

The Quantity of Money in England 1180-1247: a Model

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Money does matter.¹ More particularly, its quantity, be it shortage or abundance, is a subject of unquestionable importance in the debates over the economic history of the twelfth and thirteenth centuries.² Moreover, its importance is not restricted to primarily economic questions such as inflation or trade; the quantity of money has an obvious relevance to the increasing monetization of social, political and even religious relationships that might

¹ I would like to thank J.L. Bolton, E.J. King and N.J. Mayhew for their kind and useful comments on earlier drafts of this article.

² Quite a substantial literature has by now grown up on these subjects, though not always restricted to the period dealt with in this article. For the debate on the relationship between the quantity of money and price rises, see M.M. Postan, *The Medieval Economy and Society*, (London 1972), pp. 235-41, 248-9; P.D.A. Harvey 'The English Inflation of 1180-1220' *Past and Present* 61 (1973), pp. 25-30; E. Miller and J. Hatcher, *Medieval England: Rural Society and Economic Change 1086-1348*, (London 1978), pp. 68-9; J.L. Bolton, *The Medieval English Economy 1150-1500*, (London 1980), pp. 72-8; A.R. Bridbury 'Thirteenth-Century Prices and the Money Supply', *Agricultural History Review* 32 (1985), pp. 1-21; R.C. Palmer 'The Economic and Cultural Impact of the Origins of Property: 1180-1220' *Law and History Review* 3 (1985), pp. 375-396; N.J. Mayhew 'Money and Prices in England from Henry II to Edward III' *Agricultural History Review* 35 (1987), pp. 121-132; D.L. Farmer, 'Prices and Wages' in H.E. Hallam (ed), *The Agrarian History of England and Wales, II 1042-1348*, (Cambridge 1988), pp. 718-25; J.L. Bolton 'Inflation, Economics and Politics in Thirteenth-Century England' in P.R. Coss and S.D. Lloyd (eds), *Thirteenth-Century England IV*, Proceedings of the Newcastle upon Tyne Conference 1991, (Woodbridge 1992), pp. 1-6. For some of the wider implications of changes in the quantity of money, see, for Europe in general, P. Spufford, *Money and its Use in Medieval Europe*, (Cambridge 1988), chapters 5 and 11, "New Silver c. 1160- c. 1330" and "The Place of Money in the Commercial Revolution of the Thirteenth Century" respectively. For England in particular, see Bolton, "Inflation, Economics and Politics in Thirteenth-Century England", pp. 1-14. Also, I am grateful to have been able to read, in advance of publication, J.L. Bolton's article 'The English Economy in the early Thirteenth Century',

be thought of as one of the most notable features of the High Middle Ages. Discussion of such issues can hardly avoid making assumptions, explicit or implicit, about the quantity of money, and those assumptions have to be, whether we like it or not, quantitative. It is surely better to make these assumptions explicit, for numbers, even when expressed as a tentatively estimated range of possibilities, have their own useful kind of logic.

The task of writing in quantitative terms about money in England in the period 1180 to 1247 is not without its difficulties. The period looks back from the first general recoinage for which mint output records - and incomplete records at that - survive, peering into the prehistory of the English coinage. Here the evidence is mostly of a numismatic - one might say archaeological - character. Precision and certainty are not to be expected from such evidence.

There is also a problem of theory. What elements should we regard as constituting money in this period? There is no straightforward answer to this question even for the present day, and we cannot expect it to be any more straightforward for the Middle Ages. The usual defining attributes of money - that it should be used in transactions, as a store of value and as a unit of account - do not in themselves restrict money to the silver-based coinage. Perhaps we need not worry too much about large-scale money creation through deposit banking in twelfth- and thirteenth-century England. Nor do we have any evidence for England in this period of a significant use of silver ingots, which in some areas of Europe, as in England in earlier times, could fulfill all the attributes of money.³ More significant, for England at least, were the holdings of silver

forthcoming in *King John: New Interpretations*, to be published by Boydell in 1999. Interesting discussions of the quantity of money and its relationship to the circulation of money can be found in D.M. Metcalf, "A Survey of Numismatic Research into the Pennies of the First Three Edwards (1279-1344) and Their Continental Imitations" in N.J. Mayhew (ed), *Edwardian Monetary Affairs 1279-1344*, British Archaeological Reports 36, (Oxford 1977), pp. 7-14; N.J. Mayhew, "Modelling medieval monetisation" in R.H. Britnell and B.M.S. Campbell (eds), *A Commercialising Economy: England 1086 to c. 1300*, (Manchester 1995), pp. 55-77; N.J. Mayhew "Population, money supply, and the velocity of circulation in England 1300-1700" *Economic History Review* 48 (1995), pp. 238-257; H.A. Miskimin "Silver, not sterling: a comment on Mayhew's velocity" *Economic History Review* 49 (1996), pp. 358-360; N.J. Mayhew "Silver, not sterling: a reply to Prof. Miskimin" *Economic History Review* 49 (1996), p. 361.

³ Spufford, *Money and its Use*, pp. 209-16.

in decorative or utilitarian forms, such as in silver plates and cups. If not quite money in all of its senses, they could clearly fulfill the role of money as a 'store of value' while being easily convertible into coin.⁴ In certain restricted circumstances many different kinds of precious objects, or 'treasure', could be used, not only to store value, but even in some transactions. There is little hope of being able to quantify such kinds of near-money for any period in the Middle Ages. These complications should not deter us. Modern economists can and do choose among many more or less restrictive definitions of money. They do so on grounds of measurability and on grounds of utility in terms of the purpose for which the definition has been chosen. Medieval historians must use the only definition of money that they can possibly hope to measure - coined money - and then assess its utility as an explanatory variable, remembering always what it is precisely that they have defined.

The present article is certainly not the first attempt to put numbers to the quantity of money in England - money defined here as the quantity of the coinage in England - for the period from 1180 to 1247. Much good, pioneering work has already been done, both on mint output as well as on the quantity of money.⁵ Nor is the present article an attempt to overturn or radically revise the figures that have resulted from this work. Rather, it is an attempt to investigate some of the implications of these figures together with the results of some work of my own on coin exports. It also suggests a flexible model through which to view this whole period of changes in the quantity of money, a model that I hope may be capable of absorbing further research, and which may have uses in other periods.

