

# Bank of England notes: the switch to polymer

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- The Bank of England is responsible for maintaining confidence in banknotes.
- In meeting its banknote issuance responsibilities, the Bank aims to fully exploit innovation. The next £5, £10 and £20 banknotes will be printed on a polymer material.
- The switch to polymer will deliver banknotes that are more secure and better quality, and will support confidence in banknotes in the years ahead.

## Overview

The issuance of banknotes is probably the Bank of England's most recognisable function. Having first issued banknotes shortly after it was founded in 1694, the Bank is one of the longest-standing issuers of physical money in the world.

The Bank of England's note issuance objectives are to: (i) meet demand for banknotes in the quantities and denominations required by the public; and (ii) maintain confidence in banknotes. The key to maintaining confidence is the distribution of banknotes that are difficult to counterfeit and easy to authenticate.

During the next few years, the Bank will introduce banknotes printed on a polymer material and incorporating new security features for the £5, £10 and £20 denominations. These banknotes will also be smaller than their current cotton-paper equivalents.

The decision to move away from using cotton paper was taken after a three-year research programme and followed consultation with a wide range of stakeholders within the cash industry, as well as the public.

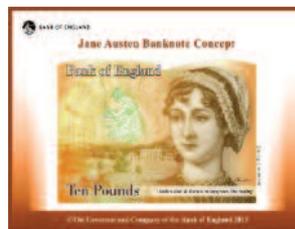
The move is not without precedent. In 1988, Australia was the first country to issue a banknote using polymer. To date, 45 billion banknotes have been produced on polymer, and issued in over 30 countries including Australia, Canada, Gambia, Fiji and New Zealand.

The new banknotes will deliver three benefits. First, the polymer banknotes, coupled with leading-edge security features, will deliver a step change in counterfeit resilience. Second, polymer banknotes will be stronger and more

durable, meaning they will last at least two and a half times longer than cotton-paper banknotes. And third, the new banknotes will be cleaner, and the public will enjoy the benefit of better-quality banknotes in their pockets.

The new polymer £5 banknote, featuring Sir Winston Churchill, will be unveiled on 2 June, and will enter circulation in September 2016. Around a year later, the Bank will launch a new £10 banknote featuring Jane Austen. A new £20 banknote, featuring a character from the visual arts, will be launched by 2020.

**Summary figure** Concept designs for the new £5 and £10 banknotes



This programme of work represents the biggest innovation in Bank of England notes for many years. The results will be beneficial to all users of cash and will maintain public confidence in banknotes in the years ahead.

(1) The authors would like to thank Tom Fish for his help in producing this article.

## Introduction

In the next few years, the Bank of England will be launching new £5, £10 and £20 banknotes on a polymer material, moving away from the cotton paper that has been used for hundreds of years. The design of the current cotton-paper £50 banknote is comparatively new and no decision has yet been taken on whether to replace it with a new polymer banknote.

This article discusses the programme of work that will culminate in the launch of the new banknotes, considers the rationale behind the change, and explains the steps taken in delivering it.

The first section reviews the Bank's responsibilities with respect to banknotes, and recent patterns of demand. The second section explores the counterfeit challenge and how the Bank responds to the threats to our physical currency. The third section outlines the research which identified polymer for the next generation of banknotes, before the fourth section explains the benefits of polymer banknotes. The fifth section discusses the cash industry and public consultation process which fed into the decision. Finally, the article discusses the programme of work put in place to launch the new banknotes.

## Bank of England objectives and demand for cash

### Banknotes and the Bank of England's objectives

As discussed in a previous *Bulletin* article,<sup>(1)</sup> there are two types of money held by firms and households: cash and deposits with financial institutions.<sup>(2)</sup> The vast majority of this money — some 97% — is held electronically as deposits, with the remainder held in physical form as cash. Bank of England notes make up most of the physical cash that circulates in the United Kingdom but, as explained in the box on page 25, cash also comprises coin issued by the Royal Mint, and banknotes issued by seven commercial banks in Scotland and Northern Ireland.

