



BANK OF ENGLAND

Speech

Working together to deliver banknotes for the modern economy

Speech given by

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I would like to thank Roy Whymark for his significant comments and contributions.

Good morning. It is a pleasure to be here at the University of the West of England (UWE). UWE has shown a real interest in the cash cycle, and is launching a Masters programme in Currency Supply Chain Management next year. I hope future graduates will go on to be part of the next generation of cash experts and enjoy the experience as much as we do.

I expect that they will be surprised at how complex the world of cash is, and how much it is influenced by technology. Over the next two days alone we will hear about a wide range of interconnected issues - developments affecting demand for cash distribution, local recycling, and anti-counterfeiting measures. All topics have a strong focus on the future, and how the industry can work to optimise the cash cycle.

Payments in the UK are changing. But cash remains a vital part of the mix. This morning, I want to discuss the continued importance of cash, the changes we are experiencing as a result of technology, and why it is important that we, collectively as the cash industry, continue to invest in the future of banknotes. While many of my examples will draw on the UK experience, I am sure they are relevant to those of you from around the globe.

What is the Bank's note function for?

Everything we do at the Bank of England starts with our mission: to promote the good of the people of the United Kingdom by maintaining monetary and financial stability. Core to this is safeguarding confidence in the currency, and we achieve this, primarily, through monetary policy and our sterling money market operations. We also need to deliver confidence in the physical currency - our banknotes - and this is at the heart of my role as Chief Cashier.

Within my team, our mantra is to make sure that we have *'the right note, in the right place, at the right time'*. In practice, this means that the public's demand for cash is met, in the denominations they require, with good-quality, easy-to-authenticate, and hard-to-counterfeit banknotes. And we need to work collaboratively with the cash industry to deliver this.

Despite reports of its demise, cash is still important...

It is true, that as a society, we rely on cash less than we used to. Technology has delivered alternative methods and changed the way we pay. Today, it is possible to purchase goods and services with debit and credit cards, using chip and PIN, or contactless technology. You can also buy items using new smartphone technology such as Apple Pay, or over the internet. You can make regular payments via standing orders and direct debits, and one-off payments using the Faster Payments Service.

While much more limited, you can also pay for some goods and services using new digital currencies such as Bitcoin - our initial estimates suggest there are probably only a few hundred Bitcoin transactions in the UK

each day. And here in Bristol, you can pay local retailers using the Bristol Pound, one of a number of local currency initiatives that have been launched across the UK over the last decade.

Although my team is responsible for a much older payment method, we are not luddites, and we welcome the additional choice and convenience that consumers can now enjoy.

Given the many ways that are now available to pay, I am often asked '*is cash about to die?*' The short answer is '*no*'. Cash is still a key player in the payments landscape. In 2014, cash accounted for 52% of consumer payments at the point-of-sale and was comfortably the most frequently used payment method. And in absolute terms, the use of cash at the point of sale (in both volume and value terms) is only slightly lower than it was fifteen years ago.

But the resilience of cash use at the checkout does not tell the whole story. Aggregate demand for Bank of England notes has grown quickly, increasing by around three-quarters over the past decade, and has outpaced the growth in GDP since the 1990s. Today there are nearly three-and-a-half billion notes in circulation, totalling over £60bn.

Some of this growth will have been driven by the supply and distribution chain, with more cash held in a greater number of ATMs, as well as bank branches, and retail stores. And some will have been driven by changes in the relative importance of cash's primary functions. At a time when demand for cash as a medium of exchange appears broadly stable, its use as a store of value appears to have grown with people increasingly hoarding cash, both domestically and overseas. The growth in hoarding (whether it be under the mattress, in a safety deposit box, or even buried in the garden) is likely to be due to a range of factors, including low interest rates and the financial crisis.

At any one time during 2014, we estimate that around 20% to 30% of total UK cash was in, what we refer to as, the 'transactional cycle' - cash held by banks, consumers, and retailers for the purposes of facilitating everyday transactions. The remainder of UK cash is accounted for by hoarding and demand from overseas and the shadow economy. The Bank will cover how cash is used in more detail in a Quarterly Bulletin article to be published later this month.

Although strong growth in banknote demand might seem somewhat surprising, it is not unique to the UK. The US, Canada, Australia, and the euro area (to name a few) are all experiencing year-on-year growth of between 5% and 10%. However, this trend is not universal. Sweden is experiencing a decline in banknote demand, as I am sure we will hear during Dr Bjorn Segendorff's speech tomorrow. Yet even in Sweden - where homeless people can accept credit cards for selling Stockholm's equivalent of the Big Issue - cash still has a future and still requires investment, and a new series of krona banknotes will be issued from this autumn.

