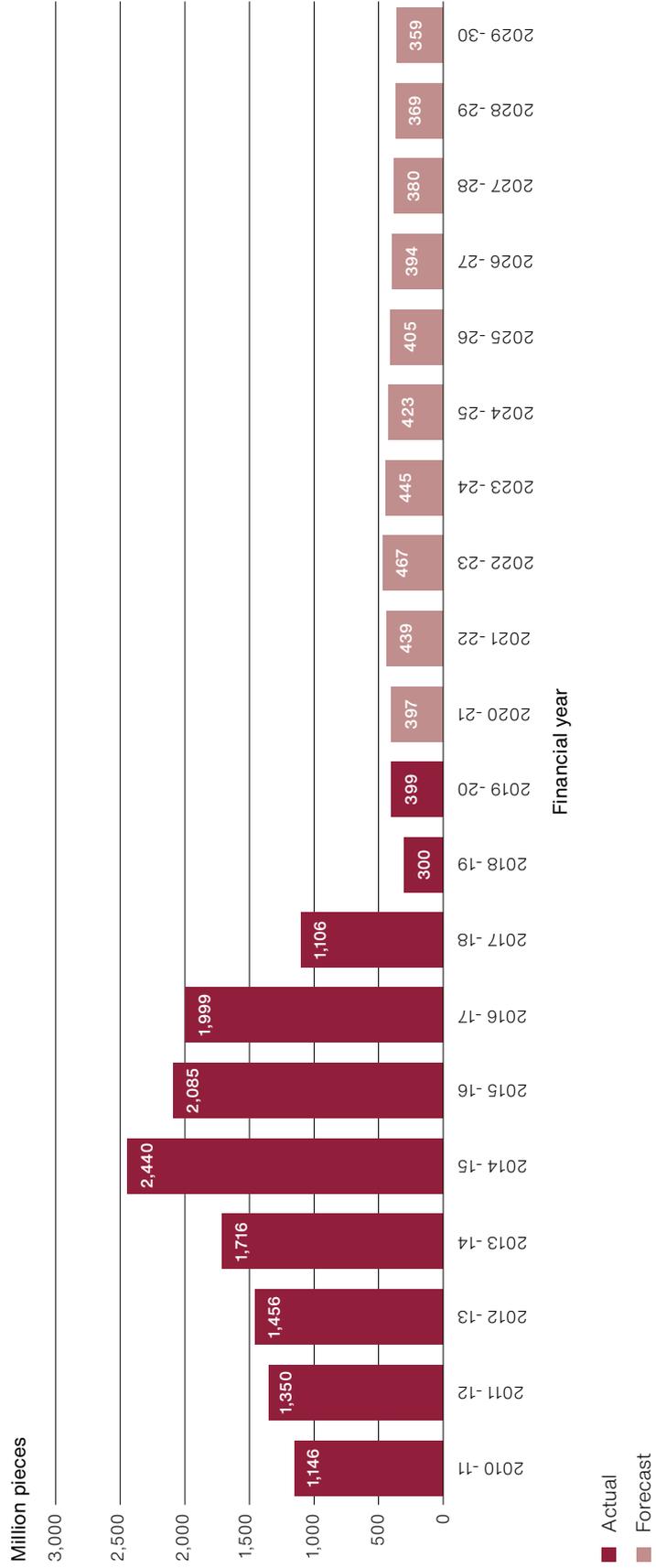
3.3 The Mint's UK coin production has fallen by around 65% in the last 10 years: in 2019-20 it made 383 million UK coins, compared with around 1.1 billion in 2010-11.¹⁵ The trend has reflected the declining use of cash, most notably for smaller cash transactions which have been particularly affected by the increased use of contactless payment methods.

3.4 Within this overall decline, production volumes have fluctuated, for example production rose in years with the issue of new coinage. Coin production increased, for example, each year between 2012 and 2016 with the issue of new 5p, 10p and £1 coins replacing stock already in circulation. The Mint believes the current reduced level of manufacture will remain for the foreseeable future (**Figure 9**).

¹⁵ The Mint only has coin manufacturing data from 2014-15. In 2010-11 it sold 1.15 billion coins to HM Treasury, which included both newly manufactured coins and some manufactured in earlier years held by the Mint as stock.

Figure 9
Actual and forecast coin sales from the Royal Mint to HM Treasury, 2010-11 to 2029-30

Sales volumes declined by around 65% between 2010-11 and 2019-20, despite increases between 2011-12 and 2015-16 with the issue of new coinage. Sales volumes for the next 10 years are forecast to remain broadly similar to those made in 2019-20



Note

1 Coin sales include both new production of coins and coins held by the Mint as stock.

Source: National Audit Office analysis of the Royal Mint's production data

Forecasting the demand for coins

3.5 The Mint forecasts coin demand for the year ahead in order to plan its coin production, and to try to avoid either shortages or excessive coin stocks. It does so by estimating the likely demand from coin centres, the private network of firms which serve the coin needs of banks and other financial institutions around the country. Based on this work, the Mint then agrees a 12 month profile of coin supply with HM Treasury, which is required to take at least 80% of the coins agreed in the profile, whatever demand turns out to be.¹⁶ On behalf of HM Treasury, the Mint then agrees monthly coin orders with the cash centres, fixing each one on a rolling three-month basis in advance of delivery.

3.6 In practice, the volume of coins the Mint actually delivers each year to the centres has often varied significantly from the annual forecasts (**Figure 10**). Historically, this has often reflected the changes that the centres have made to pre-agreed quarterly purchase orders close to delivery dates, some of which were allowed, for example to accommodate for stock policy changes or shortages in coin denominations. But it also reflects the fact that the Mint has been unable to anticipate significant fluctuations in consumer behaviour. For example, in 2017-18, an exercise to recall the old £1 coin led to an unexpectedly huge return of coins to commercial cash centres of all denominations as households and businesses emptied their stocks of coins. As a result, over the year, the Mint delivered 88% fewer coins to cash centres than forecast.