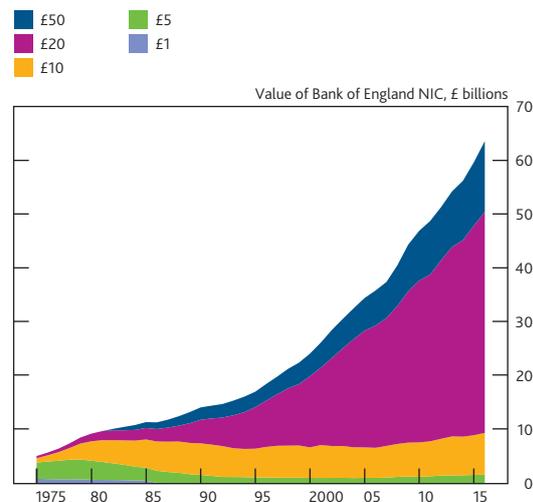
The Bank's mission is to promote the good of the people of the United Kingdom by maintaining monetary and financial stability. As part of delivering monetary stability, the Bank seeks to maintain the public's confidence in banknotes.

Banknotes should be of good quality, easy to authenticate, and resilient against the threat of counterfeiting. They should also be readily available, and in the denominations that the public needs.

### Banknote demand

In the modern economy, consumers are increasingly using a wide range of payment methods. However, as shown in

**Chart 1** Value of Bank of England notes in circulation (NIC): 1975 to present



**Chart 1**, the value of Bank of England notes in circulation continues to grow, and has increased by around three quarters over the past decade.

At the end of December 2015, there were around three and a half billion Bank of England notes in circulation, across the Bank's four denominations, totalling around £65 billion (**Table A**).<sup>(3)</sup>

**Table A** Bank of England notes by denomination at end-December 2015

£5	£10	£20	£50	Total
£1.7 billion	£8.3 billion	£42.1 billion	£13.0 billion	£65.1 billion
343 million notes	834 million notes	2,105 million notes	260 million notes	3,542 million notes

Cash possesses a unique set of attributes that sets it apart from other payment methods — it is tangible, fast and convenient, almost universally accepted, anonymous, and helpful for budget management.

As explained in a previous *Bulletin* article,<sup>(4)</sup> the Bank expects demand for cash to remain strong over the coming years and is investing in the banknotes that it issues.

## Addressing the threats to our physical currency

### The counterfeit challenge

The counterfeiting of banknotes, and knowingly passing them on, are serious crimes. Since counterfeits are worthless,

(1) See McLeay, Radia and Thomas (2014) for a detailed introduction to money.

(2) A third type of money is central bank reserves — deposits placed by commercial banks with the Bank of England.

(3) Note, the value of notes in circulation is always much higher in December than during the rest of the year. This is due to increased demand for banknotes over the Christmas period.

(4) See Fish and Whymark (2015) for an analysis of how cash usage has evolved and what may drive demand in the future.

## UK coin and Scottish and Northern Ireland banknotes

Although cash in circulation in the United Kingdom predominantly comprises Bank of England notes, there are two other components (Chart A).

The United Kingdom's coin policy is managed by HM Treasury, with coins produced by the Royal Mint.<sup>(1)</sup> At the end of December 2015, there was £4.4 billion of coin in circulation. In 2017, the Royal Mint will launch a new £1 coin. It will be constructed from two different coloured metals and contain a new security feature, designed to make the coin more counterfeit resilient.

As explained in a previous *Bulletin* article,<sup>(2)</sup> the Government also authorises seven commercial banks to issue banknotes in Scotland and Northern Ireland (S&NI banknotes). The aggregate value of S&NI banknotes in circulation totalled £7.3 billion at the end of December 2015. The three Scottish commercial issuers — Bank of Scotland, Clydesdale and the Royal Bank of Scotland — have each announced plans to introduce polymer for their £5 and £10 banknotes.<sup>(3)</sup> These banknotes will be issued at a similar time to the new Bank of England notes.

anyone who accepts one runs the risk of being out of pocket. It is therefore important that the Bank tackles the challenge from counterfeiting so that people and businesses are able to quickly and easily check that the banknotes they receive are genuine.

The counterfeit challenge is not new, and is not unique to the United Kingdom. Since the introduction of Bank of England notes in the late 17th century, criminals have attempted to forge them. However, in recent years, the rapid advancement of digital printing technology has made counterfeiting more affordable and accessible. The challenge for the Bank, in common with other central banks, is therefore to stay one step ahead of the counterfeiting threat.

