

## **Andrew Bailey: Banknotes in circulation – still rising. What does this mean for the future of cash?**

Keynote address by Mr Andrew Bailey, Executive Director for Banking Services and Chief Cashier of the Bank of England, to the Banknote 2009 conference, Washington DC, 6 December 2009.

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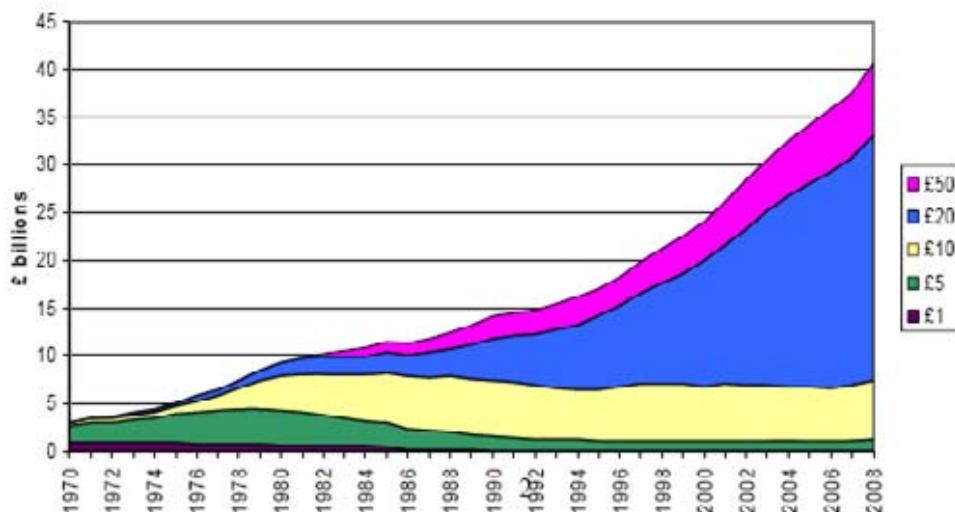
*I am grateful to Helen Allen, Nikki Brownlie, Victoria Cleland, Nick Davey, Andrew Dent, Iain de Weymarn, Lee Dobney, Andrew Hauser, Matthew Hunt, Orla May, Sally Reid and Andrew Wardlow for their comments and assistance.*

It is a great pleasure to be the keynote speaker at Banknote 2009. I want to use my time today to consider the implications of developments in banknote circulation for the future of cash. In particular, I am going to examine what I regard as the apparent paradox of banknotes, namely that the value of notes in circulation continues to rise, while the evidence we have suggests that the use of banknotes as a payment mechanism is declining gently, not I should say dramatically. I am going to illustrate this using our experience of Bank of England banknotes. There are three parts to my remarks. I am going to begin by describing trends in banknote circulation and use. Then I will consider the paradox in these trends. Finally, I will draw out some key challenges that we face in managing the circulation of Bank of England notes. Let me say at the outset that my very clear objective in terms of Bank of England notes is to maintain the integrity of our banknotes, and an important part of that is meeting the public demand. I am not trying to promote or kill our notes.

### **The trends in banknote circulation and use**

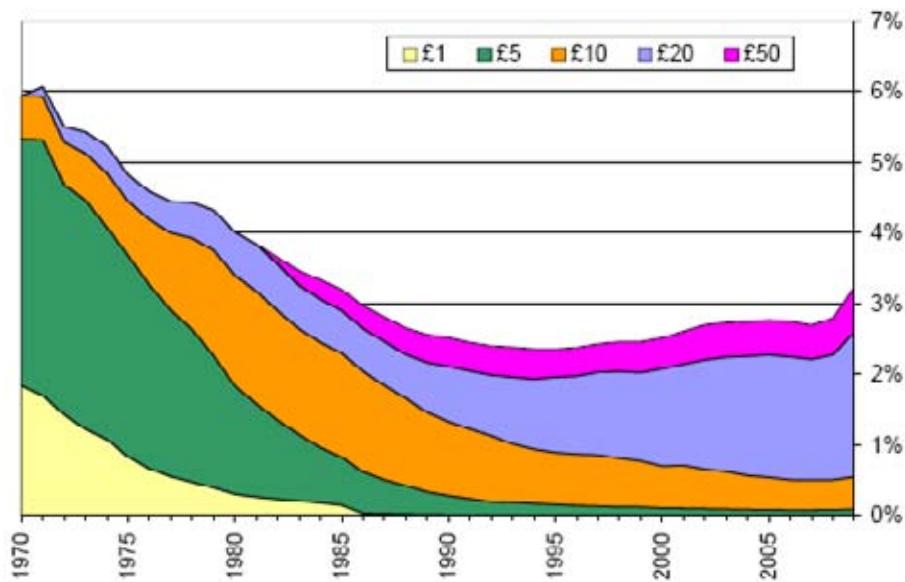
I am going to talk about trends in banknote circulation in the context of the roles of money, as a medium of exchange (payments) and a store of value. Chart 1 illustrates the pattern of the total value of Bank of England notes in circulation over the last forty years. The striking thing is the acceleration of growth over the last fifteen years. This may come as something of a surprise to the “cash is dead” lobby. This chart suggests that nothing could be further from the truth. The total value of our circulation was around £15bn in the mid 1990s, while today it is around £45bn. As the chart also shows, this increase can for the most part be attributed to one denomination, the £20 note.

