Word count: 2,345.

Who Needs Money? Varying Levels of Monetisation across Seventeenth Century England and Wales

This paper presents the first mapping of relative depth of monetisation across England and Wales in the early to mid-seventeenth century. Using Portable Antiquities Scheme data of individual coin losses it considers the ratio of smaller to larger specie in different areas, and engages with issues with this data, often unfamiliar to Economic Historians. These are used instead of the absolute minting figures used by Luccassen, and by Palma in England, which can only be used to consider deep monetisation on a national scale. It is able to demonstrate how this ratio changed over time and the areas of deeper monetisation expanded. This changing engagement with, and frequency of, monetary payments was a key part of the Financial Revolution of the seventeenth century, often seen as an essential precursor to the developments of the eighteenth and nineteenth centuries. This data provides a background to considering the regionally varied adoption of a new monetary instrument, privately supplied coinage in the mid-seventeenth century - the topic of my wider research.

Debate exists about the extent of availability of specie (physical coins) in seventeenth century England. Muldrew in his influential 'Hard Food for Midas' argued for a continued shortage of coinage, which more extreme readings have taken to suggest coins would be rare items in most households.[1] Palma has more recently pushed back against this, using minting figures and rates of finds to argue for plentiful coinage supply.[2] Both can be true if this plentiful supply was still failing to keep up with an increasing demand, or was concentrated with specific groups (as Muldrew argued), or varied regionally, as in the eighteenth century when problems were experienced in industrialising areas.[3]

With population, and GDP, thought to be increasing slowly in the early to mid-seventeenth century increased demand is assumed to come from increased monetisation of the economy.[4] Whether this change came from increased urbanism, working for cash wages, growing consumption of imported goods, or increased acquisition of necessities through monetary payments.[5] Endemic lack of coinage has been argued to impact wage levels, and risk taking in credit, but such analysis tend to focus on a country as a whole, rather than considering variations between areas, and

[1] Muldrew, 'Hard food for Midas'.
[2] Palma, 'Money and Modernization'.
[3] Dykes, '*Coinage and currency in eighteenth century Britain',* 61; Desan, *Making money,* 191-206.
[4] Broadberry et al, *British Economic Growth*, 31, 251.
[5] Whittle et al *The Experience of Work*, 4-8.

groups in the economy.[6] A separate and extensive literature of course exists on monetary supply shocks and short term tightening.[7] As Mayhew identified nationally, denominations may have different shortages as well as different rates of circulation.[8]

Characterising deep monetisation

Lucassen's concept of *deep monetisation*, rather than simple monetisation (an economy with money), describes a situation whereby coinage was used daily by most, in low value transactions.[9] He defined it as requiring 'low value' coins less than or equal to the average hourly wage in sufficient quantity to supply five times this hourly wage per capita.[10] Palma has attempted to identify whether this level was met in England at various periods.[11] Although some aspects of his method are problematic (particularly the use of eighteenth-century Portable Antiquities Scheme data) it suggests conditions for deep monetisation were met in the mid-seventeenth century.[12]

It is not possible to suggest areas that meet Lucassen's definition regionally, within a currency area, as it requires figures for total supply. Rather than continue to think of deep monetisation as an absolute I suggest it is possible, and more interesting, to think about areas of deeper or shallower monetisation. This paper does so by examining not the total numbers of coins available but the ratio of coinage, i.e. the proportion of low to high value coins.

Such a ratio within a currency area is framed by supply. Absolute supply, funded by brassage and seigniorage, the fees and profit made on production, in this period, favours the creation of high value coins. Regional supply of coinage is shaped by economic flows and distribution issues. British audience members may remember the recent debate about getting £5 notes into circulation, as cash machine operators naturally favoured stocking machines with high value notes.[13] The issues, and fears, in moving large volumes of specie in the seventeenth century are well evidenced, and provided a ready market for informal and formal alternatives.[14] The flow of specie into