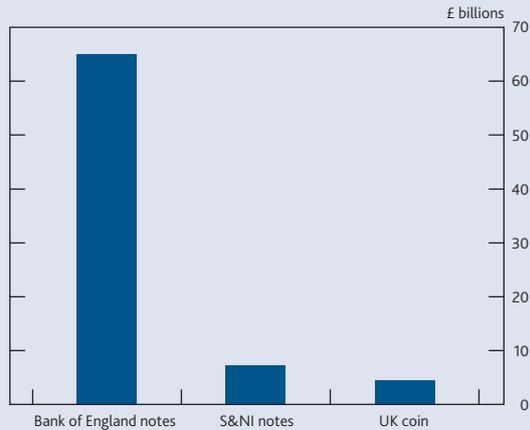
### Addressing the counterfeit challenge

The Bank's anti-counterfeiting strategy is based on five pillars.

First, the Bank is committed to developing state-of-the-art counterfeit resilient banknotes. It is currently developing new polymer £5, £10 and £20 banknotes which will incorporate leading-edge security features.

Second, as discussed in the box on page 29, the Bank works closely with the cash industry so that only high-quality,

Chart A Value of UK cash by component at end-December 2015



The Bank is working alongside both the Royal Mint and the Scottish issuers to support a smooth transition for businesses and the public.

(1) See [www.royalmint.com/](http://www.royalmint.com/).

(2) See Naqvi and Southgate (2013) for a detailed summary of the legal framework for the issuance of banknotes by commercial banks in Scotland and Northern Ireland.

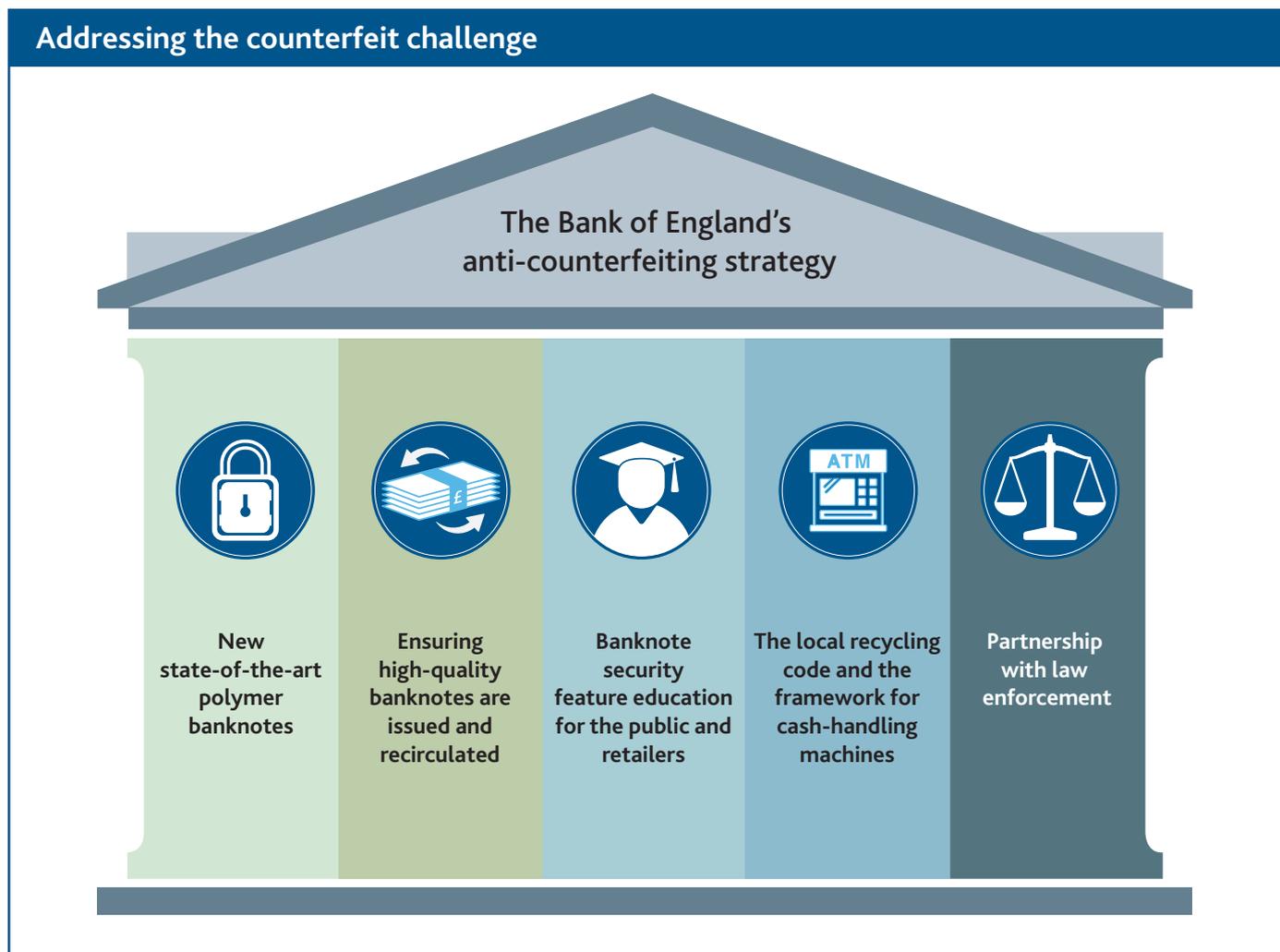
(3) The Northern Ireland issuers are: AIB Group (UK) plc (trades as First Trust Bank); Bank of Ireland (UK) plc; Northern Bank Limited (trades as Danske Bank); and Ulster Bank Limited. None of these have announced any plans to move to polymer banknotes. There are also a number of non-UK sterling banknotes that are issued in the Isle of Man, Channel Islands and Gibraltar. These are issued under currency board arrangements, with banknotes backed one-for-one with UK pound sterling. However, unlike for the S&NI banknotes, the Bank of England has no role in these arrangements.