Although primarily concerned with the period between 1180 and 1247, this article will also deal to a limited extent with the recoinages of

⁴ For gold and silver vessels being counted as part of Henry I's treasure, along with coins, see E.J. King (ed), *William of Malmesbury, Historia Novella, The Contemporary History*, transl. K.R. Potter, (Oxford 1998), pp. 30-33.

⁵ C.E. Blunt and J.D. Brand 'Mint output of Henry III' *British Numismatic Journal* 39 (1970), pp. 61-6; M.M. Archibald, "Wastage from Currency: Long Cross and the recoinage of 1279" in *Edwardian Monetary Affairs*, pp. 167-184; D.M. Metcalf, "A Survey of Numismatic Research" in *Ibid.*, pp. 26-29; S.E. Rigold, "Small change in the light of medieval site-finds" in *Ibid.*, pp. 59-80; N.J. Mayhew, "Frappes de monnaies et hausse des prix de 1180 a 1220" in J. Day (ed), *Etudes d'Histoire Monétaire*, (Lille 1984), pp. 159-77; and 'Money and Prices', pp. 121-132, especially pp. 124-5 and Table 1.

1158 and 1279, and the quantity of the coinage at those times. This extension of the period will provide some confirmation that the quantities I shall be discussing 1180 and 1247 are of credible orders of magnitude. As will be shown, estimates for 1158 are intimately bound up with those for 1180 and the estimates for 1279 are probably the most reliable of the twelfth and thirteenth centuries.

There are no written sources directly concerned with the quantity of money. Written evidence of mint output through the profits and expenses of mints and exchanges, or through farms of the same, does survive from Henry II's reign onwards, but only intermittently and partially. With the added uncertainty about the precise financial arrangements at mints and exchanges, this evidence is extremely difficult to interpret at least before Henry III's reign.⁶ Only from 1234 onwards do we have continuous returns and then only for the London and Canterbury mints. Admittedly they seem by then to have normally handled the bulk of the business.⁷ Mint output cannot, in itself, tell us the quantity of coin in the country. During a period of general recoinage however, a comparison of mint output during the recoinage with the normal output in the years surrounding the recoinage can give us an indication of the quantity of money recoined. Doubts have sometimes been raised as to how complete general recoinages were, but coin hoard evidence indicates that little old coinage remained in use for long after at least the 1247 and 1279 recoinages. Coin hoards may not, of course, tell the whole story, but there is no positive evidence for the continued use of large quantities of old coinage. Nor, in contrast to the very late thirteenth century, does there seem to be any indication of the large-scale use in England of coins not minted in England, even of sterling imitations.⁸ Both of these factors would, if significant, tend to make a recoinage estimate an underestimate of the quantity of coin in England.

⁶ J.D. Brand, *The English Coinage 1180-1247*, British Numismatic Society Special Publication No 1 (1994), pp. 32-42.

⁷ Blunt and Brand, 'Mint output of Henry III', pp. 61-65. Provincial mints were however important from the beginning of the 1247 recoinage to 1250: N.J. Mayhew, 'From Regional to Central Minting 1158-1464' in C.E. Challis (ed), *A New History of the Royal Mint*, (Cambridge 1992), pp. 110-112.

⁸ Bridbury, 'Thirteenth-Century Prices and the Money Supply', p. 18; Mayhew, 'Money and Prices', pp. 123-4; *Idem*, 'From Regional to Central Minting', p. 107.

Another possibility, which would tend to distort the figures in the opposite direction, would be the minting of foreign silver for use as sterling outside of England. Yet although sterling coins have been found outside of England, even in quite substantial quantities at least from the latter part of Henry III's reign, the widespread use of sterling outside of England, in the late thirteenth-century Low Countries for example, seems more likely to have been more a consequence of Edward I's vast expenditure abroad, rather than the deliberate purchasing of sterling by foreigners for use abroad. In any case it seems unlikely that this was a significant factor with regard to the size of the currency in England before the very late thirteenth century at the earliest.

The mint output figures for the periods surrounding the 1247 recoinage can therefore provide a workable basis for estimates of the quantity of money at the end of the 'short-cross' coinage. The same is true for the 1279 recoinage at the end of the 'long-cross' coinage. For the recoinage of 1180 at the beginning of the 'short-cross' coinage, or for the 1158 recoinage, or indeed for any earlier recoinages, there are no useful mint output records on which to rely and numismatic evidence provides our only chance of estimating mint output. In the particular case of the 1180 recoinage there is also the additional problem that we are unable to identify coin types specifically enough with the period of the recoinage to compare estimated output during the recoinage with normal output in the surrounding period. We are left with estimates of the total mint output in the period 1158-1180, scaled down by guesses about wastage - coins minted and subsequently lost, and coins exported.⁹

⁹ Metcalf, "A Survey of Numismatic Research", pp. 27-8. Although, between the 1180 and 1247 recoinages, there was another recoinage in 1205, it was a partial recoinage. By combining estimates of the pre-recoinage coins surviving (£100,000-£150,000) and estimates of the size of the recoinage (£150,000-£230,000), we can arrive at extremely approximate estimates for the quantity of the coinage around 1205 (£250,000-£380,000), but such a calculation seems perilous beyond offering us an order of magnitude. One could of course incorporate these estimates into the model outlined here, though I have not done so: Mayhew, "Frappes de monnaies et hausse des prix de 1180 a 1220", pp. 163, 165; M. R. Allen 'The provision and use of dies for Short Cross Class V' *British Numismatic Journal* 59 (1989), pp. 60-1. For detailed examinations of the chronology of the 1205 recoinage and the coin types produced, see *Ibid.*, pp. 42-76, and I. Stewart 'King John's Recoinage and the Conference of Moneyers in 1208' *British Numismatic Journal* 59 (1989), pp. 39-45