[6] Muldrew, 'Wages and the problem of Monetary Scarcity', recently challenged by Paker et al, 'Nominal Wage Patterns', 190-192, Miskin, 'Silver not sterling'.
[7] Reviews of this in the Early Modern period include Mayhew, 'Prices in England, 1170–1750', Munro 'The monetary origins of the 'Price Revolution''. Adam Brzezinski et al, 'The vagaries of the sea'
[8] Mayhew, 'Population, money supply, and the velocity of circulation'. Sargent and Velde, *The big problem of small change*.
[9] Jan Lucassen, 'Deep Monetisation'.
[10] Ibid, 74.
[11] Palma 'Money and Modernization'. He set the 'low value' coin as one pence (p247), although coins up to three-halfpennies would also fit Clarks (contested) wage data for the period, Clark, 'The Long March of History', Humphries and Weisdorf, 'Unreal Wages?'.
[12] Palma, "Money and Modernization", 247.
[13] 'Challenges in Note Circulation – Availability and Quality of Low Denomination Notes' Speech given by Victoria Cleland, Head of Notes Division, Bank of England At the ICCOS EMEA: The Currency Cycle Conference, Barcelona 21 March 2011
[14] Melton, *Sir Robert Clayton*, 36; Muldrew, 'The Social Acceptance of Paper Credit'.

areas for military campaigns in the 1640s is only weakly evidenced, if at all, against background supply.[15]

In general, we can propose a simple fall off model where we would expect to see less coinage further from the issue point, in this case the mint in London, as observed for early medieval mints for example. [16] Variations in this pattern reflecting trade and coinage flows and barriers. Privately issued coinage, with its thousands of issue points provides a much better medium for exploring these flows and barriers, as in my forthcoming PhD. Because we are comparing denominations this concentric pattern would only be visible if the velocity of circulation or the distance travelled in each transaction varies between denominations. Disruptions to the pattern would suggest the use of small coinage was more common in transactions into or within an area, i.e. that area had deeper monetisation.

Lost and found: using stray finds data recorded by the PAS

Coins lost are assumed to reflect those in use within an area, with opportunities for loss in each transaction or carrying of coinage. We would expect variation between denominations: high value coins are carefully stored, less likely to be carried every day, and diligently searched for if lost. However larger pieces of silver or gold are more likely to be found using a metal detector, and more likely to be offered for recording. These factors apply everywhere so, when comparing areas (rather than providing absolute figures), they are less problematic.

The Portable Antiquities Scheme (PAS) provides a novel dataset for exploring this issue on a regional and local, rather than national, scale, as Palma attempted to use it. The PAS is a national scheme for the voluntary recording of archaeological objects found by members of the public in England and Wales. Most coin finds are made by metal detectorists searching on farmland. Starting in 1997, it has been very successful, creating publicly accessible records of 1.8 million objects.[17] PAS data has been used to examine monetisation and variations in the use of different denominations, in the Roman period by Walton and by Bonnici, and in the medieval period by Kelleher, but has not been applied to the Early Modern period until now.[18]

PAS data incorporates regional bias caused by a wide variety of factors including constraints on metal detecting, such as modern land use, and variation in liaison success. These have been studied, and mapped, in detail by Robbins.[19] For the present study the use of comparative mapping, of low value coins against all coins, helps

[15] Besly ‘Mapping conflict’, 192.
[16] Metcalf, ‘As easy as A, B C’
[17] www.finds.org.uk
[18] Walton, *Rethinking Roman Britain*, Stephanie Bonnici (Kings College London), ‘Settlement and connectivity on Roman Vectis: the potential of PAS-recorded coinage on the Isle of Wight’ unpublished PhD thesis 2025; Kelleher ‘The monetisation of Medieval England and Wales’.
[19] Robbins, ’Balancing the Scales’

smooth these issues as both parts of the dataset are likely to be equally affected. Variation in practice over time and between recorders can also create biases. While again this was smoothed by comparing the data internally, it reduced the dataset for some counties; data cleaning and additional searches were undertaken to reduce this issue.