...and given new technology, banknotes have changed...

So rather than dying out, cash remains resilient. And people still care greatly about the notes in their pockets. Building on this strong attachment to notes, the Bank of England has actively sought to engage the public, and this summer we received almost 30,000 nominations on who they would like to appear on the next £20 note. The level of interest showed that cash was still very much in people's minds (and their wallets).

Cash is not a lazy incumbent, and does not fear technological innovation. It seeks to exploit it. Our banknotes have evolved considerably since the large handwritten black and white notes from the late seventeenth century. We have always made use of the latest technology to provide the best quality and most secure notes.

Our modern notes can arguably be said to stem from 1970 when we included a historic character for the first time. The counterfeit resilience of the William Shakespeare £20 was provided by the watermark, the embedded thread, and the note's complex multi-coloured design. At the time, it was a triumph in note sophistication, and very hard to copy.

Yet, as we moved into the 1980s and 1990s, counterfeiters were able to retire their pens and pencils and make use of increasingly affordable and accessible copying and printing equipment.

Central banks need to stay in the lead, and our specialist research team is constantly examining the merits of new banknote security features, while also investigating the technology available to counterfeiters. Fortunately, we are supported by a diverse, innovative, and collaborative banknote technology industry which has delivered increasingly sophisticated security features, printing techniques, and substrates.

Through a combination of research and investment, collaboration with law enforcement agencies, and our banknote education programme, we have been able to keep counterfeit levels low. In 2014, 430,000 counterfeits were removed from the cash cycle. Although we always strive for a lower number, this represents only a tiny fraction of one percent of notes in circulation.

Because of advancements in technology, our modern banknotes benefit from being both old and new. Today, our banknotes are traditional but also technically-advanced, and innovative yet also familiar. But we must never rest on our laurels. Looking to the future, we need to understand the challenges and opportunities brought by advances in technology. Upgrading banknotes is not enough. Technology has also changed how we access and pay with cash, and how notes move around the cash cycle. We need to understand these changes and act to mitigate the risks they present.

...and the cash cycle is evolving with traditionally wholesale activity transitioning to the retail space

In the past, people accessed cash via pay packets or from bank branches. The growth of electronic transfers for wages, and the proliferation of ATMs, has changed this. There are now around 70,000 ATMs in the UK, and these account for more than 85% of the value of cash withdrawn from accounts.

The growth in ATMs has provided easier access to cash and has been important in determining the mix of denominations in circulation. Until a few years ago, almost all ATMs only dispensed £10 and £20 notes, leading to the erosion of £5 availability. As fivers became scarce, they stayed in circulation too long and quality suffered. However, with industry collaboration, we have addressed the 'tatty fiver' problem. We are grateful to those ATM operators that adhere to, and exceed, the Bank's target of ensuring at least 1.2% of ATM dispense (by value) is in £5 notes. We know this is appreciated by the public, and our fivers-related post bag has certainly shrunk.

There is also innovation in how to spend cash. It wasn't that long ago that almost every transaction required interaction with a person. The last few years have brought significant growth in the use of self-service checkout terminals. Today, there are almost 35,000 in the UK, alongside many thousands of vending and ticketing machines.

Beyond the sight of consumers, the majority of Bank of England notes still pass through the traditional wholesale processing model. This involves retailers returning their cash takings to their bank which, in turn, deposits these into the wholesale sorting system. The four wholesale processors - 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) - are members of the Bank's Note Circulation Scheme (NCS). They process banknotes for authenticity and quality using increasingly sophisticated high-speed note sorters, which can check up to 30 notes a second. Good-quality, authentic notes then re-enter circulation, and are transported by cash-in-transit companies to bank branches, ATMs, and retailers.

The wholesale model has benefitted from technological developments, but has also been disrupted by them. As ATMs and self-service checkout terminals become more prevalent, banks and retailers are increasingly supplementing wholesale sorting arrangements with local recycling where they replenish note-dispensing machines using notes that have been paid in over the checkout or counter. This provides benefits in efficiency and costs. But because they bypass the wholesale process, we need to make sure that locally - recycled notes are still regularly authenticated.

We need to be alert to the interaction between banknote technology and changes to the cash cycle. Since equipment needs to be upgraded when a banknote is replaced, the spread of machines makes this a far bigger task, and requires a lot of time and effort. So when the Bank launches a new note, we need to be sure that we make a success of it and get it right.