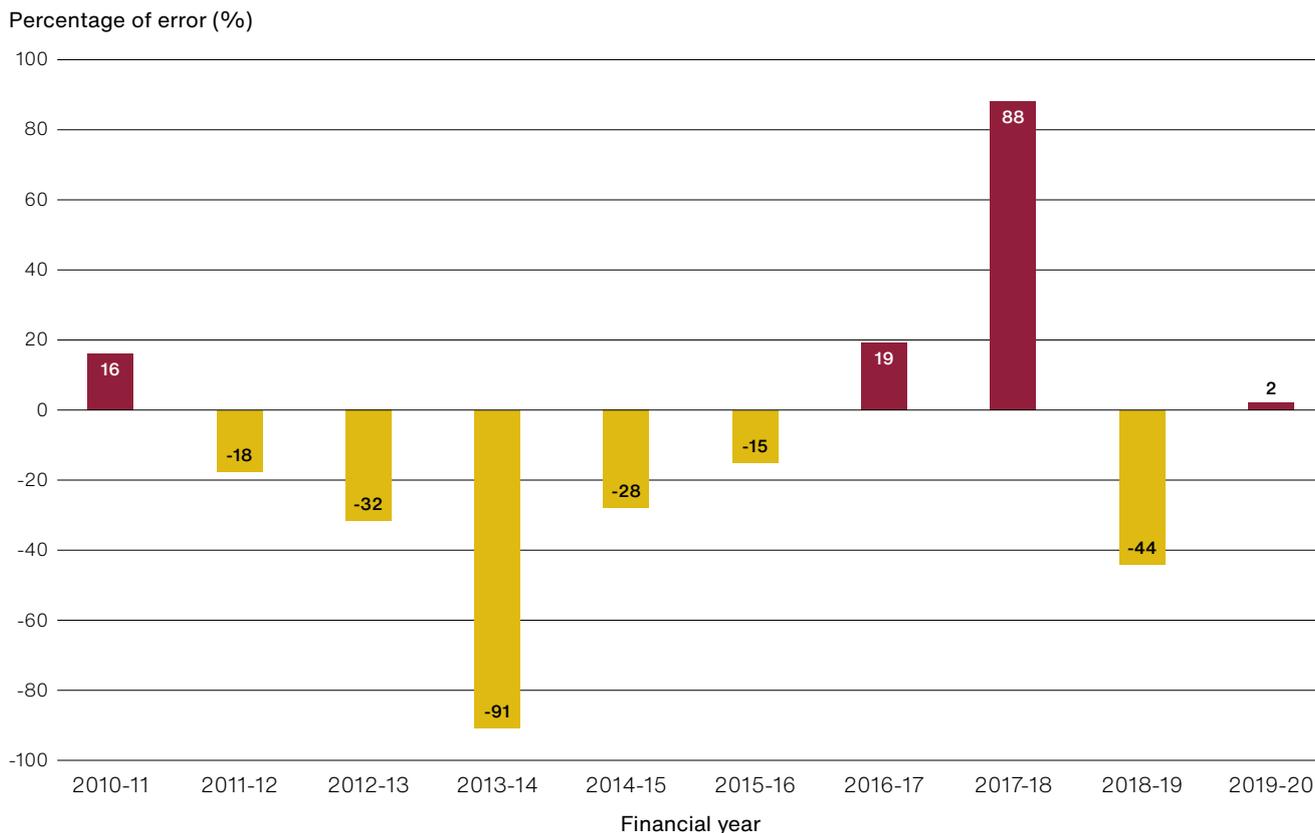
3.7 Forecasting consumer behaviour with coins is inherently challenging. There are many variables that have a direct impact on demand, such as changes that cash businesses make on what mix of denominations to keep. But there are wider factors that are more difficult to track, such as the speed of coin circulation, the number of coins visitors to the UK may take home, and the extent to which the public want to hold coins as a store of value. In 2018 HM Treasury-commissioned research found that about one-third of all issued coins were lost or taken overseas, and a further third were dormant, for example in household savings jars. The face value of these lost or inactive coins is about £3 billion. There is little detailed data or research on the issue considering, for example, what may prompt consumers to re-use their coin stores.

¹⁶ At quarterly meetings during the year, HM Treasury decides if the Mint needs to produce more coins, or change its production schedule for the rest of the year.

Figure 10

Difference between agreed coin orders at start of year, and actual deliveries to cash centres, 2010-11 to 2019-20

There have been significant differences in each of the past 10 years except 2019-20. Differences are caused by either cash centres changing quarterly orders, and/or the Royal Mint not anticipating changes in consumer behaviour



- Overestimated industry demand
- Underestimated industry demand

Note

1 The Royal Mint did not forecast the demand for the £1 coin in 2016-17 and 2017-18 due to uncertainties in demand around the £1 coin replacement, and are therefore not included in the calculations for those years.

Source: National Audit Office analysis of the Royal Mint's forecasting data

Managing coin stocks

3.8 To prepare for uncertainty, HM Treasury expects the Mint to maintain a buffer stock of coins. In 2019-20 the target buffer stock of 1p, 2p, 5p, 10p, 20p and £2 was agreed and set at 11 weeks of annual forecast demand, and the equivalent of approximately 13 weeks and 20 weeks for 50p and £1 respectively.¹⁷

3.9 Since 2017, because of both the effect of the exercise to recall old £1 coins and the rapid decline in coin demand, stocks have grown continuously. At the end of March 2020, they exceeded the buffer stocks in all denominations, and some by many factors. Holdings of £2 coins were 26 times the target, equivalent to nearly six years' worth of normal requirements, and 1p and 2p were six and eight times above target respectively (**Figure 11**). The excess stock had a total face value of £89 million.

3.10 The Mint plans to reduce stock levels steadily over the next decade without risking the loss of its own production capacity. Before COVID-19, for 2020-21, the Mint forecasts that it will need to provide 548 million coins to the market, of which it planned to manufacture 398 million, and meet the remaining 150 million by reducing stocks. In March 2020 it informed us that it did not envisage producing any new 2p or £2 coins for at least 10 years. Since March 2020, the disruption caused by COVID-19 has, however, led to sharp increases in demand, as many businesses and consumers hoarded coins in the early months of the pandemic. To meet this increased demand, from April the Mint pulled forward its manufacturing schedule for the year, and over the summer HM Treasury ordered the Mint to manufacture 60 million additional 1p coins.