Estimates of mint output that rely on numismatic evidence must, in any case, be necessarily very imprecise. The method generally used - and there does not seem to be any better alternative - is a two-stage one, both stages subject to great dangers. The first stage is to estimate the mint output from the known reverse coin dies. These estimates are based loosely on comparison with evidence from the late thirteenth and fourteenth centuries. The second stage is to estimate the total mint output. This procedure is based on the idea that the proportion of mint output from known reverse coin dies to total mint output should be equal to the proportion of non-singleton coins - coins that are not a unique known representative of the reverse dies from which they are struck - to the total number of known coins for that period of minting. This technique, while statistically sound, is endangered by the relatively small quantity of evidence and by the fact that much of the evidence has been pre-selected on a probably far from random basis in coin hoards.¹⁰

Even while accepting that no better method is available, it is difficult not to come to the conclusion that the margins of error in such an approach are so wide and incalculable as to make the method of little use in estimating the actual quantity of the coinage. Putting some practical limits on those margins of error is one of the benefits that I hope will flow from the approach adopted in the current article. Moreover, provided that the average output per reverse coin die, whatever it might be, does not alter very much in the short term, the numismatists' method may be slightly less dangerous for the purpose of estimating changes in the relative size of total mint output over consecutive periods of minting. This, as I hope to demonstrate, can be of some limited use in trying to model changes in the total quantity of the English coinage.

TABLE 1: Estimates of the Quantity of the Coinage at Recoinages 1158-1279				
	1158	1180	1247	1279
Lower Estimate (£)	20,000	20,000	350,000	550,000
Upper Estimate (£)	50,000	110,000	500,000	750,000

¹⁰ For the technique, see Metcalf, "A Survey of Numismatic Research", pp. 26-7.

Table 1 gives upper and lower estimates for the total quantity of the English coinage at the time of the general recoinages of 1158, 1180, 1247 and 1279. The 1158 estimates are based on D.M. Metcalf's estimates of mint output in the period from 1158 to 1180. Metcalf gives the number of 'cross and crosslets' dies used from 1158 to 1161 as 559 out of a total of 1,344 for the whole period from 1158 to 1180. This high proportion in the first few years arguably represents the period of the recoinage. Taken together with Metcalf's estimates for coin production from dies of the period, this suggests coin production of from £17,330 to £51,990 during the period of the recoinage. I have arbitrarily rounded these figures to the nearest £10,000, giving low and high estimates of £20,000 and £50,000.¹¹ As an estimate of the quantity of the coinage in 1158, this takes no account of 'normal' minting of foreign or previously unminted silver, an omission that would tend to make the estimates too high. On the other hand, the coins produced by the 1158 recoinage seem have been slightly heavier than their predecessors and this could cause figures for the recoinage to understate the face value of the coinage before the 1158 recoinage.¹²

As mentioned above, estimating the quantity of the coinage at the time of the 1180 recoinage presents particular problems, as it is difficult to attribute coins specifically to a period of recoinage. The solution adopted here is admittedly arbitrary. Metcalf's low and high estimates for mint output for the whole 'cross and crosslets' coinage over the years from 1158 to 1180 are 10 million pennies (£41,667) and 30 million pennies (£125,000) respectively.¹³ I have applied a high wastage rate (50 per cent) to the low estimate and a low wastage rate (10 per cent) to the high estimate, to take account of losses or export of coin during the period 1158-1180. Rounded to the nearest £10,000 this produces the low and high estimates, given in Table 1, of £20,000 and £110,000 for the quantity of money before the 1180 recoinage. The basis for these figures is certainly insecure, but it should be noted that putting a limit lower than £20,000 to this range would not affect

¹¹ *Ibid.*, pp. 26-28.

¹² Mayhew, "From Regional to Central Minting 1158-1464", pp. 89-90.

¹³ Metcalf, "A Survey of Numismatic Research", p. 27.

the argument of this article at all. Moreover, it is one of the merits of the model developed in this article that it becomes clear that an appreciably higher limit than £110,000 would produce results difficult to accept in the light of the magnitude of coin exports from 1190 onwards.

The estimates for the quantity of the coinage at the time of both the 1247 and 1279 recoinages are based on M.M. Archibald's analysis and

TABLE 2: Constructing Estimates of the Quantity of the Coinage at the 1247 Recoinage

The 'low' figure is obtained as follows:	
London and Canterbury mint output Nov 1247-Jul 1250 (32 months):	£287,470
PLUS	
'Low' estimate of provincial mint output Nov 1247-Jul 1250 (32 months):	£265,357
	£552,827
LESS	
Estimate of 32 months' worth of 'foreign' silver, based on London and Canterbury mint output July 1250—Nov 1254, grossed up to account for a 95% / 5% split between London and Canterbury and Provincial mint output:	(£172,579)
LESS	
Allowance for 'English' uncoined silver and rounding figure:	(£30,248)
EQUALS	£350,000
The 'high' figure is obtained as follows:	
London & Canterbury Output Nov 1247-Jul 1250 (32 months):	£287,470
PLUS	
'High' estimate of provincial mint output Nov 1247—Jul 1250 (32 months):	£287,470
	£574,940
LESS	
Estimate of 32 months' worth of 'foreign' silver, based on London and Canterbury Output Feb 1245—Oct 1247 with no allowance for provincial mints:	(£119,708)
PLUS	
Allowance for low weight of 'old' coin, for 'English' coined silver recoined after July 1250 and a rounding figure:	£44,768
EQUALS	£500,000