The data

The initial dataset comprised all individual PAS records of coins dated between 1550 and 1660, including foreign coins (n=37,234). Hoards were excluded due to the biases in selection and because coins put aside for hoarding were often a store of long-term value and not circulating. These dates were chosen to represent all coins likely to be circulating in 1660, the mid-point of trade token issuing.[20] PAS recording guidance means post-1660 coin recording is highly variable between areas and officers, causing issues in looking beyond this date.[21] Additional searches were carried out for coins missing dates, to increase the dataset in areas with less coinage, particularly Wales and the far South West.[22] This added 2,581 coins to the 36,452 remaining after data cleaning.[23] Analysis was carried out with this complete dataset (n=39,033).

Consideration was given to tapering the number of Elizabeth I coins, the largest group, given many might have been lost in the sixteenth century. While a c.3% loss rate per year for Early Modern silver coinage is often suggested, Oddie argued the loss rate varied regionally, and it may also have varied by denomination.[24] Many hoards of 1640-1660 have a majority of Elizabeth I coins, either because of long term formation of the hoard or local availability. [25] Even a 1% per annum loss rate might be too high for some regions/denominations, and too low for others. The resulting picture should therefore be seen as broadly that of the first half of the seventeenth century. To narrow down this period a second analysis was carried out with only Charles I and Commonwealth coins (n=13,232).

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[20] Based on evidence of hoards: Besly and Briggs 'Coin hoards of Charles I and the Commonwealth of England'.
[21] https://finds.org.uk/postmedievalcoins; while new guidance in 2017 allowed for selective recording of artefacts after 1540 this does not seem to be applied to coins: https://finds.org.uk/getinvolved/guides/recordingguidance.
[22] Records without either the ruler or start and ends dates were excluded by this method. Retrieving these would require checking every record individually and as the intention was to compare regions rather than provide absolute numbers further data cleaning wasn't attempted.
[23] The removed 'coins' were most lacking findspots or not coins, i.e. jettons. Experience with similar datasets suggests findspots could be assigned to some of the excluded pieces by examining each for data in other fields, such as parish name.
[24] Challis, ed., *Royal Mint,* 195; Oddie 'The Circulation of Silver 1697-1817'. Pepys suggests a 87% return rate for Commonwealth silver, most of which had been in circulation for at least five years at the point of recall. 'The Diary of Samuel Pepys', 148 and 224; Cook 'New hoards from seventeenth-century England', 156.
[25] Chance loses from the mid-seventeenth century also often include coins of Mary and Elizabeth, suggesting this is not just a factor of hoarding, e.g. Brown and Dolley, *Biography of Coin Hoards*, p.34, Wyatt *LON-07C76A.*

Coins were divided into 'low' or 'high' value. The division was placed below sixpence, the lowest denomination to commonly appear in mid-seventeenth century hoards.[26] 8,529 were assigned as 'high', the remainder as 'low', a ratio of 1:3.6. Removing mid-value coins (groats, sixpences and foreign equivalents), led to a much higher ratio of 1 high to 8.8 low, as sixpences were a large proportion of the coins initially assigned as 'high'. Considering only coins of 1.5 pence or lower as 'low' (Lucassen's definition) gave a ratio of 1:3.1. Translating this proportion into coins per head is problematic. However given the 'deep monetisation' test is thought to have been passed nationally, it seems likely that areas with a similar or higher proportion of low value coins than average, i.e. over 75%, would meet the definition.

The mapping of all coins mirrors PAS recording density, with higher numbers across the South East and East, particularly Norfolk and Suffolk, and lower rates in Wales and Devon, due both to numbers found and staffing variations. Comparing the 'low value' coins to all coins smooths out many of the biases in recording but cannot resolve any lack of data. A mapping limit was set at 4 coins per 40km hexagon or 10 coins per county. This limit was deliberately low, as areas with proportionately fewer low value coins have, as a consequence, fewer coins in general, so are missed by excluding areas with few coins. On the edges of the areas with too little data there is clearly a trend not just to fewer coins but fewer low value coins (Figure 1). Grouping this into counties shows a similar, albeit less granular, picture.

[26] Foreign coins were assigned based on legal equivalences for the most common circulating coins, Scottish and French denominations for example, and by metal value for others.

