



Andrew Mills
Director of Circulating Coin

Written testimony to the
United States House of Representatives
Committee on Financial Services

The Subcommittee on Monetary Policy and Trade
Hearing on
“The Production and Circulation of Coins and
Currency”

The Royal Mint’s work to control the cost of producing
circulating coins.

June 11, 2014

Introduction

The Royal Mint is a government owned company with a single shareholder Her Majesty's Treasury, in addition to being our owner HM Treasury is also our UK customer and our primary function is to produce UK coinage and act as their agent in supplying this coinage to banks and the Post Office on their behalf.

The Royal Mint is the oldest manufacturing business in the UK we can trace our history back over a 1,000 years to when we were located in the Tower of London, we then moved to Tower Hill until 1968 when we relocated to a purpose built 38 acre site in Llantrisant, South Wales in preparation for the decimalisation of UK coinage. Please see **Appendix i** for further background material.

In the past 5 years business as usual demand for the 8 UK denominations has totalled just over 1 billion pieces in total and we have a total capacity to make 4 billion pieces a year. The remaining capacity is used to supply struck coins and coinage blanks to overseas central bank and Mints around the world, we also supply tooling, metal recovery services for demoneterised coins and consultancy to these customers, which is why we describe ourselves as the 'World's Leading Export Mint'.

We have day to day contact with officials at HM Treasury acting as their technical advisor; these officials recommend policy to Minister's who make the decision on which policies to adopt that affect UK coinage. Proposed changes are also subject to consultation with industry stakeholders and the general public before implementation.

Technology and investment

The Royal Mint has developed a number of capabilities that enable us to control the cost of producing circulating coins for our customers.

Our aRMour™ plating technology replaces expensive solid alloy coins with a mild steel core electroplated with either nickel, brass or copper. This single layer or mono plate of typically 25 microns allows for a lifetime in circulation in excess of 20 years unlike multilayer plating where the thin outer layer of only 6 to 9 microns can wear through in as little as 5 years in circulation exposing the underlying copper layer. In some countries this has led the general public to believe relatively new coins were going rusty. The Royal Mint invested approximately £20m in two aRMour™ nickel plating lines and a water treatment plant three years ago and is now investing a further £16m in a new multi chemistry plating line that will be operational by Christmas 2015. Please see **Appendix ii** for more detail on aRMour™ electro plating.

Our new award winning iSIS technology for the first time brings a machine readable high security feature that up until now was only available in banknotes to cost effective aRMour™ plated coins. iSIS coins can be read at over 4,000 coins a minute and provides a definitive binary authentication; its either a genuine coin or it's a

counterfeit unlike today's electromagnetic sensing that has a wide acceptance window and varies overtime. The high security additive is co-deposited in the aRMour™ plating layer and is therefore constantly exposed to be read as the coin wears in circulation.

We were delighted when the Chancellor of the Exchequer announced the new One Pound coin in this year's Budget and confirmed that it will contain the iSIS feature.

The importance of the iSIS development is shown by the availability on Ali Baba, an e-commerce company, not only of what until recently were thought to be coinage alloys only available to authorised Mints but also what appears to be struck coin. The new investment mentioned above will include making the new multi-chemistry line iSIS capable and converting an existing line to be fully iSIS capable. Please see **Appendix iii** for more information about iSIS.

United Kingdom Circulating Coin Cost Control

The Royal Mint works to control the cost of circulating coin in two main areas one being UK coinage and the other with our overseas customers. First I will summarise the cost reductions that we have implemented on behalf of HM Treasury since decimalisation.

On February 15 1971 decimal coinage was introduced in the UK, I would like to summarise the changes to this coinage system since its introduction to control its costs and ensure that it remains fit for purpose. To give a perspective of the cost savings or cost avoidance I have calculated the metal saving of each of these changes since they were made based on subsequent issuance of that coin each year from that in which the change was made up to 2013 using London Metal Exchange metal prices on 31 March 2014.

In 1984 the then Chancellor of the Exchequer, Nigel Lawson announced that the decimal halfpenny would be not be manufactures from February of that year and it ceased to be legal tender in December 1984. The halfpenny was a bronze alloy coin weighing 1.78g and in the last complete year of production 190.7m were issued at a metal cost as stated above of £1.4m.