authentic banknotes are issued and recirculated. This is because manual authentication, and the processing of banknotes through machines (such as ATMs), are more difficult when banknotes are of poor quality.

Third, the Bank has an active education programme that works with businesses and the public to help people understand how to identify genuine banknotes. The Bank's Banknote Education Team issues a suite of (free-of-charge) materials including leaflets, posters and a smartphone app.<sup>(1)</sup> Although some are easier to spot than others, all counterfeits can be identified using guidance supplied by the Bank of England.

Fourth, the Bank — through the Code of Conduct for the Authentication of Machine-Dispensed Banknotes — encourages effective authentication of banknotes that have been locally recycled. Local recycling occurs when a bank or retailer accepts a banknote from a customer and then dispenses it to another customer via a machine (such as an ATM or a self-service checkout). The Code requires that all banknotes dispensed in this way are first authenticated using a device listed in the Bank's

(1) See [www.bankofengland.co.uk/banknotes/Pages/default.aspx](http://www.bankofengland.co.uk/banknotes/Pages/default.aspx).



Framework for the Testing of Automatic Banknote Handling Machines.<sup>(1)</sup>

Fifth, and importantly, the Bank works closely with law enforcement agencies across the United Kingdom to disrupt counterfeiting operations and to bring the perpetrators to justice. Where necessary, the Bank will assist the courts by providing expert witness support.

**Counterfeit levels**

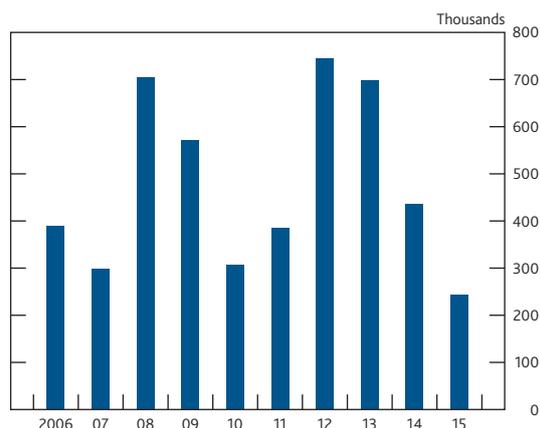
The likelihood of an individual being passed a counterfeit is very low. In 2015, 243,000 counterfeits — simulating Bank of England notes — were discovered and removed from circulation (**Chart 2**). This is equivalent to only a tiny proportion of 1% of all Bank of England notes in circulation.

**Choosing polymer banknotes**

**Research phase**

Led by its specialist research team of scientists, engineers and other technical experts, the Bank of England commenced a three-year research programme in 2010 examining options for the next generation of banknotes.

**Chart 2** Volume of counterfeits removed from circulation



Given the accelerated pace of innovation in recent years, central banks now have a greater choice of materials that banknotes can be printed on. The most suitable materials can be split into three broad categories: (i) paper; (ii) polymer; and (iii) hybrid materials — a combination of the two. There are various specifications within these categories

(1) See [www.bankofengland.co.uk/banknotes/Pages/retailers/framework.aspx](http://www.bankofengland.co.uk/banknotes/Pages/retailers/framework.aspx).

although, in general, paper banknotes are most commonly made from cotton fibres, while polymer banknotes are made from polypropylene — a transparent and flexible plastic film. Hybrid banknotes will often use multiple layers of the two materials (for example, one layer of cotton paper sandwiched between two layers of polymer or *vice versa*).