Because of the confluence of these factors, we need to invest in the future of cash...

So what do these developments mean for the cash industry? Because cash is, and will remain, important to consumers, we need to be ready to supply notes into, and that are fit for, the future. And because of the onward march of innovation, we want to achieve a step change in banknote sophistication, with notes that are easy for consumers to check, and with proper authentication throughout the cash cycle.

To achieve these aims, the Bank is working with the industry on two major initiatives.

...and we are working together to launch durable and secure polymer banknotes...

First, we are launching new banknotes on a polymer substrate and in a smaller size. In autumn 2016, we will introduce the Winston Churchill £5, followed by the Jane Austen £10 a year later. And today, I am pleased to announce that the new £20 note, which we expect to launch in the next three-to-five years, will also be printed on polymer. The decision to change substrate wasn't taken lightly. It followed many years of research, as well as engagement with the public and extensive consultation with the cash industry. Indeed, feedback from the industry has been key in developing the design, and choosing the security features, for the new notes.

So, why polymer? Primarily, because polymer - incorporating complex windows and sophisticated security features - delivers a leap forward in counterfeit resilience. Experience from central banks that have issued polymer banknotes has been positive. Canada, for example, has seen a real reduction in counterfeit levels since launching its polymer series a few years ago. Polymer is also cleaner and more durable, leading to better quality notes in circulation.

We have made good progress in designing the new notes, and our printing partner De La Rue plc will start mass producing the new £5 this month on the polymer supplied by Innovia Films.

Although the Bank can take the lead on mapping out the pathway to issuance, we can't launch the new notes on our own. If consumers are to experience a smooth transition, we need help from the entire cash industry - from all of you here today, from manufacturers, to NCS members, to small convenience stores.

A key strand in the successful issuance and distribution of the new banknotes will be action from the cash industry to ensure their businesses are ready. That is why we are supporting a series of five industry-led working groups, representing all parts of the cash supply chain. These groups provide fora for the commercial sector to develop solutions to the challenges and issues faced in the cash industry. Feedback on this collaborative approach has been positive, and the industry is confident in how the programme is moving forward.

Between now and launch, we will be seeking assurance that the cash industry will be ready in time. We will continue to engage and listen, and will help where we can. And next year, we will roll out training materials for banks and retail staff, alongside a public communication initiative. Together, we have achieved a great deal over the past few years and as we move closer to launching the new polymer banknotes, we all need to retain momentum.

...we are working together on ensuring appropriate authentication at all stages of the cash life cycle...

Alongside the new notes, we are working with the industry to implement the Code of Conduct for the Authentication of Machine-Dispensed Banknotes. The Code ought to be followed by any organisation that uses customer-operated note-dispensing machines. It requires that notes dispensed in this way are first authenticated using a device listed on the Bank's Machine Testing Framework. This doesn't need to be expensive with some of the smaller handheld devices costing less than £100, and if deployed at the point of sale, would prevent a retailer from accepting a counterfeit in the first place.

The Code has a staggered implementation timetable, and this April, we were pleased to find that over 75% of relevant ATMs and self-service checkouts were already compliant. Over the next two years, we will roll out the Code to all ATMs and are currently consulting on how we can extend this to other sectors, and how it could be extended to cover Scottish and Northern Ireland banknotes.

...these two initiatives are complementary and we all need to play our part in delivering them.

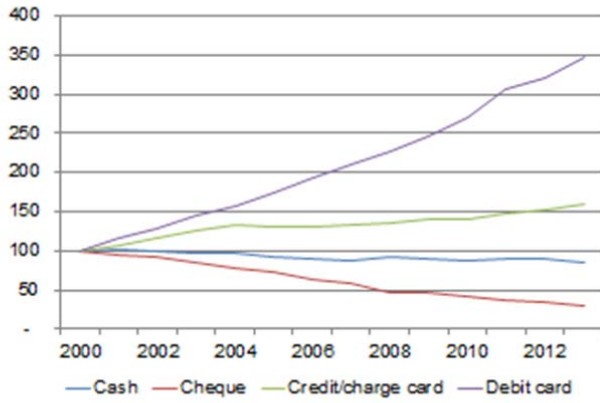
In closing, I want to reiterate the three ways in which technology has changed and modernised the cash industry. First, innovation has given us more choice over how we pay. Second, it has changed how cash moves through the cycle, including how we access cash, and how it is recirculated. And third, the notes themselves have changed, and have become ever more sophisticated.