Financial performance

3.11 The production of UK coinage accounts for less than 15% of the Mint's commercial income, which includes coin contracts with more than 20 overseas governments and income from precious metals sales. Unlike its overseas coin-making, where sales have to be won through open competition, HM Treasury agrees coin orders with the Mint if there is demand, before purchasing and selling them on to banks at face value.¹⁸ The prices paid to the Mint for each coin denomination are fixed by contract until 2023, adjusting each year only for inflation. In 2019-20, HM Treasury paid £10.4 million to the Mint for UK coins, and £13.1 million for base metal, which it pays for separately. The £23.6 million total was the lowest spent on UK coins for decades and represents a 18% reduction from 2018-19.¹⁹ The Mint's revenue from overseas coin sales was nearly five times higher in 2019-20, at £103 million.

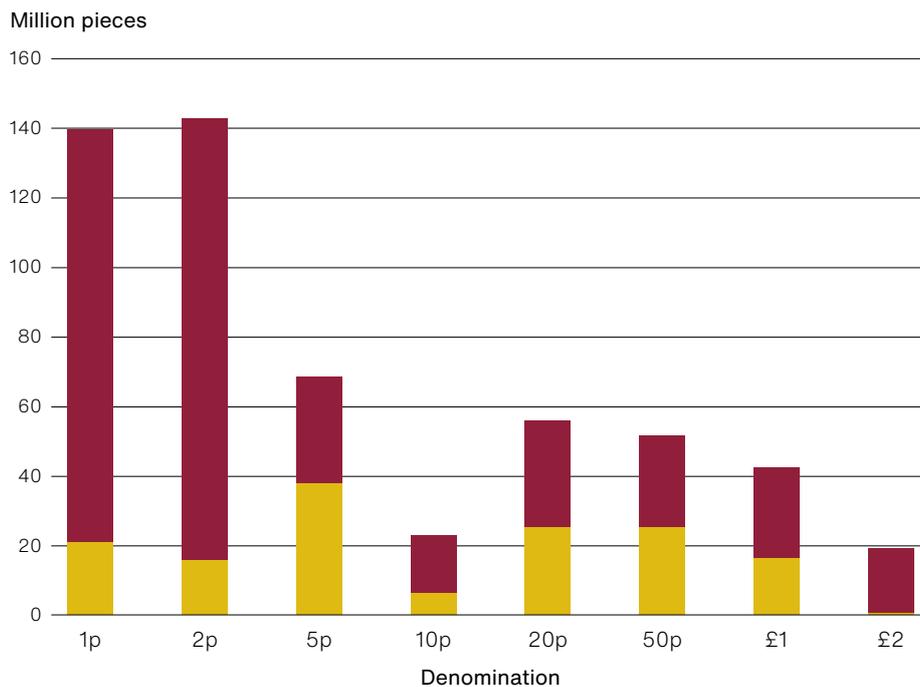
¹⁷ Buffer stocks for 50p and £1 are around 120% and 150% of 11 weeks respectively, due to greater forecasting volatility.

¹⁸ HM Treasury commits to purchase a minimum of 80% of the ordered coins.

¹⁹ The amount paid by HM Treasury does not sum from its component parts due to rounding. The total amount paid by HM Treasury was £23.558 million.

Figure 11
Coin stock versus target buffer stock – 31 March 2020

At the end of March 2020, stocks of coins exceeded the buffer targets in all denominations, and some by many factors



	1p	2p	5p	10p	20p	50p	£1	£2
■ Excess stock (million pieces)	118.5	127.1	30.7	16.5	30.5	26.4	26.0	18.7
■ Buffer stock target (million pieces)	21.2	15.9	38.0	6.4	25.4	25.4	16.5	0.7
Total coin stock (million pieces)	139.7	143.0	68.7	22.9	55.8	51.8	42.5	19.4

Note

1 The majority of stock was owned by HM Treasury. A small proportion was owned by the Royal Mint as some coins remained as yet unsold to HM Treasury on 31 March 2020.

Source: National Audit Office analysis of the Royal Mint’s coin stock data

3.12 Lower demand for coins both in the UK and overseas in recent years has adversely affected profitability in the Mint’s coin-making work. Lower volumes suffer from diseconomies of scale in a production process with high fixed costs, and greater competition for a declining market abroad is squeezing margins on overseas coin sales. In 2019-20 the Mint reported an overall net loss of £4.4 million on its coin-making, compared with a loss of £8.5 million in 2018-19. These figures do not include the costs of exceptional items or foreign exchange gains or losses. If these are included, total losses in coin-making were £4.3 million in 2017-18, £13.1 million in 2018-19 and £3.9 million in 2019-20.

The Mint's drive to improve profitability and efficiency

3.13 The Mint has worked hard in recent years to make coin-making more profitable. It has focused on securing profitable overseas contracts and ending non-profitable ones. And it has undertaken a series of actions to reduce costs within an overall 'strategic roadmap' of reducing capacity and becoming more efficient. The main actions the Mint has taken so far have included:

- in May 2018, shutting its on-site casting operations (used to turn raw metal into metal sheets for coin blanks);
- between October 2018 and October 2019, mothballing two of its six coin-making lines of machinery – a nickel and a brass plating line;
- between May 2018 and March 2020, reducing the number of full-time equivalent staff it employs for UK and overseas coin-making from 452 to 351; and
- efforts to improve productivity through operational and process changes. These have enabled a reduction in cost per standard hour of operations from £164 in 2017-18 to £136 in 2019-20.

3.14 While redundancy and other costs associated with capacity reduction spiked in 2018-19, adversely affecting profitability in that year in particular, the average overall reduction in direct manufacturing cost per UK coin, excluding metal costs, has been approximately 23% over three years. However, a large concurrent increase in metal prices, together with proportionately more manufacture of higher cost denominations, such as £1 coins, has meant that the average unit cost of producing a coin has gone up by about 45% over three years. The increase for each denomination has also varied depending on volumes produced. For example, between 2016-17 and 2019-20, the cost of making a £1 coin rose by 36%. But the cost of making a 1p has increased 69%, as relatively few have been made, driving up marginal cost.

3.15 The Mint plans to further reduce costs and increase productivity. It is aiming to improve returns but also maintain capability to make sufficient quantities of UK coin into the future.