Technological advances have also provided central banks with a wide choice of security features for incorporation into banknotes. These range from holograms and micro-lens features through to colour-changing and metallic inks. Choosing security features is a complex process and depends on factors such as the current counterfeiting rate, counterfeit quality, and authentication practices followed by the public, retailers and financial institutions.

At the heart of the Bank's research was counterfeit resilience. The Bank undertook extensive testing in an attempt to simulate the efforts of counterfeiters to forge different types of banknotes incorporating different materials and security features. The analysis made use of a wide range of techniques from amateur digital printing through to professional industrial-scale manufacturing.

With each trial, the Bank developed an understanding of the necessary skill, time and cost required to counterfeit banknotes at different levels of sophistication. This enabled the Bank to rank the combinations of materials and security features in terms of counterfeit resilience.

Extensive durability testing was also undertaken. This involved exposing the materials and security features to a wide range of everyday household chemicals and activities to measure the wear resistance to abrasion and folding. One of the tests, for example, involved putting different sample banknotes through washing machine cycles.

The research also drew on the experiences of other central banks and included an independent study of the environmental impact of both polymer and cotton paper.

The research concluded that there was a strong case for replacing existing cotton-paper banknotes with new banknotes printed on polymer. While hybrid materials were also considered, these were ultimately discounted given a lack of available data from real-world deployment.

## The benefits of polymer banknotes

Banknotes that are printed on polymer offer three key benefits, each discussed below.

### Secure

The characteristics of polymer have been carefully crafted for banknotes so that it is difficult for a counterfeiter to source a

similar material which feels the same and is easy to print on. When combined with leading-edge security features, polymer banknotes can constitute a step change in counterfeit resilience, leading to safer, and more secure, banknotes. In general, printing on polymer is more difficult than printing on paper and requires specialist printing equipment that is not easily available.

Transparent windows can also be included in polymer banknotes. These see-through windows can be combined with sophisticated security features which, together, enable the manual authentication of a banknote from both sides. In addition, these security features can be designed to look different depending on which side of the banknote is being inspected — adding another level of counterfeit resilience.

Evidence from countries that have switched to polymer — including Australia, Canada and New Zealand — supports the conclusion that polymer banknotes are more secure. All countries that have introduced polymer banknotes have reported a decline — often a significant one — in counterfeit levels, with very low residual volumes as a result. Although counterfeiting is still attempted, the majority of counterfeits produced are of relatively poor quality (with many still being printed on paper).

### Durable

Polymer banknotes are stronger and more durable than their cotton-paper equivalents. The greater durability is due to the physical structure of the material which makes it more resistant to damage, such as tearing and folding. This means that polymer banknotes last at least two and a half times longer than cotton-paper banknotes.

The initial cost of producing a polymer banknote is higher than for a cotton-paper one. However, because polymer banknotes last longer in circulation, fewer replacement banknotes need to be printed over the long term.

The enhanced durability of polymer banknotes is also beneficial from an environmental perspective. During the research phase, the Bank commissioned an independent study to assess the environmental impact of both cotton-paper banknotes and polymer banknotes.<sup>(1)</sup> The study examined the life cycle of a banknote from the production of the raw material, and then through the manufacturing, printing and distribution phases before being destroyed and the waste disposed. Polymer banknotes can in fact be recycled, with the material used to make other products (for example plant pots) and the Bank will fully separate paper and polymer banknote waste to facilitate their recycling.

(1) See 'LCA of paper and polymer bank notes'; [www.bankofengland.co.uk/banknotes/polymer/Documents/lcapaperandpolymerbanknotes.pdf](http://www.bankofengland.co.uk/banknotes/polymer/Documents/lcapaperandpolymerbanknotes.pdf).

The study considered seven environmental indicators<sup>(1)</sup> including global warming potential and water and energy use. Polymer banknotes scored better than cotton-paper banknotes for all of the main phases of a banknote's life cycle, and for five of the seven environmental indicators.<sup>(2)</sup> The study concluded that polymer banknotes have a lower environmental impact than their cotton-paper equivalents.

Greater durability will also benefit the cash industry. Since tatty or damaged cotton-paper banknotes are often the cause of banknote machine jams (and therefore unavailability), better-quality banknotes should lead to greater efficiency in banknote processing.