**Chart 1: Bank of England banknotes in circulation**



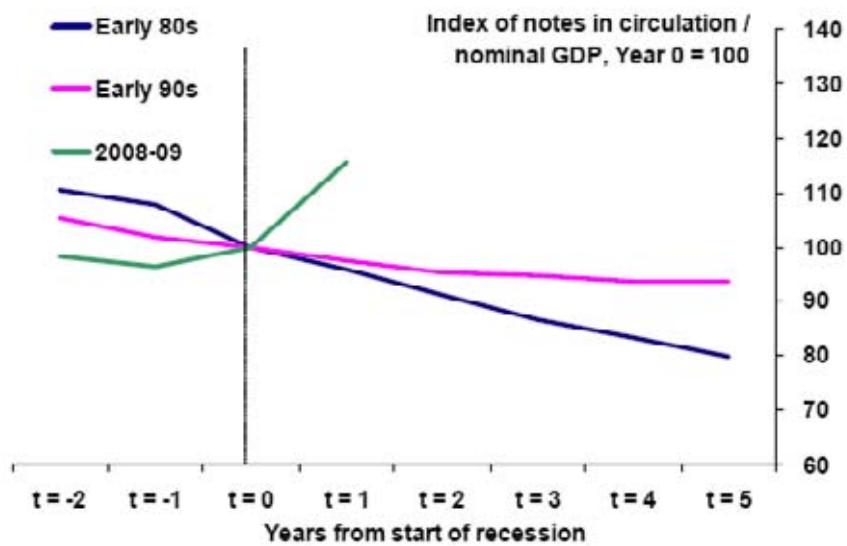
But it is important to put this increase in notes in circulation into context. Chart 2 does this by plotting the value of notes in circulation as a share of the nominal GDP of the UK, again over the last forty years. What we now see is a decline in the value of notes from 6% of nominal GDP in 1970 to a low point of 2.4% in the mid-1990s. Since then, there has been a stabilisation and small increase, followed by a noticeable increase over the last two years, to 3.2% of nominal GDP. We can tell a story about inflation in the UK economy to explain the long-run trend. The decline in the stock of notes in circulation relative to nominal GDP came in the high inflation period of the 1970s, running on into the early 80s. As inflation erodes the value of the currency, the incentive to hold banknotes declined markedly in a period of high inflation. Likewise, this was a period that saw a marked decline in the use of cash for wage payments. The move to an environment of low inflation has subsequently stabilised that situation.

**Chart 2: Bank of England banknotes in circulation as % of nominal GDP**



This pattern of the note issue as a percentage of nominal GDP reveals that something quite noticeable has happened over the last two years. Chart 3 focuses on this development by plotting the course of the note issue to GDP percentage over the recessions of the early 1980s and early 1990s and the current experience. The contrast of the current experience is striking. Two features of the current situation strike me as most relevant in explaining this development: first, lower levels of public confidence in the banking system; and second, very low interest rates which thereby reduce the opportunity cost of holding banknotes (as a non-interest bearing asset).