Oversight and management of note production

3.16 The Bank has responsibility for the production and issuance of notes for use throughout the UK.²⁰ It sets its own objectives for note production, subject to a requirement to liaise with HM Treasury "in advance of any significant decision regarding expenditure in relation to the production of bank notes". The Bank's two main objectives for note production are to provide enough cash to meet the needs of the economy, and to maintain public confidence in the currency. It also aims to promote quality and authenticity of notes in circulation, and to promote the efficiency of note production.

²⁰ Six banks in Scotland and Northern Ireland can issue notes. Bank of England notes also circulate in Scotland and Northern Ireland as well as England and Wales.

3.17 The Bank's notes directorate is led by the Chief Cashier and has around 130 staff. The directorate supports the Bank's primary objective on monetary stability, by aiming to underpin confidence in the currency. It is split into two subdivisions:

- notes operations, comprising cash distribution and policy, banknote operations and IT, and future of money; and
- banknote resilience, comprising contract management, banknote communications, banknote transformation, development and research.

3.18 Since 2003 the Bank has sub-contracted, through a public procurement exercise, the printing of notes to De La Rue, a UK-based printing company, at the Bank-owned production site in Essex. The Bank entered the current 10-year contract in 2015. The Bank is responsible for setting production specifications, ensuring quality and regulating the issue of all notes in the UK. The production of notes in Scotland and Northern Ireland are contracted for separately between De La Rue and specified Scottish and Northern Irish banks.

Trend in the demand for notes

3.19 Unlike coins, the demand for notes has increased over the past 20 years. According to Bank figures, in July 2020 the number of notes in circulation reached a record high of 4.4 billion, with a monetary value of £76.5 billion (**Figure 12** overleaf).²¹ Notes are increasingly being used as a store of value and therefore the demand for notes has been less affected by the decline in the use of cash for transactions.²²

3.20 Analysis by the Bank in 2018 estimated that only 20% to 24% of the value of notes in circulation were being used or held for cash transactions. It estimated that up to a further 5%, or between £1 billion and £3.5 billion, was held by UK households as savings. It noted that the figures for household holdings were likely to be underestimates and the scale of the error was hard to determine. Little is known about the remainder (approximately £50 billion worth of notes). Possible explanations include holdings overseas for transactions or savings, and possibly holdings in the UK of unreported domestic savings or for use in the shadow economy. The Bank and other government bodies hold too little reliable data between them, however, to be able to make even a broad estimate of how much should be apportioned to each category.

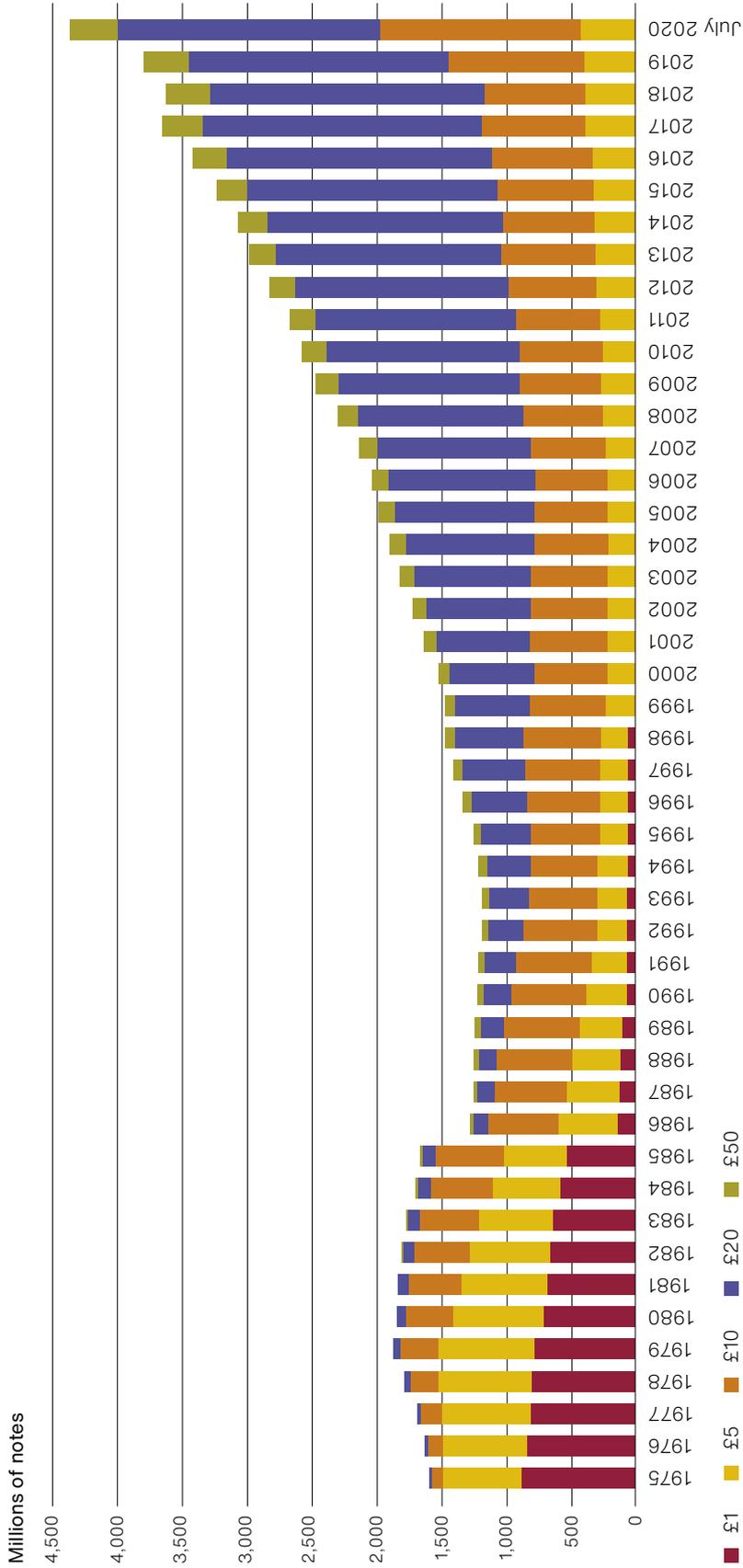
²¹ There are an additional £4.3 billion of higher-value notes held by the Bank of England as backing for the note issues of banks in Scotland and Northern Ireland.