### Clean

The third key benefit of polymer banknotes is that they are cleaner than cotton-paper equivalents. Polymer is impermeable and of a non-fibrous nature which means that it repels dirt and moisture. Coupled with the improved durability, polymer banknotes remain in good condition for longer and become less tatty.

Feedback from the public suggests people put a premium on clean, good-quality currency and consider the banknotes in their pocket as a source of national pride. Importantly, cleanliness and quality also support counterfeit resilience — since it is harder to check security features on a tatty banknote.

## Consulting the cash industry and the public

### Preliminary consultation

During the research phase, the Bank undertook two consultations to better understand the impact on the cash-handling industry of launching banknotes using a new material, and in a number of different size configurations. The exercise found that businesses would be able to adapt and that, although the cash industry identified that there would be transition costs, there was also recognition of the long-term benefits.

The Bank also sought early feedback from the public. It commissioned a number of independently-run focus groups that measured the public's reaction to different banknote materials. Feedback from many participants was favourable towards polymer banknotes. The Bank also sought advice from special interest groups, including those representing blind and vision-impaired people.

### Further consultation on the new £5 and £10 banknotes

Based on the findings of the research phase, the Bank announced in September 2013 that it was considering the case for introducing polymer banknotes for the next

series of £5 and £10 banknotes, and would seek the views of the public.

At the same time, the Bank announced that, if polymer were chosen, the new banknotes would be 15% smaller than the current series equivalents (which are large by international standards). The preference for making the banknotes smaller meant less material would be used in their production, reducing manufacturing costs and delivering further environmental benefits.

### Further public consultation

To gauge wider public opinion, the Bank undertook a public consultation between September and November 2013. This involved a ten-week roadshow, which included 47 events held across the United Kingdom (including, for example, in shopping centres). These events gave people the opportunity to talk with Bank staff and to look at, and handle, sample polymer banknotes. To provide more in-depth analysis, the Bank also commissioned further independently-run focus groups and surveys.

Altogether, the consultation included over 18,000 interactions with the public, with almost 13,000 people providing feedback. The feedback was overwhelmingly supportive with 87% of respondents in favour of polymer banknotes.<sup>(3)</sup>

### Further industry consultation

The cash industry always needs to make changes when a new banknote is issued — firms need to upgrade cash machines, train staff and modify handling procedures. To support this process, the Bank began consulting more widely with all sectors of the cash industry from September 2013, building on the results gathered from the earlier engagement.

The Bank consulted financial institutions, ATM providers, retailers (including representative trade bodies) and cash-in-transit firms. The Bank also engaged with banknote equipment manufacturers to better understand the impact of the change on technology.

The consultation process was very valuable. Overall, it gave the Bank confidence that businesses would be able to adapt and that the long-term benefits of the new notes would outweigh the short-term transition costs for the cash industry. The transition costs fall particularly on those businesses that use machines to handle cash — for example banks with large estates of ATMs and large supermarkets that use a lot of self-service checkout machines.

(1) The seven environmental indicators assessed were: (i) primary energy demand — non-renewables; (ii) water consumption; (iii) acidification potential; (iv) eutrophication potential; (v) global warming potential; (vi) human toxicity potential; and (vii) photochemical ozone creation.

(2) Two indicators were inconclusive: (i) human toxicity potential; and (ii) photochemical ozone creation.

(3) Sixty-nine per cent of respondents were strongly in favour of polymer banknotes with 18% somewhat in favour. Only 6% of the people consulted were opposed to polymer banknotes (with 7% neutral). To view the full results of the consultation, see [www.bankofengland.co.uk/banknotes/polymer/Pages/pcp.aspx](http://www.bankofengland.co.uk/banknotes/polymer/Pages/pcp.aspx).

## The banknote cycle

In delivering confidence in banknotes and meeting demand, the Bank relies on a large and complex banknote supply and distribution chain.



(1) The polymer for the new £5 and £10 banknotes will be supplied by Innovia Security. The Bank of England plans to tender for the polymer for the next £20 banknote in Spring 2016. As well as the material, the ink used on the banknotes and the various security features that are incorporated all need to be sourced from the commercial sector.

(2) There are currently four NCS members: G4S Cash Solutions (UK) Ltd; Post Office Ltd; Royal Bank of Scotland plc; and Vaultex UK Ltd (a joint venture between Barclays plc and HSBC plc).

As well as confirming the general support for polymer, it helped to identify specific challenges that had to be addressed. For example, the feedback raised helpful questions on how to manage the issuance of new banknotes through the complex distribution chain which is summarised in the figure above.