The Royal Mint launched the consultation in July 1987 concerning changes to the coinage structure that led to the reduction in size of the 5p and 10p coins. A booklet was produced which described possible changes to the coinage. It also included some of the results of research by the Department of Psychology of the University of Nottingham into the ability of individuals to distinguish between two different coins by sight and touch.

The publication set out the requirements for a good coinage system, the constraints on change and the need for change.

Four possible options were published and the focus was on reducing the size and shape of the 50p, reducing the size of the 10p, changing the size, shape and alloy of the 5p and the possible removal of the 2p.

In advance of the public consultation The Royal Mint commissioned a survey of public opinion on the four options. This was undertaken by a market research company who questioned 2400 adults in the UK. The results of this survey were published in the consultation document.

The consultation sought to establish whether the proposed changes would lead to savings or increased costs and what advantages or disadvantages would there be for bulk users of coins such as banks, the vending industry, transport and milkmen!

Comments were invited from all these groups and individuals as part of the consultation process.

As a result the smaller coins were introduced in 1992, the change to the 5p has saved £63m in metal costs based on issuance since and the change to the 10p has saved £72.3m.

In 1992 the 1p and 2p coins were converted from a bronze alloy to aRMour copper plated steel to reduce cost, the weight was kept constant for both coins as was the diameter. This meant that most of the public were unaware of the change being made unless they noticed that the new coins were now attracted by a magnet.

The plated 1p has saved £147.4m in reduced metal costs since 1992 and the plated 2p has saved £133.7m over the same time.

A review of UK coinage took place in 1994 with particular focus on replacing the 50p coin with a smaller coin and the possible introduction of a £2 coin.

The Royal Mint launched the consultation in October which outlined the options for consideration. The consultation was expected to take around two months and the public were asked to respond to direct questions as well as inviting additional comments.

Responses to all consultations were returned to the Royal Mint for analysis prior to formal recommendations submitted to HM Treasury. As a result the smaller 50p was introduced in September 1997 ready for coin demand leading up to Christmas that year. The larger 50p was removed from circulation in 6 months to assist the vending industry as co-circulation of different specification coins of the same denomination can lead to lower reliability of their machines.

The metal saving from the reduction in size of the 50p has been £29.2m in lower metal costs since introduction.

In September 2009 HM Treasury announced that the cupro-nickel 5p and 10p coins would be replaced with aRMour™ nickel plated versions to reduce production cost

and increase seigniorage. The initial date for introduction was January 2011, following consultation with stakeholders this was delayed until January 2012 to allow for vending machine operators to update coin mechanisms to accept the new coins.

The aRMour™ nickel plated 5p has saved £10.9m and the aRMour™ nickel plated 10p has saved £9.7m since they were introduced on the same basis as the other savings previously mentioned. Please see **Appendix iv** for historical consultation leaflets, the table of the savings mentioned above and UK coin issuance figures by year.

Overall Summary

Approximate Size Savings

	Year of Change	Pieces to 2013 (bn)	Metal Saving £m
50p	1997	1.0	29.2
10p	1992 (to 2012)	2.8	72.3
5p	1992 (to 2012)	4.9	63.0
Total			164.5

Approximate Solid to Plated Savings

	Year of Change	Pieces to 2013 (bn)	Metal Saving £m
1p	1992	13.2	147.4
2p	1992	6.0	133.7
5p	2012	0.8	10.9
10p	2012	0.4	9.7
Total			301.7

The metal rates are based upon those prevailing from the LME at 31.03.14.

The volumes are calendar year issues.

In the 2012 Autumn Statement the Chancellor of the Exchequer announced the active withdrawal of the cupronickel 5p and 10p coins from circulation and their return to the Royal Mint. The sorting is carried out at private sector cash centres by a partner chosen following a tendering process. In the first year of operation the Pro Active Replacement programme delivered £15m of benefit to HM Treasury. This programme also benefits the UK vending industry in reducing time that the different specification 5p and 10p coins will co-circulate. The programme also benefits the Cash InTransit industry as there is a need for increased transport.