**Chart 3: Movements in Bank of England notes in circulation/nominal GDP during recessions**

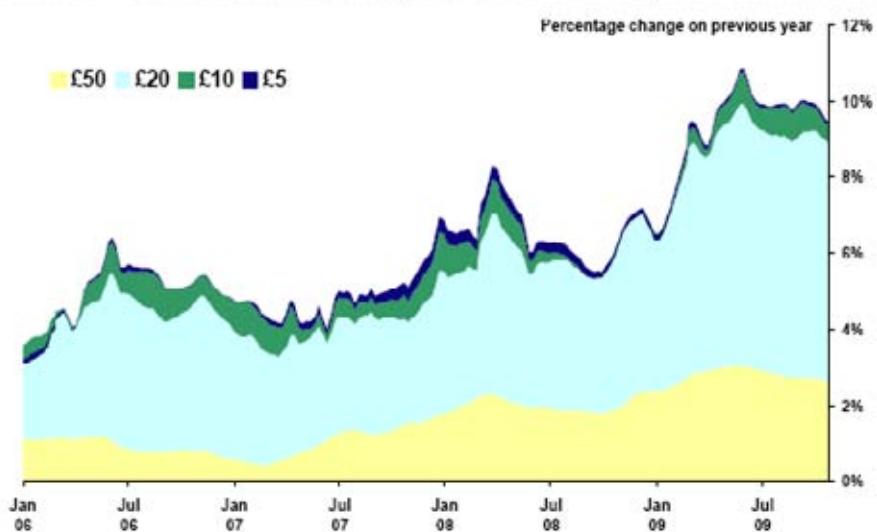


I should add two important points at this stage. First, my understanding is that this pattern over the last two years is reflected in other major currencies. Second, as I will come back to later, banknotes are central-bank money in a form that can be held by the public, in other words the retail equivalent of reserve accounts at the central bank, the latter being wholesale central-bank money. Banknotes are therefore a non-interest bearing store of value. In the current recession, the demand for banknotes has risen, and it is likely that this reflects demand for central-bank money as a store of value. We can add some further evidence to support this story by looking at the pattern of behaviour of the various denominations of Bank of England notes. We issue four denominations – £5, £10, £20 and £50. Chart 4 shows the growth rate of each denomination over the last nearly four years. The striking feature of this chart is the growth rate of the highest denomination note, the £50, which had picked up from the onset of the financial crisis in the summer of 2007, and then rose further from last autumn, in the wake of the failure of Lehman. Since the summer of 2007, the total value of our £50 notes in circulation has risen from £7bn to £9bn. Again, I believe this is a pattern seen in the high denomination notes of other currencies. Chart 5 shows the same story, but this time expressing it in terms of the contribution of each denomination to overall growth. The yellow contribution shows the role of the £50. This strikes me as pretty good *prima facie* evidence that there has been an increase in demand for banknotes as a store of value.

**Chart 4: Bank of England banknotes in circulation: recent movements**

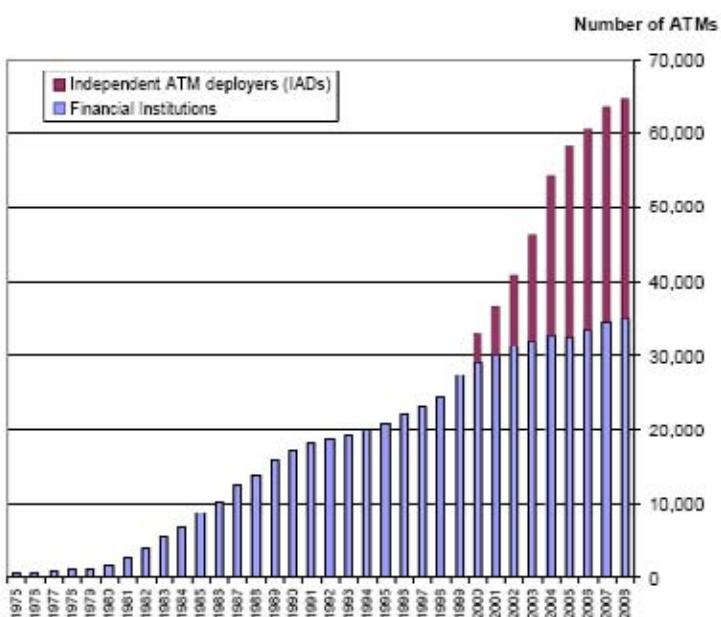


**Chart 5: Contributions to recent growth of Bank of England banknotes in circulation**



So far, I have told the story of trends in demand for banknotes over the last forty years in terms more of the macroeconomics of demand for notes as central bank money. Now I want to turn to the more micro elements of banknote use. The first thing to say here, as Chart 6 illustrates, is that over the last twenty years there has been a major change in the method of distributing banknotes to the public. At the start of the 1990s there were under 20,000 ATMs in the UK, whereas now the number is over 60,000. Since the beginning of the current decade, the major growth has been among the independent ATM deployers, as opposed to financial institution operated machines.