## Launching the new banknotes

### The decision

Having assessed the results of the public and industry consultations, the Bank announced in December 2013 its decision that the next £5 and £10 banknotes would be printed

## Banknote characters

Since 1970, the Bank has included characters of significance on its banknotes, alongside supporting imagery commemorating their lives. This practice provides an opportunity to celebrate individuals that have shaped British thought, innovation, leadership, values and society.

The first character to appear on a Bank of England note was William Shakespeare. He featured on the £20 banknote that was launched in 1970. In the four and a half decades since, fifteen characters have appeared on fourteen banknotes.<sup>(1)</sup>

The way the Bank chooses banknote characters has changed. With the selection of the character to appear on the £20 banknote, for the first time the selection drew heavily on the views of the public and involved a largely independent Banknote Character Advisory Committee.<sup>(2)</sup>

### The next £5 and £10 banknotes

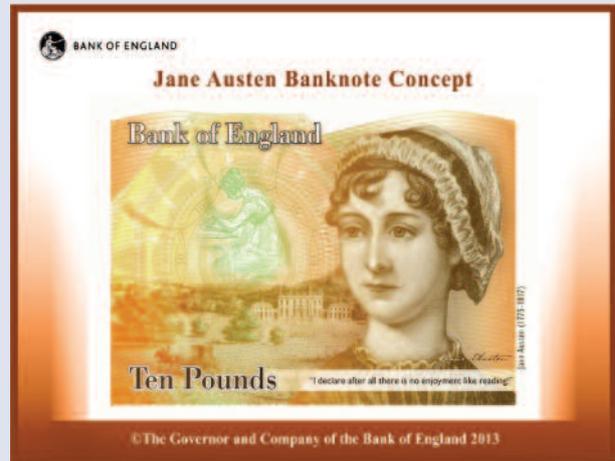
The new £5 banknote will be unveiled on 2 June and will enter circulation in September 2016. In 2013, the Bank announced that it would feature Sir Winston Churchill (**Figure A**). Former Bank Governor, Mervyn King noted 'Sir Winston Churchill was a truly great British leader, orator and writer. Above that, he remains a hero of the entire free world. His energy, courage, eloquence, wit and public service are an inspiration to us all'.

**Figure A** Concept design for the Sir Winston Churchill £5 banknote



In July 2013, the Bank announced that the next £10 banknote would feature the author Jane Austen (**Figure B**). It will enter circulation in 2017, around a year after the new £5 banknote. In making the announcement, Governor Mark Carney said 'Jane Austen certainly merits a place in the select group of historical figures to appear on our banknotes. Her novels have an enduring and universal appeal and she is recognised as one of the greatest writers in English literature'.

**Figure B** Concept design for the Jane Austen £10 banknote



### The next £20 banknote

In May 2015, the Bank launched a two-month public nomination process asking for nominations, from the field of visual arts, for which character should appear on the next £20 banknote. The initiative generated nearly 30,000 nominations, covering 590 eligible visual artists.

The Banknote Character Advisory Committee then considered all eligible nominations and, over a number of stages, produced a shortlist of names. At each stage, the Committee took into account the contributions made by each visual artist, while also considering the equality implications of different choices. The final decision — based on a shortlist of names proposed by the Committee — is made by the Governor. The chosen character will be announced in Spring 2016, alongside a concept image showing how the character will appear on the new £20 banknote.

- (1) Entrepreneur Matthew Boulton and engineer James Watt are jointly commemorated on the current £50 banknote.
- (2) The Banknote Character Advisory Committee is chaired by Ben Broadbent, Deputy Governor for Monetary Policy. The full members are three external experts — Sir David Cannadine, Sandy Nairne and Baroness Lola Young of Hornsey, and the Bank's Chief Cashier — Victoria Cleland. John Akomfrah, Andrew Graham-Dixon and Alice Rawsthorn — all experts in the field of visual arts — have joined the Committee specifically for the £20 banknote character short-listing process.

on polymer, and that the new banknotes would be smaller. As discussed in the box on page 30, the new £5 banknote will feature Sir Winston Churchill and the new £10 banknote will feature Jane Austen. A decision to introduce a new polymer £20 banknote was taken later and was announced in September 2015.

### Production

With the material and security features agreed, the Bank commissioned production for the new £5 banknote. Initially, this involved a number of small-scale manufacturing trials to ensure that the proposed design could be produced in volume to a uniform quality. Following this, two full-scale manufacturing trials were completed, providing opportunity to resolve any issues in advance of the start of mass production.