**TABLE 3: Constructing Estimates of the Quantity of the Coinage
at the 1279 Recoinage**

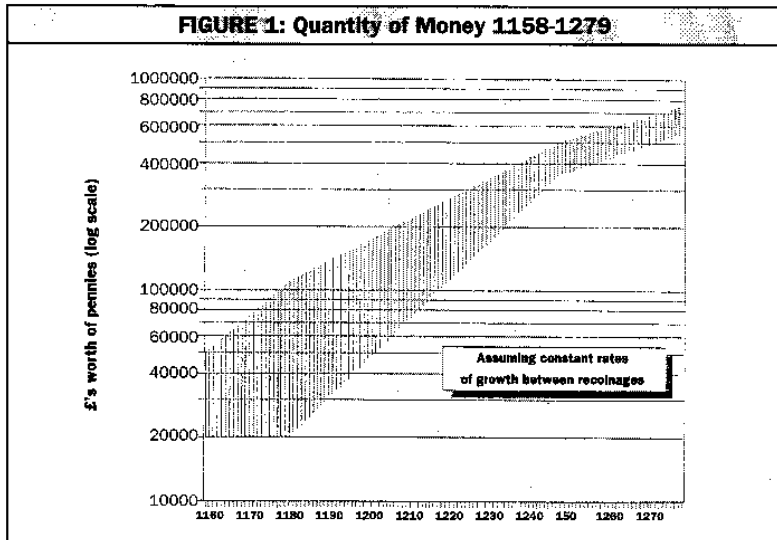
The 'low' figure is obtained as follows:	
London and Canterbury mint output 1279-July 1290:	£891,218
PLUS	
Estimate of provincial mint output 1279-July 1290:	£281,437
	£1,172,655
LESS	
London and Canterbury 'foreign' silver:	(£463,126)
LESS	
Estimate of possible 'foreign' silver at provincial mints:	(£56,287)
LESS	
'English' silver after 1281, assumed not to come from previous coinage:	(£77,050)
LESS	
Allowance for 'English' silver before 1281 not from previous coinage and rounding figure:	(£26,192)
EQUALS	£550,000
The 'high' figure is obtained as follows:	
London and Canterbury mint output 1279-July 1290:	£891,218
PLUS	
Estimate of provincial mint output 1279-July 1290:	£281,437
	£1,172,655
LESS	
London and Canterbury 'foreign' silver:	(£463,126)
PLUS	
Allowance for underweight 'old' coin and rounding figure:	£40,471
EQUALS	£750,000

estimates, in conjunction with the records of mint output.¹⁴ The construction of these estimates is shown in Tables 2 and 3. My aim is to allow for the greatest reasonable range of estimates in order that the argument within this article should not be compromised by any spurious overprecision in respect of these figures. Thus some elements that appear

¹⁴Archibald, "Wastage from Currency", pp. 172-4, 182-4; Blunt and Brand, 'Mint Output of Henry III', Table 1.

as constituents in the 'low' figure are assumed, somewhat unrealistically, to be nil for the purposes of calculating the 'high' figure and vice versa. Note that in the case of both of these recoinages, 1247 and 1279, N.J. Mayhew's estimates of money in circulation fall comfortably within the ranges set out here.¹⁵

The simplest assumption to make concerning changes in the quantity of the coinage in the periods between recoinages is that this quantity changes at a constant rate. Unrealistic as this may be, it is a useful starting-point from which to adopt more complex and more realistic assumptions. Figure 1 presents this graphically.¹⁶ Even this over-simple model can give us some useful results, by giving us some idea of the possible average annual net increases in the quantity of the coinage. For example, from these figures, the average annual net increase in the coinage between 1158 and 1279 should lie somewhere between £4,132 and £6,033. Between 1180 and 1247, the same average should lie between £3,582 and £7,164.



¹⁵Mayhew 'Money and Prices', p. 125.

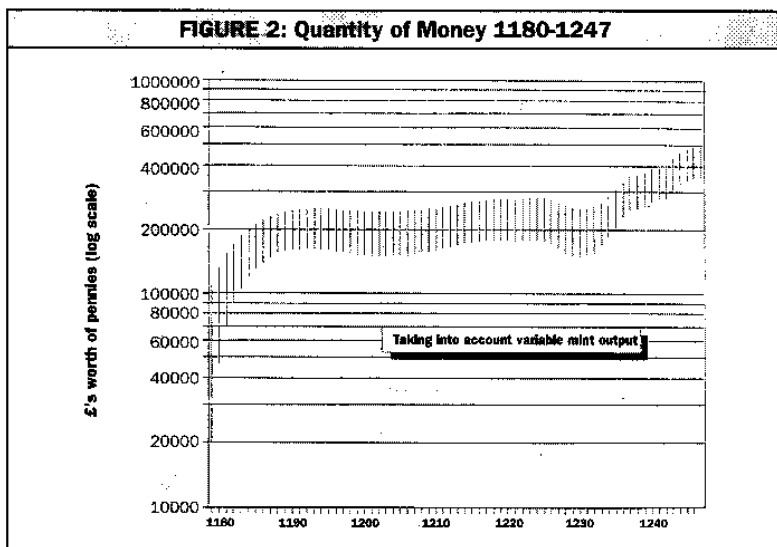
¹⁶ Note that on Figures 1—3 a logarithmic y-axis is used, to emphasise changes in the rate of growth rather than absolute changes.

The assumption that the quantity of money increased at a constant rate is unrealistic for two reasons. Firstly, estimates of mint output, both before and after the beginning of the continuous series of records concerning the London and Canterbury mints, suggest that the flow of silver to the English mints was not at a constant rate. Secondly, changes in the level of the export of coin from England were influenced strongly by political, military and religious factors and were therefore subject to fluctuations too large and sudden to ignore. Yet in the nature of averages, if the annual net increase in the quantity of coinage was sometimes less than the long-run average, it must sometimes have been more, and vice versa. What follows is an attempt to model the effect of both changes in the level of mint output and changes in the rate of loss and export of coinage on the pattern in Figure 1 for the period from 1180 to 1247.

Estimates of average annual mint output for various periods between 1180 and 1247 are shown in Table 4, while Figure 2 graphs the changes in the quantity of money, modified to take account of the different levels of mint output. The amounts in Table 4 up to and including the period 1210 - 1218 are, with two exceptions, derived wholly from the estimates made by N.J. Mayhew from the numismatic evidence.¹⁷ The first exception is the range of amounts given as 'Annual Average Output Excluding Recoinages' for the period 1180-1191. This is here calculated from Mayhew's estimate for 'Total Output' together with the estimates given in this present article for the quantity of the coinage in Table 1, thus

Period	Total Annual Average Output (£)	Annual Average Output Excluding Recoinages (£)
1180-1191	27,273	17,273-25,455
1191-1205	14,286	14,286
1205-1210	48,000	18,254
1210-1218	22,222	22,222
1220-1234	18,917	18,917
1234-1242	39,267	39,267
1242-1247	50,831	50,831

¹⁷ Mayhew 'Money and Prices', p. 125.



producing a 'low' and a 'high' estimate of 'Annual Average Output Excluding Recoinages'. The second exception is the amount given for 'Annual Average Output Excluding Recoinages' for the period 1205 - 1210. As we have no indication of the size of King John's 1205 partial recoinage, this amount is simply taken to be the average of the preceding and succeeding periods.