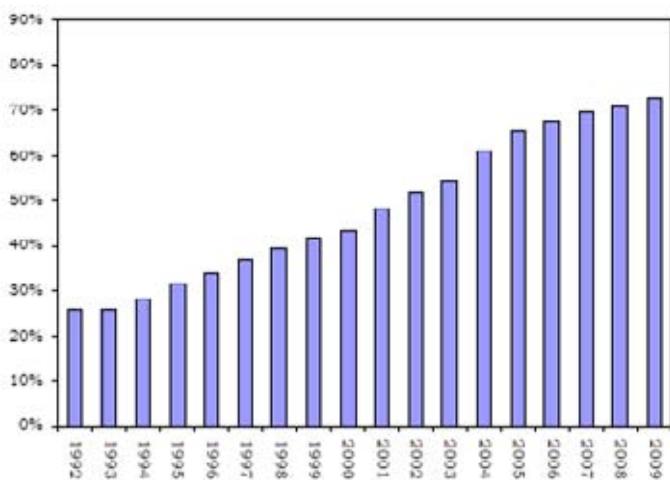
**Chart 6: Growth of ATMs in the UK**



Source: UK Payments

And as Chart 7 shows, ATM withdrawals now account for around 70% of all cash acquisitions by individuals in the UK, compared with 25% in the early 1990s. We can all observe around us the growth of the ATM industry, but it is worth considering how influential it has been on the circulation of banknotes. First, the rise of the ATM has fundamentally changed and modernised the distribution of what is sometimes regarded as an old-fashioned means of payment. Second, it is likely that the growth of ATMs may have led to an increase in notes in circulation for another reason.

**Chart 7: ATM withdrawals as % of all cash acquired by individuals in the UK**

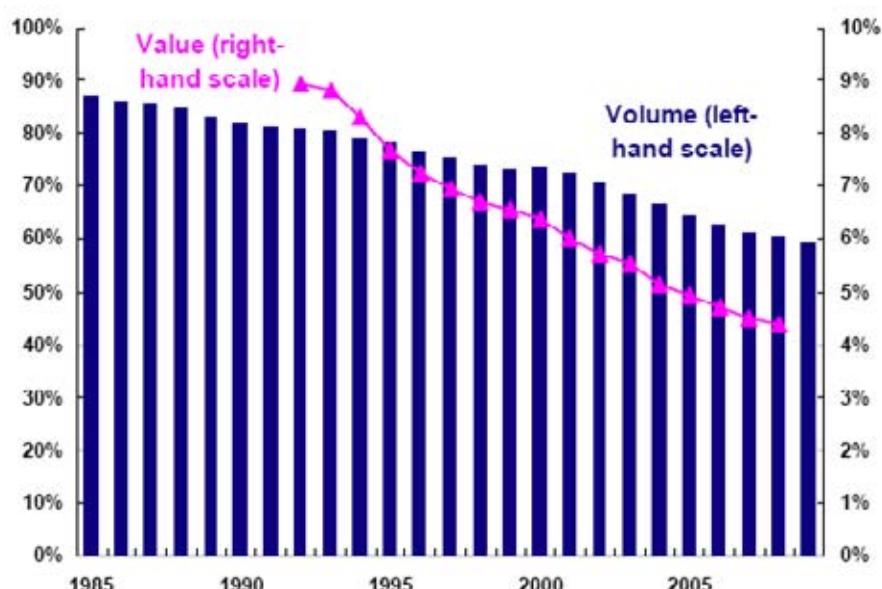


Source: UK Payments

When we talk to ATM operators about their business model they stress that the least acceptable outcome is for their ATMs to run out of notes. As a consequence, ATMs are restocked well before they run out. This means that the overall ATM estate is holding what could be described as idle inventory stock, but these are defined as notes in circulation. But I should be clear that I don't have enough evidence to prove to you that the stock:output ratio for banknotes has gone up, which would run counter to the story in almost all other industries.

I want to move on now to trends in cash usage (I am using "cash" here to mean banknotes and coin). Chart 8 shows survey evidence for the use of cash in retail transactions in the UK over the last 25 years. In terms of the share of the total volume of transactions, cash has fallen from over 80% in the mid 1980s to 60% currently. In value terms, cash accounted for around 9% of all retail transactions in the early 1990s, whereas it is around 4% currently. Cash is generally used for small-value transactions. The latest evidence suggests that the average value of a cash transaction is around £9, with 93% of payments under £5 being made in cash. One in five adults in the UK report that they use only cash for day-to-day transactions, with this group heavily focused on teenagers/young adults and the elderly. The survey evidence also indicates that more credit-constrained individuals prefer to use cash, as a budgeting tool based, I think, on the principle that with cash you can only spend what you have.