During the trial process, the Bank supplied test banknotes, under strict security controls, to banknote equipment manufacturers (for example, firms that manufacture ATMs) to assist them with upgrading their equipment in order to accept, dispense and authenticate polymer banknotes. This is an essential part of the process of launching a new banknote and helps to get cash-accepting and dispensing machines ready ahead of the launch date.

De La Rue is currently producing the £5 banknote ready for issue in September 2016. Ahead of the launch, over 400 million banknotes will be produced. This will allow for the replacement of all the cotton-paper £5 banknotes currently in circulation as well as those held as stocks either by the industry or the Bank itself. Ahead of its launch in 2017, over one billion £10 banknotes will be manufactured.

### Supporting cash industry readiness

The Bank is committed to working collaboratively with the cash industry to support a smooth transition to the new notes and design an approach to the transition that minimises the costs of change. To support this goal, following the decision in 2013 to issue new £5 and £10 notes, the Bank put in place a comprehensive industry liaison programme.

The programme is built on regular dialogue and encourages collaboration and information sharing across the industry to resolve any challenges that arise. As well as running regular industry-wide forums, the Bank has commissioned five industry-led working groups, representing all parts of the cash distribution chain.

Over the past two years, the groups have worked collaboratively to prepare for the launch in the areas of: (i) wholesale banknote processing; (ii) ATMs; (iii) other banknote equipment — for example, vending, self-service checkouts; (iv) cash-in-transit; and (v) cash handling and training — for example, for retail staff. This collaboration has been invaluable in planning the rollout of the new banknotes.

Feedback from industry participants indicates a high level of confidence in how the programme is moving forward.

### Public education and awareness

A successful launch will also depend on awareness and acceptance of the new banknotes by the public. From 2 June 2016, the Bank will embark on an extensive communications campaign. The campaign will include the Bank visiting different regions of the United Kingdom and engaging with the media, the public and local businesses, and providing a range of free educational materials. The intention is to ensure people are ready, and to build awareness for the launch of the new state-of-the-art banknotes.

### Withdrawal of the current £5 and £10 banknotes

Having launched the new polymer £5 banknote in September 2016, the Bank will — after a suitable period of time — withdraw legal tender status for the current cotton-paper £5 banknote. This will occur before the new polymer £10 banknote enters circulation. Subsequently, the current cotton-paper £10 banknote will also be withdrawn.

After legal tender status is withdrawn, customers will no longer be able to use old series banknotes for purchasing goods and services. However, the Bank will give plenty of notice so that consumers have sufficient time to pay current series banknotes into bank accounts or to spend them. Bank of England notes contain a promissory clause stating that the Bank will pay the bearer the sum of the banknotes on demand. In practice, this means that the current cotton-paper banknotes will be exchangeable at the Bank of England for new banknotes (or electronic payment) of the same value forever. For example, even after its withdrawal in April 2014, the £50 banknote featuring Sir John Houblon can still be swapped by the Bank for the newer £50 banknote, which features Matthew Boulton and James Watt.

### Conclusion

Demand for cash will likely be resilient in the years ahead. As such, the Bank needs to work with the cash industry and continue to invest in banknotes.

Following a comprehensive programme of research and development, the Bank of England will launch the next £5, £10 and £20 banknotes on polymer. Polymer provides a strong foundation for increasingly sophisticated, leading-edge, security features. The new banknotes will be state-of-the-art and will provide a step change in counterfeit resilience. The banknotes will also be cleaner and more durable, and will deliver confidence in Bank of England notes for the years ahead.

In the months leading up to the launch of the new polymer £5 banknote in September 2016, the Bank will continue to work with the cash industry to deliver readiness.

Victoria Cleland, the Bank's Chief Cashier, recently remarked 'On Thursday 2 June we will unveil the full design of the new fiver — the Bank of England's first polymer banknote. The new fiver will bring a step change in counterfeit resilience and quality. We have been working extensively with the cash industry to ensure a smooth transition to polymer. Now is the

time for retailers and businesses to prepare. Alongside the launch, we will release new free-of-charge training materials to help businesses train their staff, and run an extensive public awareness campaign to enable everyone to prepare for the new fiver entering circulation in September. This is an exciting time for banknotes and we are grateful to the cash industry for helping us introduce polymer banknotes'.<sup>(1)</sup>

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(1) See [www.bankofengland.co.uk/publications/Pages/news/2016/040.aspx](http://www.bankofengland.co.uk/publications/Pages/news/2016/040.aspx).

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