²² A store of value is an asset that retains purchasing power into the future and can be saved and exchanged at a later time. Examples include gold and other precious metals.

Figure 12

Total volume of Bank of England notes in circulation, 1975 to July 2020

In the past 20 years, the number of notes in circulation has nearly tripled, from 1.5 billion in 2000 to more than 4 billion in 2020



Notes

- 1 The £1 note was withdrawn from circulation in 1988; the £50 note was introduced into circulation in 1981.
- 2 The figures are the position at the end of February in each year, except 2020 which is the position at the end of July.

Source: National Audit Office analysis of Bank of England note data (available on the Bank of England website)

3.21 The increase in the use of notes as a store of value has been seen among other major currencies. The US, Canada, Australia and the eurozone have in recent years all experienced annual growth of between 5% and 10% in demand for notes. Various central bank studies have attributed a range of potential explanations for the phenomenon, ranging from low inflation and interest rates leading to increasing confidence in the real value of currency, to loss of confidence in banks following the 2008 financial crisis.

The polymer programme

3.22 The production of notes by the Bank of England in recent years has been dominated by the issuance of new polymer notes for the £5, £10 and £20 denominations. The Bank introduced the new £5 polymer note in October 2016, the £10 note in September 2017, and the £20 note in February 2020. The £50 polymer note is planned for launch during 2021. Each launch represents a significant logistical challenge and requires detailed planning and careful co-ordination of a large number of stakeholders. So far, the Bank has met these challenges and each denomination has launched on time.

3.23 The Bank's main objective for the programme is to reduce counterfeiting risk, on the basis that polymer notes are inherently harder to counterfeit and have more sophisticated security features. Secondary benefits include raising note quality and increasing note durability, as the notes are expected to last at least 2.5 times longer than the cotton paper notes they are replacing. It will take some years before it is known whether the primary and secondary objectives have been met. Early data suggest that £5 polymer notes may be lasting more than 2.5 times longer than the £5 paper notes they are replacing, but assessing durability is particularly difficult as recent decline in cash use may be extending the life of all note types.

The costs of the programme

3.24 Cost reduction is not an explicit objective of the programme. The Bank recognises that, per note, polymer notes cost approximately 60% to 80% more than paper notes to make, and whether the additional cost will be made up for will depend largely on how much longer the polymer notes last relative to paper notes. The Bank's initial Business Cases for each denomination together estimated that the programme would have an overall net cost of £25 million to £30 million over 10 years.²³ Since the initial business cases the Bank informed us that some costs, such as those relating to raw materials, have been lower than forecast, and that its most recent cost benefit analysis suggested that the programme could result in net savings.

²³ The 2013 Business Case for the polymer £5 and £10 notes forecast £40 million savings, the 2015 Business Case for the polymer £20 note forecast costs of £55 million and the 2018 Business Case for the polymer £50 note forecast costs of £10 million to £15 million.

3.25 The Business Cases and cost–benefit analyses have compared polymer notes against a theoretical ‘upgraded’ paper note as their counterfactual benchmark rather than the paper notes being replaced. The only denomination where the Bank carried out cost benefit analysis against both the existing and upgraded paper is the £50 note in 2018. The Bank estimated that the polymer £50 note would cost £10 million to £15 million more over 10 years than the upgraded paper £50 note, but £50 million to £70 million more over 10 years than if it kept the existing paper. However, the Bank informed us that this is not necessarily representative of other denominations or the programme as a whole. In 2012-13, before taking the decision to move to polymer, the Bank engaged with the cash industry, including discussing participants’ views on potential costs of transition. The Bank informed us that it had sought information from the industry on the potential cost of using paper, ‘upgraded’ paper and polymer notes but was not able to obtain this.

Forecasting the demand for notes

3.26 The Bank forecasts the future number of notes that will be needed in circulation using an annual exercise carried out in October, supported by continuous assessment of demand throughout the year. The Bank aims to determine demand for notes not only in order to maintain public confidence in their availability and quality, but to control costs and manage public funds.

3.27 The annual forecasting exercise involves both the running of econometric models and regular meetings with representatives from the cash industry to discuss its forecast assumptions. Each year the Bank uses its October forecast to provide an ‘indicative’ order to De La Rue for the 12 months starting the following March. The Bank then places ‘confirmed’ orders with De La Rue six times per year, each one of these six months in advance of production.

3.28 In practice, actual demand has fluctuated quite widely compared to the Bank’s forecasts. For example, it over-estimated the rate at which the public would return £5 paper notes after the 2016 launch of £5 polymer notes, and in 2017 it over-estimated the demand for £50 notes.²⁴ On the other hand, in 2019 it under-estimated demand for £10 polymer notes – having to order an extra 145 million to be printed. In a 2017 research paper, the Bank concluded that achieving accuracy in forecasting demand was difficult not just because of the number of drivers of demand involved, but because of the lack of available data on many of them, including, for example, on hoarding behaviours and the shadow economy.

²⁴ In March 2020, 116 million £5 paper notes had still not been returned despite no longer being legal tender.

Stocks of notes

3.29 As for coins, the Bank plans to hold buffer stocks of all notes to avoid shortages. The Bank sets its contingency stock level by considering potential supply and demand shocks, and benchmarks itself against the practice of other major central banks.²⁵ In March 2020, the Bank set that contingency at 11 months of annual demand for £5 and £10 notes, enough £50 notes to meet a spike in demand, for example such as that experienced in the 2008 financial crisis plus 50%, and enough £20 notes to meet six months of forecast demand for the new notes during its launch phase.²⁶ In addition, to meet day-to-day and seasonal fluctuations in demand, the Bank holds ‘bond’ stocks, which are kept in cash centres throughout the UK.