The averages for the periods 1220 - 1234, 1234 - 1242 and 1242 - 1247 are all derived from the records of mint output at London and Canterbury.¹⁸ The annual provincial mint output can probably be safely ignored as insignificant during these periods. The records for London and Canterbury between 1220 and 1234 are limited to the periods from July 1220 to November 1222 and from March 1225 to March 1229. The amount for 1220 - 1234 has been estimated on the basis that changes in mint output between these short periods and between 1229 and 1234 occurred gradually at a constant rate.

Four assumptions are made in constructing Figure 2: firstly that

¹⁸ Blunt and Brand 'Mint Output of Henry III', Tables 1 and 2.

additions to the coinage are equal to the output of the mints excluding recoinages; secondly that where mint output figures for particular years are available, they should be used; thirdly that where mint output figures for particular years are not available, changes in mint output should be assumed to be as gradual as possible, and finally that losses from the coinage occur in proportion to the quantity of money.

Based on these assumptions, where mint output figures were not available for individual years, I used the average mint output for any period as representing the mint output at the mid-point of that period and made the change in mint output as smooth as possible between these mid-points. 'Years' here represent approximately the exchequer year, the mint output being apportioned from the variable periods given by the mint records. The starting points and finishing points of the two series that form the upper and lower limits of the range shown in Figure 2 are the 'high' and 'low' estimates of the quantity of the coinage at the time of the 1180 and 1247 recoinages given in Table 1. The mint output estimates were then used to represent additions to the quantity of money. In the first period (1180 - 1191) the average mint output used in the upper series was the 'low' estimate of 'Annual Average Mint Output Excluding Recoinages' during this period, while the 'high' estimate was used in the lower series. The rates of loss to the coinage, in each case a constant proportion of the existing coinage and applied to each series throughout, were adjusted to make each series end at the 'correct' finishing point, dictated by the 'high' and 'low' estimates of the quantity of money at the time of the 1247 recoinage.

It is necessary to be cautious about the fluctuations introduced in Figure 2. Only after 1234, with the beginning of the continuous series of mint records for London and Canterbury, does our knowledge of annual mint output rest on fairly firm foundations. The sparse mint records of the period 1220 to 1234 inspire little confidence. Least certain of all would seem to be the relatively fast monetary growth of the 1180s that Table 2 and Figure 2 suggest. The estimates of mint output drawn from the analysis of surviving coins, which are the only evidence for this, can hardly be regarded as reliable.

That there was a very significant increase in mint output, relative to

the quantity of the existing coinage in England, at some time between 1160 and 1250 seems beyond doubt. No-one who has read Peter Spufford's *Money and its Use in Medieval Europe* can fail to be impressed by the scale of the change in Europe's stock of silver, coined and uncoined, following the opening up of new European silver mines, starting with those at Freiberg in eastern Germany around 1168. Nor should we underestimate the speed with which the new silver could spread.¹⁹ Nevertheless, the question remains as to whether the estimates that have been made of mint output before 1220, with all their uncertainties, could seriously mislead us as to the date of the most rapid increase in the quantity of England's coinage.²⁰ The answer to that question is to be found, at least in part, by examining the second reason for fluctuations in the rate of growth of the quantity of the coinage - the variable level of coin exports.

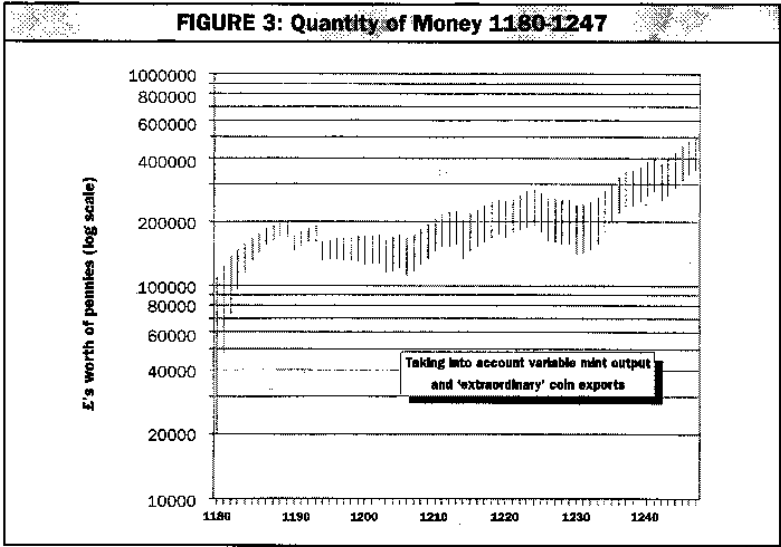
It is useful to distinguish both 'ordinary' exports of coin and losses of coin from 'extraordinary' exports of coin, although it is admittedly a somewhat artificial distinction. A certain amount of English coin was routinely exported. Some was carried abroad by merchants in the normal course of trade. At all times there were holders of lands and rights in England whose chief interests and primary places of residence lay abroad, and who were therefore likely to remit surplus income abroad. Every embassy from England to a foreign court was likely to carry English coin with it, at least initially. Likewise, private individuals who were visiting landholdings abroad or on pilgrimage would take English coin with them. Many people had cause to visit the Papal court and the need to take money there was a commonplace. While it is likely that there were many factors that determined the level of these 'ordinary' exports of coin, their total magnitude relative to the quantity of money in England was likely to have changed fairly slowly, made up as it was of many relatively small sums. It is realistic to expect that in normal circumstances the 'ordinary' export of coin would increase as the quantity of the coinage in England increased, and in the absence of any evidence of a clear trend otherwise,

¹⁹ Spufford, *Money and its Use*, Chapters 5-11. For the potentially fast diffusion of the 'new silver', see, for example, pp. 138-9, 148.