**Chart 8: Cash usage as % of all transactions in the UK (by volume and value)**



Source: UK Payments

### The paradox of banknotes

This quick survey of trends in banknote demand and use leaves us with what I regard as the paradox of banknotes. The total value of Bank of England banknotes in circulation continues to rise, but their use in transactions is falling gradually. To recap, I have put forward some arguments that seek to explain this paradox. From a macroeconomic perspective, sustained low inflation has increased confidence in the real value of the currency, while more recently demand for banknotes has risen during this recession, and particularly for high denomination notes, reflecting loss of confidence in banks, and very low interest rates. ATMs have changed banknote issuance. And, banknote use is more concentrated among the young, the

elderly, and those on low incomes. I would add one other thought on the demand for banknotes, which is more to do with human psychology. I suspect most people, however much they use cards, feel a degree of comfort from knowing that they also have cash in their wallet or purse, even if it is as a back-up.

What does this analysis tell us about future demand for cash? As a central bank responsible for the issuance of banknotes, two principles are at the front of our thinking: first, that we issue central bank money, in the form of claims on the Bank of England; and second, that in doing so we must meet the public's demand for our notes. By issuing central-bank money, we are providing both a means of payment and a store of value.

But I think we should recognise that the paradox of banknotes that I have described indicates that there may well be a limit to the growth of the value of notes in circulation insofar as the use of banknotes as a means of payment is not increasing. This is, though, a broad assessment, and I would not wish to offer a judgment on the level at which the demand of the public to hold more banknotes will peak. An important reason for this uncertainty is that, as recent experience indicates, the demand for banknotes as a store of value is dependent on the state of the economy and the financial system. This is a challenge for central banks because we have to manage our own contingency stocks based on a view of likely future demand. This is something to which central banks have had to devote more attention over the last two years.

### **What does it mean to meet the public's demand for banknotes**

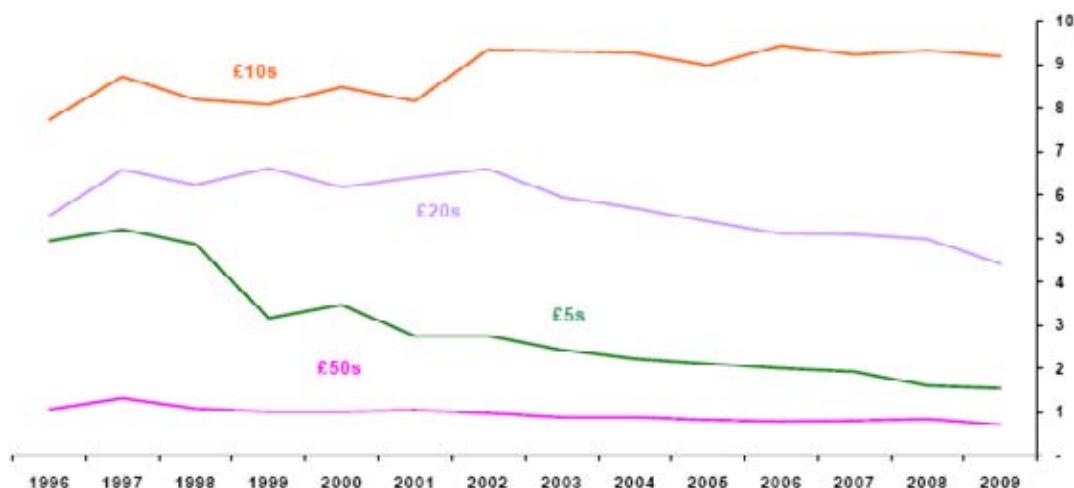
I want to turn now to considering what it means to meet the public's demand for our banknotes. I take this very seriously, with the principle that the public knows best what it wants in terms of what it requires from its banknotes.

I think it is reasonable to say that, in the past, meeting the public's demand for notes was for most part focused on ensuring that the value of notes demanded was available. At the Bank of England we have outsourced much of our role in note distribution for 27 years and our note distribution schemes have been designed around the objective of meeting public demand for a value of notes. There is nothing at all wrong with this objective; indeed, it is the heart of what we do on note distribution. But increasingly, we are trying to meet two other objectives as well: maintaining a satisfactory physical quality of our notes in circulation, and meeting the public's demand for different denominations, ie the denominational mix.