Results

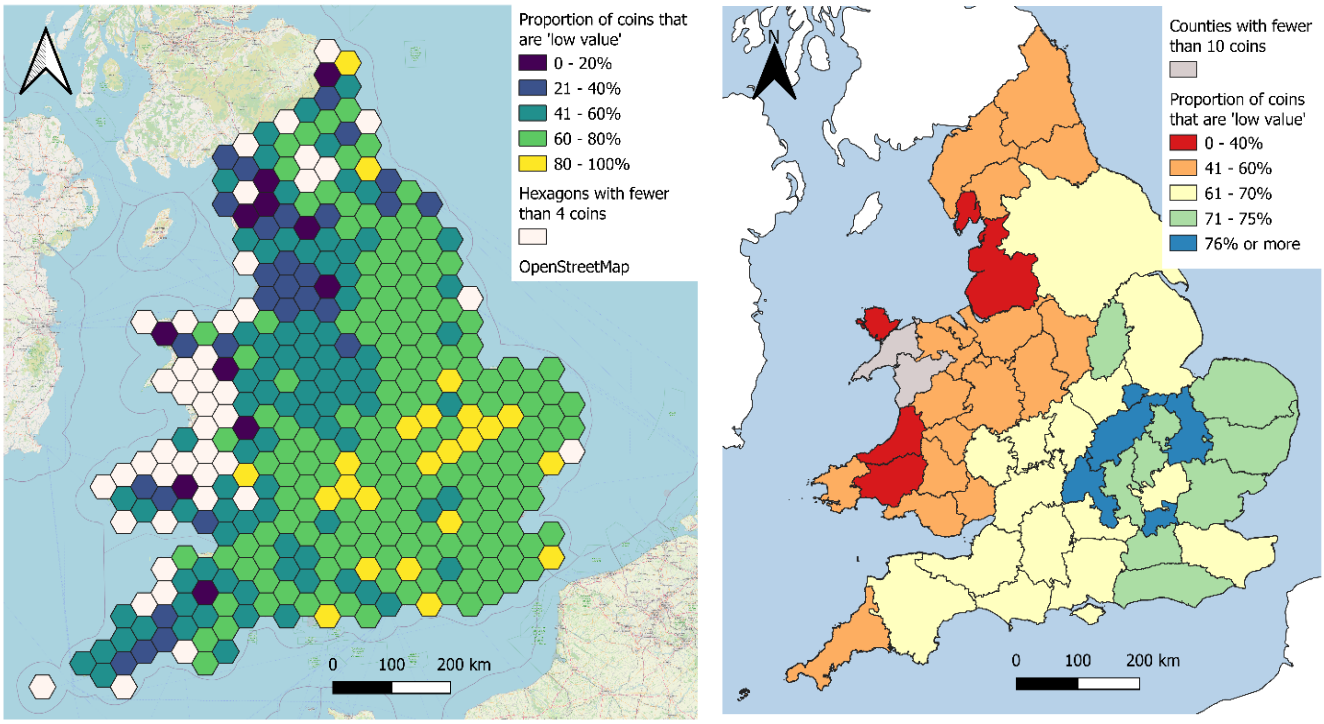

Figure 1: Comparison of the proportion of PAS records of single coin finds issued between 1550-1660 which are low or high value, as defined in the text. a) shown as hexagons measuring 40km across, b) shown at county level. Breaks have been chosen to maximise the discrimination of areas.

There is a clear drop off further from London - the North and West vs South East pattern, so often seen in England. If the drop off was even between denominations the reduction in low and high value coins would cancel out. Rather, the high value coins are travelling further or quicker, a point reiterated with Scottish coins below. The reasons for this may relate to preferential need for high value coins in the transactions occurring east to west or low value coins west to east; less everyday use, and loss, of small coinage in these areas; or preferences to distribute higher value coinage.