²⁰ For recent doubts on this score, see Bolton, "Inflation, Economics and Politics", p. 6.

it is also simplest and safest to assume that the proportion of existing coin 'ordinarily' exported remained roughly the same. Regarding coinage lost, as opposed to coinage exported, again one would expect it to remain roughly proportional to the quantity of the existing coinage.

TABLE 5: Suggested Extraordinary Exports of Coin 1180-1247		
Date	Amount (£)	Brief Explanation (see Appendix C)
1184/5	3,000	Tax for the Holy Land
1186/7-1187/8	2,000 p.a.	Henry II's war against Philip II and Duke Richard
1188/9	11,000	Henry II's war against Philip II and Duke Richard; Richard I's payments to Philip II
1189/90	24,000	The Third Crusade
1192/3	5,000	Richard I's war against Philip II
1193/4	27,000	Richard I's war against Philip II; Richard I's ransom
1194/5-1198/9	5,000 p.a.	Richard I's war against Philip II
1199/1200	9,000	John's relief to Philip II
1200/1-1201/2	5,000 p.a.	John's war against Philip II
1202/3	19,000	John's war against Philip II
1203/4	5,000	John's war against Philip II
1204/5	19,000	John's defence of Gascony
1205/6	12,500	John's expedition to Poitou
1206/7	17,000	John's expedition to Poitou; John's subsidies to allies
1211/12	7,000	John's subsidies to allies
1212/13	6,000	John's subsidies to allies
1213/14	50,000	The twin campaigns, Flanders and Poitou
1216/17	3,000	Indemnity to Prince Louis
1219/20	12,000	Papal crusade taxation
1224/5	16,000	Richard of Cornwall's Gascony expedition
1225/6	16,000	Richard of Cornwall's Gascony expedition
1229/30	18,000	Henry III's Brittany and Poitou expedition
1230/1-1233/4	7,000 p.a.	Subsidies to duke of Brittany; Poitevin and Gascon fees
1234/5	2,000	Poitevin and Gascon fees
1235/6-1236/7	12,000 p.a.	Henry III's sister's dowry; Poitevin and Gascon fees
1237/8	9,000	Payments to Frederick II and Simon de Montfort; Poitevin and Gascon fees
1238/9	2,000	Poitevin and Gascon fees
1239/40	9,000	Contributions to crusade; Poitevin and Gascon fees
1240/1	2,000	Poitevin and Gascon fees
1241/2	45,000	Expenditure for Gascony expedition
1242/3	25,000	Expenditure for Gascony expedition
1243/4	10,000	Expenditure in Gascony



It is difficult to draw a precise boundary between these 'ordinary' exports and losses of coin on the one hand and 'extraordinary' exports of coin on the other, but there were several occasions and periods when large sums of money are known to have been transferred abroad, clearly over and above what can be regarded as 'ordinary'. Table 5 suggests some quantities for these 'extraordinary' exports and Figure 3 shows the consequences of allowing for these. Appendix A explains the amounts given in Table 5.

The method adopted to produce Figure 3 was to deduct the amounts listed in Table 5 from the annual amounts generated by the previous model (the model that produced Figure 2), for both 'high' and 'low' series. Secondly, the general loss rates, applied throughout the two series and now representing only the 'ordinary' export and loss of coin, were adjusted to bring the finishing points of the two series back to the estimates at the time of the 1247 recoinage, while remaining a constant proportion of the existing coinage.

The amounts taken into account are not intended to be comprehensive and cannot pretend to be accurate or precise, but a

comparison of Figure 3 with Figure 2 does reveal the implications that such 'extraordinary' exports of coin could have. It is also useful to note the sheer size of some of these 'extraordinary exports' relative to the long-term annual average increase in the quantity of the coinage.

The most significant difference suggested by Figure 3 is that, instead of the growth in the quantity of money merely slowing moderately in the 1190s and early 1200s, as in Figure 2, the quantity of money may have actually declined in the early 1190s, primarily under the impact of the Third Crusade and Richard I's ransom. There is little sign of a return to growth until after 1206/7, when there is a respite in King John's military efforts on the Continent. In 1214 King John's twin campaigns produce a further setback.

Although the sparse mint records from 1220 to 1234 may exaggerate the downturn from 1225 to 1231 resulting from the Gascony expedition of 1225 - 6 and the Brittany expedition of 1230, the expenditures were certainly large enough on their own to have some significant impact. However, the potential importance of changes in mint output is illustrated by the way in which the strong growth in mint output in the late 1230s and 1240s minimized the impact of Henry III's sister's dowry and the very large expenditures connected with the Gascony expedition of 1242.

The impact of the expenditures abroad listed in Table 5 has considerable relevance to the question of the speed of monetary growth in the 1180s. Note the scale of the expenditures compared to the average annual net increase in the quantity of the coinage, assuming a constant growth between 1180 and 1247, or between 1158 and 1279. If these expenditure amounts were applied to the assumption used in Figure 1 - of an otherwise constant rate of growth in the quantity of money between 1180 and 1247 - so much coin would have gone abroad that the quantity of money would have actually become negative by the early years of King John's reign.

This was far from being the case. In 1207, immediately after the long period of heavy expenditure abroad that had lasted, with few breaks, from 1190 to 1206, King John's Thirteenth raised around £60,000 and his exactions remained heavy or extremely heavy relative to earlier royal

demands right up until 1214.²¹ Although this certainly generated complaint, it is hard to resist the impression from the Exchequer Pipe Rolls that there was still more money actually circulating in the economy after 1207 than there had been in the 1170s, though of course the Pipe Rolls only tell us about monetary transactions that were connected with government.²²

Even accepting that the mint output estimates may underestimate minting activity in the 1190s and early 1200s, unless they conceal a huge increase in the silver inflow, or a huge monetization of non-monetary silver - for neither of which there is any evidence - they cannot seriously mislead us concerning the fast rate of monetary growth in the 1180s. Without a sustained inflow of silver to the mints in this period substantially larger than before, any credible estimate of the quantity of money in 1180 would imply a drastic depletion in the available coin by the massive exports of coin that began around the end of the decade. Raising the estimate of the quantity of coinage in 1180 even beyond the credible does not solve the problem, as it would merely reduce further the estimate of the annual average net inflow between 1180 and 1247 and make the impact of large 'extraordinary' coin exports yet more decisive in reducing the quantity of the coinage. It is clear that, however much large coin exports of the 1190s, early 1200s and 1213 - 1214 depressed or even reversed the growth in the quantity of coinage, there was no catastrophic demonetization of the English economy. Without the fast growth in the quantity of the coinage in the 1180s, this would seem to have been unavoidable.