3.30 Since 2017, the continued production of notes has resulted in stocks high above the minimum levels set out in its contingency policy. In March 2020, contingency stock levels were significantly above the minimum levels for all denominations, with stocks of £5 and £50 more than three times higher. Total contingency stocks had a value of £39 billion, against the minimum levels of £20.5 billion. There were also £7 billion worth of bond stocks, making the Bank’s total stocks in March 2020 around £46 billion. The cost of producing the stocks held at March 2020 above the minimum contingency levels was around £35 million, before taking account of any fixed costs, such as depreciation of machinery. It was not clear from the documentation shown to us what process the Bank operated to decide upon adequate stock levels, and how the cost implications of doing so were taken into account when building up stocks. The Bank considers the stock levels at March 2020 to have been prudent to remove any possibility of running out of notes, especially during the transition of the £20 note to polymer. In March 2020, polymer £20 notes made up more than half of the value of holdings above the minimum guidance levels. It informed us that during the COVID-19 pandemic there had been a significant increase in the demand for £10 and £20 notes, such that some of the contingency stock for the £10 note had to be used. At the end of July 2020, total contingency stocks had a value of £30.4 billion, against minimum guidance levels of £15.6 billion.

Financial and operational performance

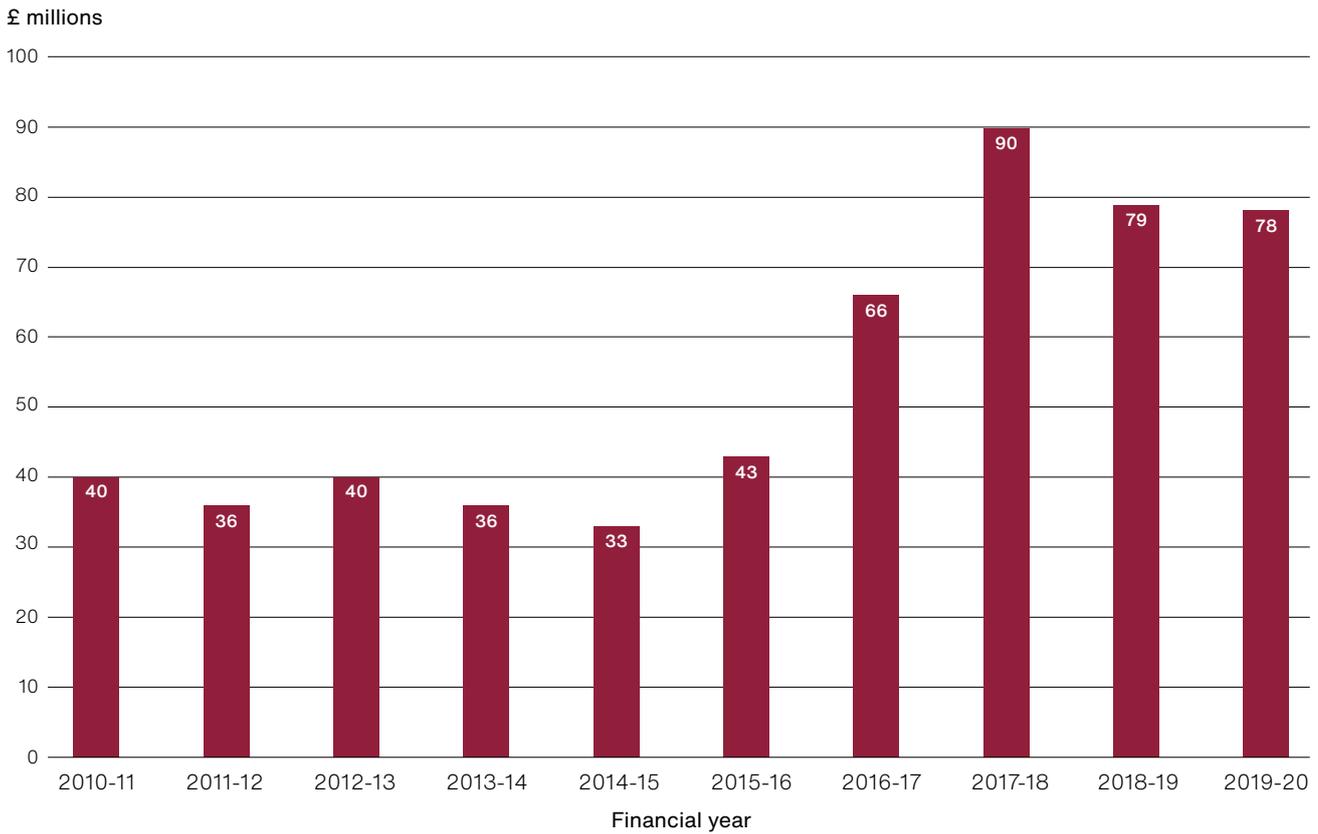
3.31 The Bank’s note operations include production, storage and distribution. In 2019-20 the total cost of this work was £119 million. Production accounts for about two-thirds of the cost, and has approximately doubled over recent years, mainly due to the costs associated with the move to polymer notes and their launch (**Figure 13** overleaf). Once polymer transition is complete, production costs should decline, assuming polymer notes last as long as expected and stock levels do not significantly increase.

25 An example of a supply shock is a major outage at the printing works and an example of a demand shock is that experienced in the 2008 financial crisis.

26 Specifically, 150% of the additional growth in the value of notes in circulation seen during the crisis, adjusted for growth in retail deposits.

Figure 13
The Bank of England's cost of producing notes, 2010-11 to 2019-20

Production cost has broadly doubled over recent years mainly due to the polymer programme



Source: Bank of England Annual Reports and Accounts

3.32 In addition to determining the specification of notes, the Bank has significant discretion in choosing its procurement strategy and note production methods, which together determine the cost of note production activities. Its income comes from ‘seigniorage’ – where the Bank sells manufactured notes at face value to Note Circulation Scheme members representing banks and the post office and invests the proceeds in interest-yielding assets. The Bank must pay the interest earned to the National Loans Fund each quarter, after deducting note production and distribution costs.²⁷

²⁷ In 2019-20, earned interest amounted to £703 million, from which the Bank deducted £117 million for the production and issuance of notes and £31 million held back by the Bank to meet future expenditure, while the previous year’s buffer of £35 million was added back. A net £590 million was therefore paid to the National Loans Fund.

3.33 As part of its 2015 10-year contract with De La Rue, the Bank pays a fixed price for each note printed within pre-agreed volumes. The contract builds in efficiency improvements, by each year gradually reducing the allowable spoilage rate (number of defect notes produced), and increasing the expected printing machine performance.²⁸ If De La Rue exceeds performance in these areas, its profit margins increase, and likewise if it falls below the targets, it incurs the associated additional costs. Over the first five years of the contract, it met about half of its targets for both spoilage and machine speed. The Bank believes this demonstrates that its targets are at about the right levels to maximise De La Rue performance.