Regardless of reasons, it remains the case that individuals in these areas had different access to types of specie. This was problematic for those who needed small coinage to make, and receive, regular payments - "all sorts of people who buy and sell small wares…their feeding being from hand to mouth", as Voilet put it in 1651.[27] This lack was not just a consequence of economic patterns but actively shaped them. As well as credit and wage issues raised by Miskin and Muldrew, the lack of small change in this area could encourage alternative transactions and leases, in attempts to reduce the regular need for coinage payments, or the use of replacements, such as trade tokens.

[27] Voilet, Thomas. 1651. 'Reasons Submitted by Thomas Voilet to the Mint Committee to Prove the Necessity of Making Farthing Tokens, and Half Farthings Either of Copper or Tin, at such a Full Value that They Should not be Counterfeited Abroad or at Home, There being no Advantage to be Made of Them but for Payment of Workmanship', in Everett Green '*Calendar of State Papers, Domestic Series, 1651',* 313–15

Beyond this broad picture there are interesting variations. While the South East generally has a higher proportion of low value coins the highest levels are to the north of London, in Cambridgeshire, Northamptonshire and Oxfordshire (Figure 1a). These were all areas with relatively high employment in secondary and tertiary occupations (although not the highest).[28] The North West is consistently lower that the North East (Figure 1a). Mapping Scottish coins suggests this is partly due to differential penetration by Scottish copper (Figure 2). Scottish coins show a similar differential between silver and copper coins, which travel less far and have different fiat and commodity affordances.[29] This may partly be an issue of availability, rather than demand. The very early adoption of trade tokens, low value private coinages, in Lancashire in the 1650s, suggests an unmet need for smaller denominations.

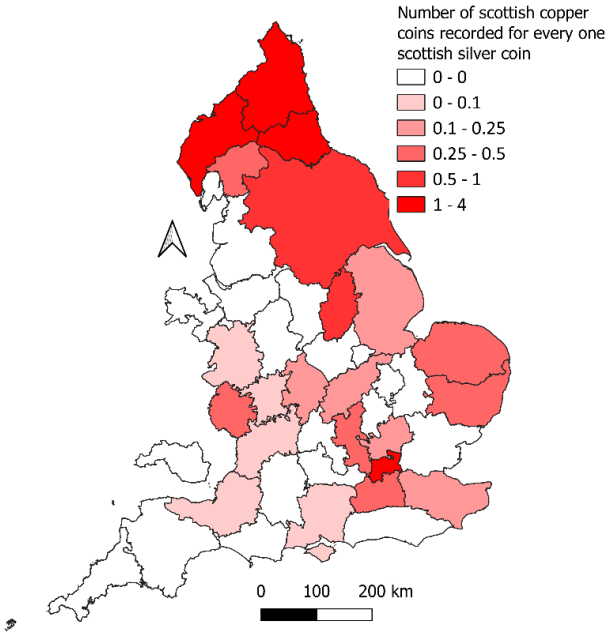

Figure 2: Distribution of Scottish copper coins compared to the distribution to Scottish silver coins recorded by PAS. Counties with no Scottish silver coins are not shown.

Focussing on coins of Charles I and the Commonwealth shows a general increase in the proportion of low value coins, with almost all of England surpassing the 75% threshold for 'low value' coins (Figure 3a, counties in blue). This may reflect genuine change over time with 'deep monetisation' spreading to more areas; mass production of rose farthings; or the removal of high value denominations through hoarding or outflows during the Civil Wars.[30] A more fine-grained differentiation of areas with the highest proportions of low-value coins shows a strong consistency (Figure 3b). The North East

[28] https://www.economiespast.org/
[29] Scottish silver was made legal tender in England after the accession of James I; the copper/billon was not. The silver also had a higher commodity to nominal value ratio.
[30] Besly, 'Mapping Conflict', 189.

remains higher than the North West. The area to the north of London is still higher than the rest of the South East but the area with the highest proportion is slightly further east, including Norfolk, also an area of high tertiary employment.[31]