There are two developments which stand out for me in terms of the physical quality of notes. First, modern ATMs can more safely dispense notes of a physical quality that as the issuing authority I would not wish to see in circulation (for example, heavily soiled notes). This is a mundane point, but the latest ATMs are harder to jam, unlike their predecessors. On the whole, financial institutions do not dispense what we regard as unfit notes, even though their ATMs might be able to do so, but as the issuing authority we now have to pay more attention to ensuring that this does not happen. The second development represents the connection between the physical quality of notes and denominational mix. We have most difficulty getting our low denomination note, the £5, into circulation. The main reason for this problem is that few ATMs dispense £5s. The link to quality comes about because once our £5s enter circulation, they stay in circulation and exchange hands more times before they return into the wholesale cash distribution system for fitness sorting, and thus can be taken out of circulation as unfit or re-circulated as a fit note. Put simply, since there are relatively few £5 notes entering circulation they stay in circulation and are not banked and fitness sorted as regularly as they should be. Chart 9 illustrates this problem. It shows over the last nearly fifteen years the trend in how many times per year on average banknotes of each denomination are processed through the wholesale cash centre fitness sorting process. The intuition we think is that the lowest value note should be sorted most often, and the highest value note least often. The reason for this order is that the lowest value note will be nearest to a pure transactional instrument, and the highest value note nearest to a pure store of

value instrument. As the chart indicates, the intuition holds for all denominations except the £5. On average, at £10 note passes through a cash centre for sorting nine times a year, a £20 four and a half times, and a £50 just under once a year. But the £5 has seen a decline from five times a year in the mid-1990s to one and a half times a year now. This goes a long way to explain the problem we have with the £5. We need to see more dispensed so that they are less scarce and therefore they return to cash centres for sorting more often.

**Chart 9: Turnover: How many times are notes in circulation turned over each year?**



In the last few years we have had some success in increasing the total number of £5s in circulation. The overall value of £5s in circulation had been stuck at around £1bn since the early 1990s. In the last two years it has risen to £1.3bn. But the evidence from turnover indicates that we have a lot more to do. Recently, we have therefore run two pilot schemes. One is with a major bank, which has agreed to stock a proportion of its ATMs with £5s and examine what affect this change would have on its cash business. The results to date suggest that the business case for stocking some ATMs with £5s is stronger than previously thought.

At the same time, we have carried out a second pilot study. This has been focused on the business case for major retailers ordering more £5s to use as change. A major supermarket chain has conducted a trial which involves supplying more £5s to many of its stores. Again, the results appear to have been a success. Using more £5s as change has appeared to slightly speed up the overall processing of payments at the checkout and appears to be well received by customers.

I am very grateful to HSBC and Sainsbury's for their help with these two pilots. In the New Year I hope and expect that we will take these examples to other financial institutions and major retailers to make the case for a change of policy towards issuing £5s. This is important because my assessment is that there is a good deal of aversion among the commercial sector to change in this area. Yet our evidence suggests that the public wants more of them and of a better quality. To achieve that objective we need to see more £5s dispensed from ATMs and by retailers in change. With the results of these two pilot exercises, I think we have the evidence to press the case for raising the dispense of £5s, and we will do this alongside reviewing our distribution scheme to ensure that the incentives for note distribution are properly aligned across the denominations.

The story of the £5 illustrates the growing importance of denominational mix in our note distribution policy. We want to work with the commercial sector to ensure that the public's demand for a balanced denominational mix of notes is met.

In conclusion, notes are a big business for central banks. They are high profile in the eye of the public. There is an apparent paradox in that the value of notes in circulation has been rising year after year at the same time that evidence suggests that the use of notes to pay for transactions is declining. I have offered some explanations for this paradox which highlight that banknotes are also a store of value since they are central bank money. But at the same time the objectives of our central bank distribution scheme have grown in number to embrace the physical quality of notes in circulation and the denominational mix. The last of these – denominational mix – poses the biggest challenge, but in the UK I believe we now have evidence to support the business case for ATM and retailer dispense of £5s.

And, finally, I am sometimes asked why this matters to the Bank of England? After all, I can assure you that in the current financial conditions we are not short of difficult challenges. The answer is simple. We should not forget that our job is to ensure that confidence in our currency is maintained – and crucial to that is satisfying the public's demand for our notes.