3.34 The efficiency improvements built into the contract have helped to reduce the unit cost of note production over the past four years. The unit costs for polymer £5 notes reduced by 17% between 2015-16 and 2018-19, and the £20 polymer note unit cost has reduced by 5% since it was first produced in 2018-19. Although the £10 polymer note's unit cost has increased over the past two years, it has still declined overall since 2016-17 by 16% (**Figure 14**).

Figure 14

Bank of England's unit costs of producing notes – in pence

Note unit costs have decreased in recent years in most denominations

		2015-16	2016-17	2017-18	2018-19	2019-20
£5	Paper	NP	NP	NP	NP	NP
	Polymer	8.5	7.3	NP	7.0	NP
£10	Paper	4.6	4.1	NP	NP	NP
	Polymer	NP	9.1	7.4	7.5	7.7
£20	Paper	5.0	NP	4.1	4.0	NP
	Polymer	NP	NP	NP	7.1	6.8
£50	Paper	NP	NP	NP	4.9	NP
	Polymer	NP	NP	NP	NP	NP

Notes

- 1 NP – notes were not produced during the year.
- 2 Costs are full production costs and include fixed costs, such as depreciation of machinery.

Source: National Audit Office analysis of Bank of England data

²⁸ Machine performance is measured by Reams Per Production Hour (RPPH), which measures the efficiency of production.

Reducing the risk of counterfeiting

3.35 Anti-counterfeiting is an important strand of the responsibilities of both the Mint's and Bank's operations, supporting their objective to ensure the public have confidence in the use of coins and notes. Surveys of public confidence in cash commissioned by the Bank indicate that the public have a high degree of confidence in cash: only 6% of the public perceive there to be a high level of counterfeiting risk.

3.36 The Bank estimates that about one in 10,000 notes in circulation in England and Wales is a counterfeit, at a cost to consumers and businesses of about £10 million a year.²⁹ This is low compared to fraud losses on digital card payments, which UK Finance estimated was £671 million in 2018. But it is high relative to the international comparators we have seen data for: six times the rate in Australia and more than three times the average in the eurozone (**Figure 15**). The Bank attributes this difference to counterfeiting in the UK having greater involvement from organised crime than in other jurisdictions.

3.37 Until the end of 2019, counterfeiting rates on the £5 and £10 notes were much lower than the paper equivalents (**Figure 16**); and public confidence in the currency, as measured by annual surveys, also rose slightly since the programme started. In the early months of 2020 there was some evidence of counterfeiting of the polymer £10 note, of which some were printed on a polymer substrate at a high enough standard to be accepted by retailers. During the COVID-19 pandemic the prevalence of these notes has reduced, but the real test of counterfeiting will be when the new £20 is established, as this is the traditional target note for counterfeiters.

3.38 The Mint is primarily concerned with counterfeit rates for 50p, £1 and £2 coins, as historically these have been the denominations at highest risk. In 2016 the Mint estimated that one in 30 of £1 coins was a counterfeit, and it led to the exercise to replace it with a new £1 coin. In doing so the Mint developed High Security Feature (HSF), a new technology. The Mint's counterfeiting surveys since 2018 have found very low counterfeiting rates for 50p, £1 and £2 coins.

²⁹ Counterfeiting rates are higher for Scottish and Northern Irish notes: in 2018, respectively three times and twice the levels in England and Wales. Unlike the Bank, note issuers in Scotland and Northern Ireland do not have the ability to withdraw legal tender status from old notes, so older more vulnerable designs have remained in circulation for longer, which has contributed to higher counterfeiting rates. However, as the Scottish and Northern Irish issuers have started to issue polymer notes, old-series paper notes will gradually be withdrawn from general circulation.

Figure 15

Counterfeit rates for notes, international comparison

Recent UK note counterfeit rates have been high compared to other countries

Central bank	Material used for note	Counterfeit notes per million notes in circulation
Bank of England	Paper with transition to polymer for low denominations from 2016	107
European Central Bank	Paper	33
Reserve Bank of Australia	Polymer	18
Bank of Canada	Transition to polymer from 2011	12

Note

1 Counterfeit notes per million notes in circulation is the average of annual figures between 2015 and 2019.

Source: National Audit Office analysis of Bank of England data

Figure 16

Number of counterfeit notes discovered in the UK, 2016 to 2019

Few counterfeit polymer notes have so far been discovered, but it is still early days

Year	£5 note		£10 note	
	Counterfeits of paper notes discovered	Counterfeits of polymer notes discovered	Counterfeits of paper notes discovered	Counterfeits of polymer notes discovered
2016	1,503	4	22,525	N/A
2017	911	7	41,205	N/A
2018	446	35	6,510	62
2019	349	7	1,593	563

Notes

- 1 The decline in paper notes seen over the period coincides with the paper £5 and £10 notes being withdrawn from circulation.
- 2 In 2020, prior to the COVID-19 lockdown, around 250 counterfeit £10 polymer pieces a week were being seen; this dropped during lockdown to 40 pieces a week.