This model of the quantity of money between 1180 and 1247, represented by Figure 3, relies on many assumptions and approximations, all of which can and should be subject to future modifications. Nevertheless, if nothing else, the model makes clear that the assumptions and approximations we make are mathematically dependent on each other, and this, in itself, helps to clarify the problems of the subject.

²¹ N. Barratt 'The Revenue of King John' *English Historical Review* 111 (1996), pp. 837, 839.

²² J.L. Bolton's forthcoming article 'The English Economy in the early Thirteenth Century' will suggest that there was shortage of coin 'in circulation' after 1207, but this is clearly different from saying that there was a substantial reduction in the quantity of the coinage in England. Money raised by King John but not spent abroad—that is, held in the royal treasuries—was not 'in circulation' in the sense that Bolton uses the phrase, but would still be part of the quantity of the coinage in England as defined in this present article.

APPENDIX A: ESTIMATING AND MODELLING EXTRAORDINARY
EXPORTS OF COIN 1180 - 1247

a) The 1184/5 Tax for the Holy Land

Almost everything about the assessment, collection and destination of this 1185 tax is obscure. It does not seem to have caused much complaint and was probably therefore modest. £3,000 is an arbitrary amount chosen to reflect this, bearing in mind that there may have been other 'extraordinary' exports of coin in the early and mid-1180s that we know nothing about. Records of coin exports in the 1180s are generally uninformative as to amounts, though there are plenty of entries on the Exchequer Pipe Rolls suggesting that coin was being shipped abroad by the king, both in 1184/5 and in other years. At least 1000 marks were sent to Prince John in Ireland in 1184/5.²³

b) The War in Normandy from 1186/7 to 1204/5

The extent of the export of coin from England to pay for Henry II's, Richard I's and John's warfare on the Continent between 1187 and 1205 is highly uncertain, but only from 1190 to 1192 and in 1200 is it likely to have been insignificant.²⁴ J.C. Holt calculated that at least the sum of £18,534 and probably more was transferred to Normandy between October 1202 and October 1203, while the known transfers to Normandy in the 1197/8 exchequer year amounted to £4,573.²⁵ I have therefore taken £5,000 as being the normal yearly costs to England of war in Normandy for the period from 1189/90 to 1203/4. A lesser sum £2,000 per annum seems appropriate for 1186/7 and 1187/8 while £1,000

²³ W.E. Lunt, 'The text of the ordinance of 1184 concerning an aid for the Holy Land' *English Historical Review* 37 (1922), pp. 240-2; F.A. Cazel 'The tax of 1185 in aid of the Holy Land' *Speculum* 30 (1955), pp. 385-92; *The Great Rolls of the Pipe of the Reign of Henry II, the Reign of Richard I, etc.* Pipe Roll Society, (London 1844—): *PR 31 Henry II*, pp. 169, 206, 216-18. See also *PR 28 Henry II*, p. 139; *PR 29 Henry II*, pp. 148-9; *PR 30 Henry II*, pp. 80, 86-7; *PR 32 Henry II*, pp. 49, 178-9.

²⁴ At least 9,875 marks (just over £6,500) seem to have been transferred from England to Normandy around September 1200. 1,875 marks of this seems to have been destined to fund John's expedition to Gascony, but the rest may have formed part of the relief owed to Philip II: T.D. Hardy (ed), *Rotuli Normanniae in Turri Londinensi asservati, 1200-1205; also 1417-1418* (Record Commission, 1835), pp. 31, 36.

²⁵ J.C. Holt, 'The Loss of Normandy and Royal Finances', in J.B. Gillingham and J.C. Holt (eds), *War and Government in the Middle Ages. Essays in Honour of J.O. Prestwich*, (Woodbridge 1984), pp. 96-7.

is allowed for the period up to July 1189. The 1202/3 figure has been regarded as unique to that year. This is only intended as a rough approximation, but the sum total for the whole period should not, at least, be much of an overestimate. With these and with the other amounts in Table 3, I have tried to minimise the possibility of exaggeration.

c) Richard I's Payments to Philip II

In July 1189 Richard I promised Philip II the 20,000 marks that Henry II, before his death, had agreed to pay, plus an extra 4,000 marks in compensation for Philip's costs in the preceding campaign. In the same year Richard was soon to receive 10,000 marks from the Scottish king. While it is possible that some of the funds came from Richard's Continental dominions, there is reference on the Exchequer Pipe Rolls to 25,000 marks having been sent abroad.²⁶

d) The Third Crusade

In 1190 Philip II organized transport from Genoa for 650 knights and 1300 squires. The cost of such a force in terms of wages would be about £24,000 a year. Richard's force is usually regarded as having been considerably larger than Philip's, but some of the funds taken on crusade can be assumed to have come from Richard's continental dominions. It is not assumed that the king paid wages to the whole force for a year (though the king did pay the sailors for a year), but that the figure represents an amount of coin taken abroad by all the English crusaders including the coin necessary to support themselves for a year. It should be noted that in 1191, in Sicily, Richard undertook to pay Philip II 10,000 marks to be released from his betrothal to Alice. This money may have been paid out of funds Richard had with him. Of the more favourable financial transactions undertaken by Richard on crusade it is doubtful that any of the money found its way back to England.²⁷

²⁶ J. Gillingham, *Richard the Lionheart*, 2nd edn, (London 1989), pp. 127-8; J. Hunter (ed.), *The Great Roll of the Pipe for the First Year of the Reign of King Richard I* (Record Commission, 1884), p. 5.