For these changes to take place it cannot be emphasised enough how important stakeholder engagement is from early on in the process. The Royal Mint has regular dialogue with trade associations that represent different facets of the coin acceptance industry including vending, parking and amusements and retailers. We also have close working relationships with the major coin mechanism and sorting companies that provide equipment in the UK. This is addition to institutions such as the Royal National Institute for the Blind

Not only does the UK coinage model frequently review the costs of production and market acceptance of coins it also ensures that new coins are not struck when surplus coins are held by the industry members as once coins are in circulation they cannot be returned to HM Treasury or the Royal Mint. The Royal Mint, banks and the Post Office meet weekly to trade surplus coins with deficit members. Coins are traded at face value plus a delivery charge from the surplus member.

Overall costs are also optimised by using a forecasting process agreed between UK Payments (an industry body that represents retail banks and cash handling companies), the Royal Mint and HM Treasury.

The Royal Mint establishes the estimated annual demand for the year by the end of each January. This will be based on demand from previous years, excluding any years where demand has been distorted by unusual factors.

The industry uses individual member forecasts to establish an overall forecast for the annual demand within the same time scale for comparison purposes.

On the basis of the above, there is an agreed annual estimate.

In addition, prior to each quarter, the Royal Mint will prepare forecast schedules of estimated despatches broken down by month, to be discussed with the industry and finalised by the Royal Mint and the industry no later than one month in advance of each quarter.

Total volumes estimated to be available for drawing each month are packed and available from the first week of each period, with confirmation of availability of the volume agreed for each period provided to the industry by the Royal Mint by the end of the first week of each period.

Since 2013 there has been a Coin Circulation Scheme (CCS) in the UK that is an agreement between all stakeholders involved in forecasting, distribution, processing and management of coin in the UK. The CCS sets out what is in the collaborative space for the UK coin industry and the roles and responsibilities of each member.

The CCS covers many of the items previously mentioned issue of new coin, changes to size and specification, introduction or withdrawal of a denomination, changes to specifications, packaging standards, forecasting and detection of counterfeit coins.

Recent Activity in the United States

The Royal Mint provided input into the Concurrent Technologies Corporation Alternative Metals Study and met with various stakeholders. Please see **Appendix v** for a summary of the report regarding the Royal Mint's contribution and a paper summarising other meetings in the United States.

Overseas Currency Costs Control

Examples of the Royal Mint controlling the cost of circulating coins for overseas customers are both in the active conversion of solid alloy coins to aRMour™ plated coins and the cost control of the total currency budget by converting low denomination banknotes to coins.

A recent example of the former is the three year contract award to the Royal Mint by the central bank of Poland to supply three aRMour™ brass plated struck coin denominations to replace solid alloy versions. An example of the latter is the conversion of the Tanzanian 500 shilling banknote to aRMour™ nickel plated steel struck coin including a latent image to provide overt security and public engagement.

Appendix

Appendices relate to respective material submitted for the record with this testimony to the United States House of Representatives Committee on Financial Services Subcommittee on Monetary Policy and Trade on June 11, 2014.

Appendix i

TRM, Making money for everyone - (TRM Opening Presentation_V2 November 2012.pdf)

TRM, The Worlds Currency - (TRM Overview Flyer 2013.pdf)

TRM, Manufacturing – (Manufacturing Presentation_V1 January 2013.pdf)

Appendix ii

TRM, aRMour® – (TRM aRMour Presentation – V1 October 2012.pdf)

TRM, aRMour® Plated Steel Coins and Coin Blanks – (TRM Armour Brochure 2013.pdf)

Appendix iii

iSIS^{TRM} Integrated Secure Identification Systems, The new generation of coin – (iSIS from the Royal Mint 2013.pdf)

TRM Coin Press – (TRM Coin Press – Customer Edition Spring 2014.pdf)

iSIS^{TRM} Brochure – (TRM iSIS in UK 1 pound brochure.pdf)

iSIS^{TRM} Integrated Secure Identification Systems – (TRM iSIS Sales Presentation – V1 May 2013.pdf)

Ali Baba screen shot One Pound Coin

Appendix iv

TRM, Mintage Figures – (RMM-Mintage-Figures1.pdf)

Appendix v

Extracts from the Alternative Metals Study – (US Coinage Reform - TRM Summary of CTC Report.pdf)

Historical consultation document – (Summary of Public Consultations.pdf)

Briefing Paper For United States Congressional Committees And Stakeholder Groups – (The Royal Mint Briefing Paper.pdf)