Source: National Audit Office analysis of Bank of England documents

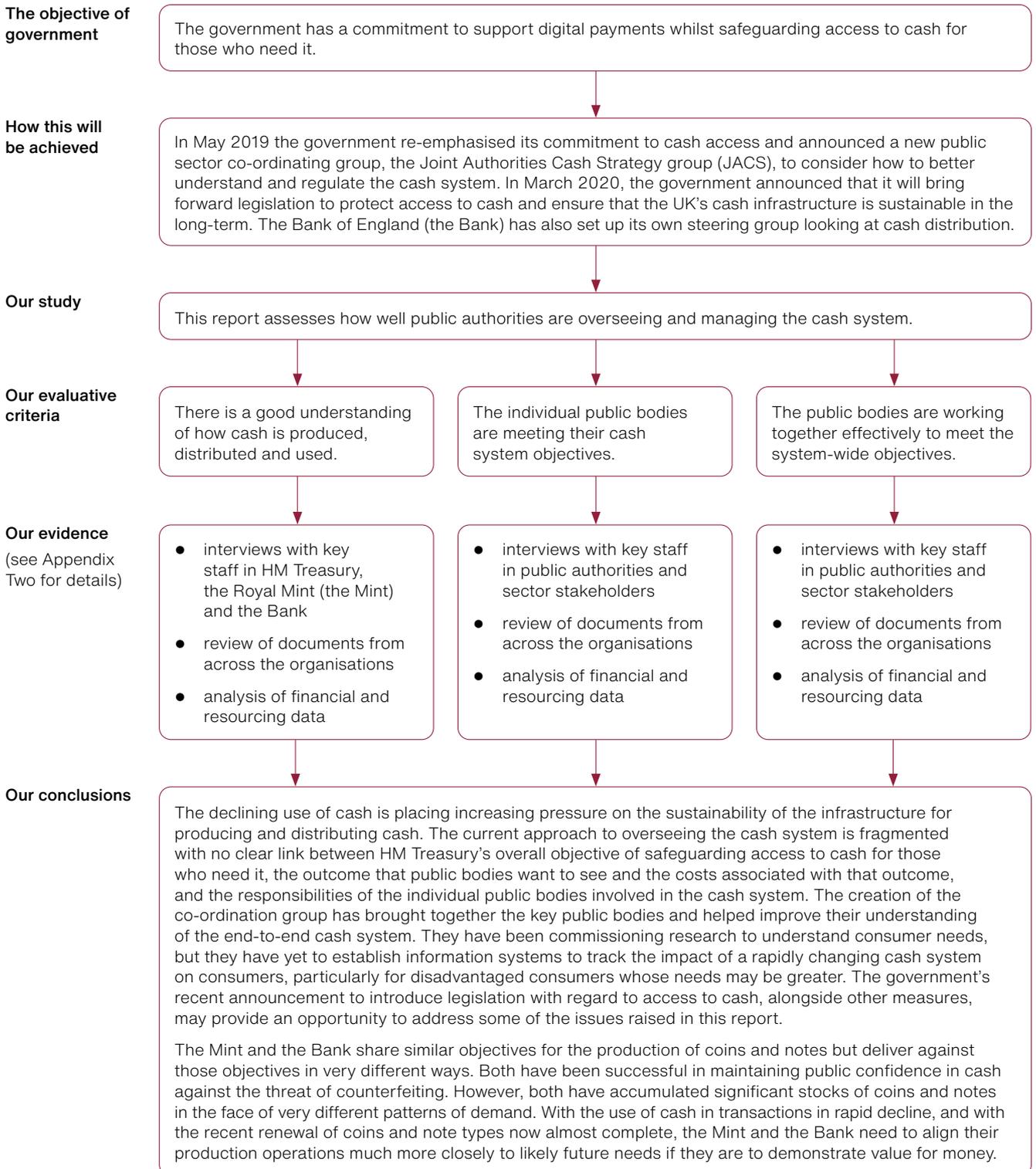
Appendix One

Our audit approach

1 This report examines the role played by the public bodies in operating and overseeing the cash system. The report examines how the cash system currently operates in the UK and whether the various public bodies with key responsibilities for cash are meeting their objectives and whether a system-wide approach is being taken. Our key questions were:

- How is cash produced, distributed and used?
- How well are individual public bodies meeting their cash system objectives?
- Are the public bodies working together effectively to meet their system-wide objectives?

2 Our audit approach is summarised in **Figure 17**. Our evidence base is described in Appendix Two.

Figure 17**Our audit approach**

Appendix Two

Our evidence base

1 Our conclusions on how well the public authorities are overseeing and managing the cash system were reached following analysis of evidence collected between February 2020 and July 2020. Our audit approach is outlined in Appendix One.

2 We assessed the oversight and management of cash production in the UK by:

- reviewing strategic documents containing objectives, metrics and performance data on note and coin production;
- analysing the Royal Mint's (the Mint's) and the Bank of England's (the Bank's) data on production volumes and costs over time and future projections. We also examined information on financial performance and efficiency targets;
- reviewing modelling assumptions and the cost-benefit analysis of the polymer programme carried out by the Bank;
- conducting semi-structured interviews with senior officials across the public authorities with responsibilities over cash production, including the Mint, the Debt Management and Reserve Team and Enterprise and Growth Unit in HM Treasury, and the Notes Directorate in the Bank;
- conducting field visits to production facilities at the Mint and the Bank in February and March 2020 to develop a better understanding of production processes and to interview key personnel; and
- analysing trends in counterfeiting rates for coins and notes to assess the extent to which the Mint and the Bank have been able to minimise the threat posed by counterfeiting.

3 We examined whether HM Treasury and other public bodies established clear objectives for delivering the government's aims to safeguard access to cash by:

- reviewing strategic documents from HM Treasury, the Payment Systems Regulator (PSR) and the Financial Conduct Authority (FCA) to identify cash-specific objectives and responsibilities, and the extent to which they are well developed;
- examining the completeness and quality of information regulators hold on consumer needs and detriment, the infrastructure for accessing cash, and cash acceptance by retailers; and
- conducting semi-structured interviews with key personnel at the PSR and the FCA to understand their plans for the cash system.

4 To examine the impact of changes to the cash system, we analysed data from LINK on free-to-use and pay-to-use automated teller machines (ATMs) by Lower Layer Super Output Areas (LSOAs) between January 2018, the earliest date with reliable data, and January 2020. LSOAs are small local areas that have an average population of 1,500 people. We linked each LSOA to its deprivation index and decile, using the 2019 Office for National Statistics English indices of deprivation. We calculated the average number of free-to-use ATMs and the share of free-to-use ATMs for each deprivation decile and examined the differences between more deprived and less deprived local areas.

5 We assessed whether public bodies have a joined-up approach to managing the cash system by:

- reviewing papers produced by the Joint Authorities Cash Strategy Group and notes from meetings between public authorities regarding cash; and
- conducting semi-structured interviews with key senior officials at HM Treasury, the PSR, the FCA and the Bank of England.

6 To build up our evidence base we also:

- conducted semi-structured interviews with key stakeholders, including: LINK, UK Finance, the National Crime Agency, Access to Cash Review members, and the consumer group Which?; and
- undertook a literature review of publicly available information on the cash system in the UK and internationally.

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