²⁷ Gillingham, *Richard the Lionheart*, pp. 145, 147; The calculation of £24,000 assumes the knights would need 12d per day and the squires, taken to be equivalent to mounted sergeants with two horses. 6d per day. For the sailors, see *PR 2 Richard I*, pp. 8-9.

²⁸ Gillingham, *Richard the Lionheart*, pp. 230, 236.

e) Richard I's Ransom

The payment to secure Richard I's release from captivity was 100,000 marks (£66,667). It was not paid totally in coin. Some of the ransom was collected in the form of gold and silver plate. The Cistercian wool crop was also appropriated.²⁸ The impact of the latter in terms of the export of coin depends on where the wool was sold. £22,000 for the ransom assumes that half was paid in coin and that two-thirds of the coin was from England.

f) John's Relief in 1199/1200

I have assumed that two-thirds of John's relief of 20,000 marks was paid in coin from England.²⁹

g) The Defence of Gascony in 1204/5

In 1204 King John made a payment of 28,000 marks to the Archbishop of Bordeaux for the defence of the remaining Angevin dominions in France.³⁰

h) John's Expedition to Poitou in 1206

It is difficult to untangle the references to the movement of funds on the Close Rolls at this time, but £25,000 spread over two exchequer years would be a conservative estimate.³¹

i) John's Subsidies to Allies 1206/7 to 1212/13

I have counted here only the 6,000 marks given to Otto IV in 1207, the 10,000 marks released for him in September 1212 and the 9,000 marks promised to Otto in January 1213. There were certainly other subsidies to Continental allies, for example the 1,000 marks annual pension granted to Otto's brother, Henry Count Palatine in 1209 and the 3000 marks promised to the countess of Flanders in 1212. On the other hand the king of Scotland in 1209 promised to pay John 15,000 marks over two years.³²

²⁸ R.V. Turner, *King John*, (London 1994), p. 53; see also above, note 24.

²⁹ F.M. Powicke, *The Loss of Normandy (1189-1204)*. 2nd edn, (Manchester 1960), p. 438.

³⁰ T.D. Hardy, *Rotuli Litterarum Clausarum in Turri Londiniensi Asservati*. 2 vols (Record Commission, London, 1833, 1844), i, pp. 60b-90a *passim*.

³¹ *Ibid.*, i, p. 82b; T. Rymer, A. Clarke and F. Holbrooke (eds), *Foedera, Conventiones, Litterae et cujuscunque generis Acta Publica*, new edn., vol. i, pt. I (Record Commission, 1816), pp. 49-50, 53; H. Cole (ed), *Documents Illustrative of English History in the Thirteenth and Fourteenth Centuries* (Record Commission, 1844), pp. 243, 252.

j) The Twin Campaigns of 1214

The sums exported for the twin campaigns of 1214 (in Poitou and Flanders) were clearly very large. Although it is difficult to be precise, a perusal of the Close Rolls would suggest that £50,000 would be a very conservative estimate.³³

k) The Indemnity to Prince Louis (1216/7)

Although Philip II's son Louis was promised 10,000 marks at the time of the peace of Kingston/Lambeth, his invasion may have resulted in some inflow of silver as well, from funds brought with him. I have therefore allowed only half of the indemnity as an 'extraordinary' export of coin.³⁴

l) Papal Crusade Taxation (1219/20)

The financial relations between the papacy and the English government are clearly a complex matter during Henry III's minority and would remain so for the rest of the period with which we are concerned, but I have included only the £12,000 levied by the legate Pandulf by July 1220.³⁵

m) Richard of Cornwall's Gascony Expedition

Altogether, between November 1224 and August 1226, around £32,000 is known to have been sent to Gascony.³⁶

n) Brittany and Poitou Expedition (1229/30)

This £18,000 represents the average of R.C. Stacey's low and high estimates of Henry III's direct expenses.³⁷

o) Subsidies to the Duke of Brittany

In the years 1231-4 the duke of Brittany received between £15,000 and £20,000 in subsidies from Henry III.³⁸

³³ *Rotuli Litterarum Clausurarum*, i, pp. 145b, 146b, 153a, 153b, 161a, 162a.

³⁴ D. Carpenter, *The Minority of Henry III*, (London 1990), p. 45.

³⁵ *Ibid.*, p. 223

³⁶ *Ibid.*, pp. 374-8

³⁷ R.C. Stacey, *Politics, Policy and Finance under Henry III 1216-45*, (Oxford 1987), p. 172, n. 46.

³⁸ *Ibid.*, p. 172.

p) Poitevin and Gascon Fees

Between 1231 and 1241 Henry was paying his Poitevin and Gascon retainers around 2,500 marks a year.³⁹

q) Henry III's Sister's Dowry (1236 - 1237)

Henry's sister received a dowry of 30,000 marks for her marriage to Frederick II.⁴⁰

r) Payments to Frederick II and Simon de Montfort

In 1238 Henry III provided 8,000 marks to support 100 knights for Frederick II's siege of Brescia and lent Simon de Montfort 2,350 marks for his trip to Rome to regularize his marriage. The loan was eventually written off.⁴¹

s) Contributions to the Crusade (1239/40)

In 1238 Henry III gave Richard of Cornwall 8,500 marks towards his crusade. Although he did not go until 1240, he then went with a substantial force. When Simon de Montfort went on crusade, also in 1240, he took with him a large number of Henry's own household knights.⁴²

l) Expenditure in Gascony 1241/2 to 1243/4

The total cost of the expedition seems to have been around £80,000. It is not clear that all Henry III's debts after 1243 were settled abroad, but to counterbalance this, we know that a further 4000 marks were sent to Gascony in 1244 and in the same year £3,000 was spent on Flemish mercenaries against Scotland. Some of this was most likely taken abroad.⁴³

³⁹ *Ibid.*, pp. 42, 127, 176.

⁴⁰ *Ibid.*, p. 98.

⁴¹ *Ibid.*, pp. 126-7.

⁴² *Ibid.*, pp. 126, 140.

⁴³ *Ibid.*, pp. 189-90, 198-9, 245.