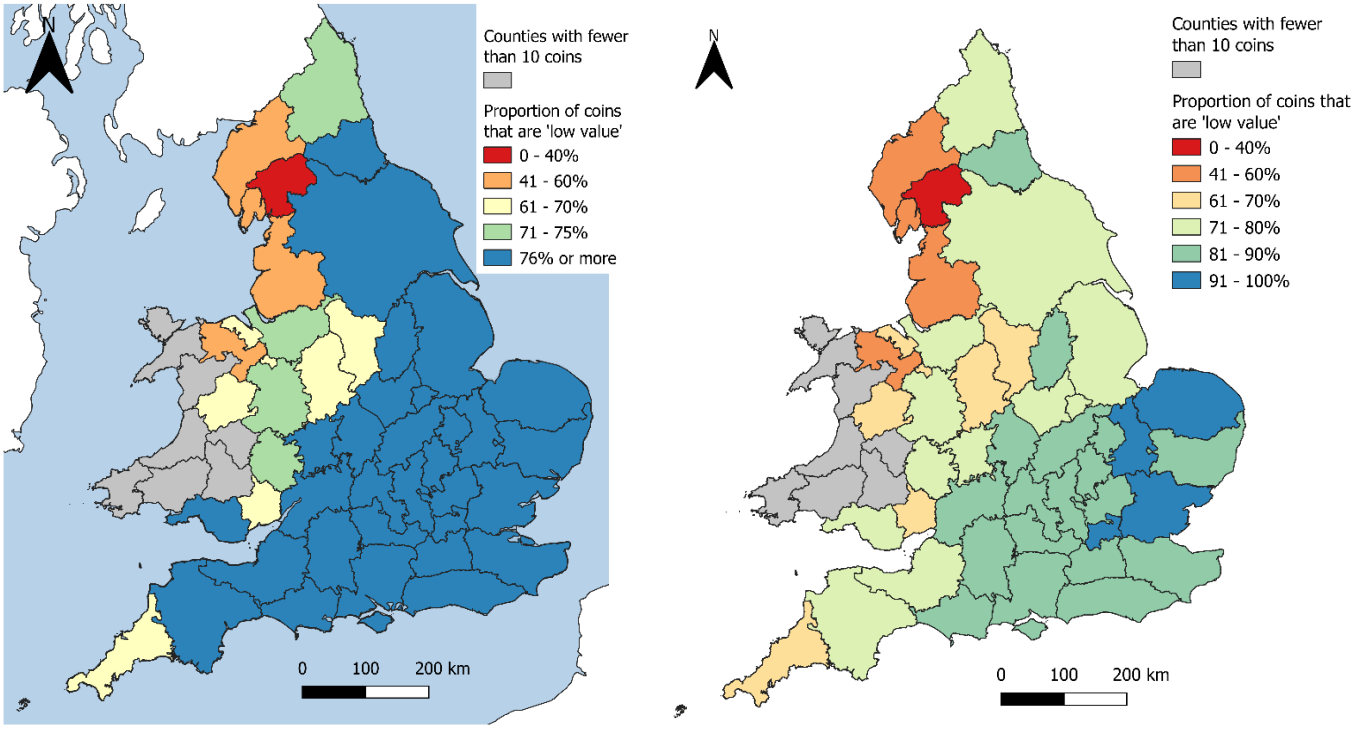

Figure 3 Comparison of the proportion of PAS records of single coin finds issued by Charles I and the Commonwealth which are low or high value, as defined in the text: a) with blanket 75% threshold, b) with fine-grained divisions, above 70%. Breaks have been chosen to maximise the discrimination of areas.

Concluding thoughts

This work has demonstrated a new technique to examine monetisation regionally within a currency system. It could be readily applied elsewhere, although more easily when coin finds are already recorded nationally, as in The Netherlands and Switzerland. Similar data could be gathered from excavations, providing complementary information to PAS data in urban areas and allowing more fine-grained analysis. This would of course be a much more time-consuming project.

The paper highlights new ways of thinking about monetisation in this period. We can look at a range, rather than an absolute, but need to be alive to regional variations, when suggesting monetary shortages in the past. We should also consider the different experiences of different groups who relied on money not just as an abstract but on the grubby pieces of paper and ill struck pieces of metal, which shaped their economic experience.

[31] https://www.economiespast.org/

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