It's true that cash is no longer the only show in town, and it certainly can't claim to be the new kid on the block. But it's still vitally important. Cash is not ready for the retirement home, and certainly not the funeral home. And because there is a lot of life left in cash, we need to work together to keep it healthy and fit for purpose.

In the UK, the move to polymer notes and the rollout of a Code of Conduct for local recycling are important individually, but we can only achieve full confidence in banknotes by delivering both together. Everyone in the cash industry has a role to play. And all of us, alongside the public, will benefit from the success.

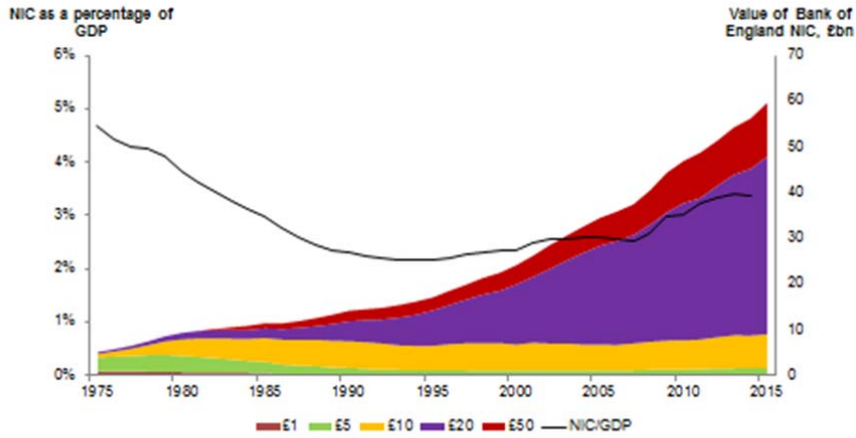
Annex

Aggregate volume of spontaneous payments by method, indexed to 2000 (Source: Payments UK)



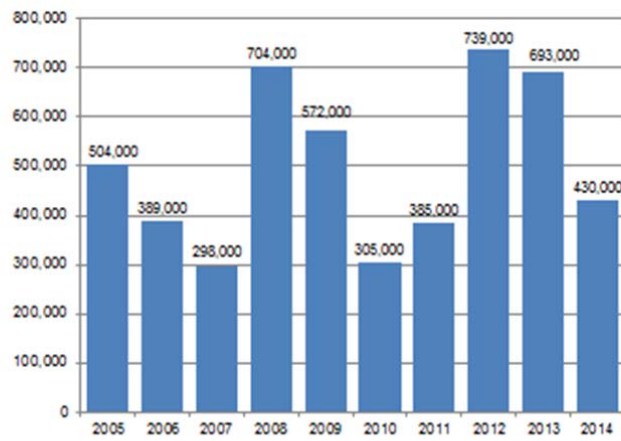
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Bank of England notes in circulation 1975 – Present



2

Volume of counterfeit banknotes removed from circulation



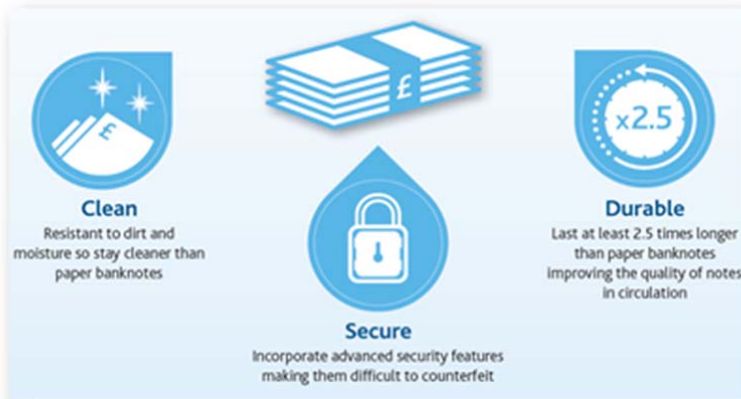
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Characters for the next series



4

New Polymer Notes



5

Code of Conduct for the Authentication of Machine-Dispensed Banknotes, July 2013

The Code requires that:

1. All BoE banknotes dispensed by customer-operated cash dispensers must be authenticated using a machine listed on the Bank of England's *Framework for the Testing of Automatic Banknote Handling Machines*;
2. Notes recycled and dispensed to the public must be authenticated as genuine and current series.

To achieve this:

3. Machines' software/firmware must be sufficiently up to date;
4. Internal processes must be sufficient to support the principles above.



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