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Roman currency: new thoughts and problems

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The currency of the empire centred on Rome is possibly the most widespread and complex that has existed to date and hence holds out the most opportunities for study and challenges of interpretation. Time limits of 27 B.C. to A.D. 480 may seem negligible to those weaned on millennia or millions of years but, looking at the material another way, we have for study the production of well over 500 large groups of sequentially dated artefacts, often assignable to exact centres of production, distributed over much of Europe and the Mediterranean lands. This may be a state of affairs that even flint methodologists would envy.

Because coins were mass produced by the Roman administration there is a high degree of similarity between all coins of a single issue (that is, a campaign of striking over a fixed period of time, perhaps a year or more). Yet the close involvement of the coinage with the fortunes of the emperor, the health of the economy, propaganda, pay and taxes, means that any one issue may differ radically in design, denomination, fineness of precious metal, or issuing authority, from the one which went before it. This point of standardization and change is worth treatment in a little more detail, for it gives opportunities for the study of currency which scarcely recur until the nineteenth century.

The first emperor, Augustus, reformed the monetary system which had survived the last troubled years of the Republic so that the well-established denarius of fine silver was accompanied by three denominations of 'middle change' and two of 'small change'. Here an interesting point emerges on Roman accounting, for the large bronze sestertius, one quarter of a denarius, made its first common appearance on the monetary scene after over half a century of use as an almost purely theoretical unit of account. The denomination had started as a silver quarter denarius, therefore a rather small and fiddly coin weighing *c.* 1·1 g., in the early Republic, but after quickly dying out at the beginning of the second century B.C., there was only one attempt at revival in the 30s B.C. In accounts, however, the sestertius had become the main unit. Thus all the financial directions which Cicero (died 43 B.C.) sent to his friends and associates are given in sums of sestertii, and the practice went on into the second century A.D.

After the sestertius, the denarius was used when writers quoted sums of money; the sestertius seems to have anticipated its use as a common coin and it seems nearly certain that the denarius continued in accounts long after it had disappeared from the purse. The denarius came to a fairly swift end, as a commonly used coin, after A.D. 200. Inflation, linked with debasement of the silver, made the denarius of 238 a poor relation, and the denarius of 273 a coppery little coin with perhaps 1% of silver. These late

denarii are rarely found as site finds, and few seem ever to have circulated far from Rome and the Italian mints. But in 301 the emperor Diocletian constructed and promulgated an edict fixing maximum prices and in this all prices are quoted in denarii. By this time no coin is known which can reasonably be called a denarius and the Edict quotes only one price as 1 denarius (six pounds of grass), so here again the unit of account seems to have no counterpart in the money which was actually being minted at the time.

On the matter of inflation coin finds from Roman sites give a fairly clear picture of change. On any site occupied in the reign of Augustus the most commonly lost coin is the as (one-quarter of a sestertius). By the reign of Trajan (98–117) the most commonly lost coin is the sestertius, and by the reign of Septimius Severus (193–211) the denarius is the most common loss. While there is a typical archaeological 'fault' here, for coin loss cannot possibly ever *prove* or demonstrate inflation, it can only prove change in coin loss and *suggest* inflation as one of the possible explanations, it is difficult to find an explanation for this change in coin loss which does not involve an adverse change of purchasing power in the coins involved. It is reasonable to suggest a fourfold inflation during the first century A.D. and a similar inflation during the second century. In the third and fourth centuries inflation moved much more quickly. In about 190, a pound (libra) of gold should have been valued at around 1,250 denarii; by 300 the value had shot up to about 96,000 denarii, and in the fourth century this rise continued, until the denarius as a unit of account was literally worthless, and was forgotten.

The price of gold, as quoted in denarii, leads on to the purchasing power of gold which seems to have stayed remarkably stable throughout the Roman inflation. A workman's wage in Egypt in the middle of the second century was just over a silver denarius a week, which would work out at about 17 g. of gold a year. Diocletian's Edict gives the workman a maximum daily wage of 25 denarii which would work out at about 19 g. of gold per year. Corn prices stay fairly constant in terms of gold, and the cost of a soldier, or military pay, is likewise fairly stable if judged in terms of gold. All this suggests an improved way of looking at the coinage of the first four centuries A.D. which, up to now, has been far too worried by changes in denomination and name of coins, at the expense of purchasing power. For instance, the system of coins instituted by Augustus is taken to be totally different from the system organized by Diocletian. This seems to be unfortunate if it is right to think of the two systems tied together by the purchasing power of gold.

Augustus struck gold coins at the standard of forty to the libra (pound of *c.* 327 g.) and Nero changed this to forty-five; in silver, Augustus started at eighty-four to the pound and Nero raised this to ninety-six. In both cases sestertii were struck at four to the denarius, asses at four to the sestertius, and the half (semis) and quarter (quadrans) of the as completed the small change. Leaving out all the possible arguments and problems, the system of Diocletian after 301 may be outlined as a gold piece at sixty to the libra, a silver piece at ninety-six to the libra, with perhaps sixteen silver pieces to the gold, and silvered bronze coins at 2, 5 and 20 denarii, when the silver piece was 100 denarii.

Instead of worrying about names and denominations, it might be simpler to reduce every coin to its value in gold. A suitable unit in which to deal would be 28,800 units to a libra of gold. The coins of Nero and Diocletian judged on this scheme would give the following table:

TABLE I

Nero	Units		Diocletian
Aureus	640	480	Aureus
Denarius	25·6	30	Argenteus
Sestertius	6·4	6	Follis
As	1·6	1·5	Radiate
Semis	0·8	0·6	Small laureate
Quadrans	0·4	0·3	(Denarius of account)

This method of working obviously needs some detailed examples to check the degree of accuracy, but two comparisons, almost at random, do suggest that our unit keeps fairly constant between Nero and Diocletian, and may be worth using. The poor man under Nero scarcely has 2 asses to buy lupines to feed himself with – that is, about three units; if he had spent these units at the time of Diocletian's price Edict he would have received a quart of cooked lupines. If he had been after wine, then in Pompei (before A.D. 79) a measure of ordinary wine would have cost an as, about 1·6 units; in the Edict the wine would cost 8 denarii or about 2·4 units. Good wine comes out closer at about seven or eight units a measure.

It is now worth asking whether this unit can be used predictively, that is, if there is a reasonably constant value running through the coins in use, can this be relied upon to predict the purchasing power of coins, and can it help in the problem of the relative loss rates of different coins?

A good point of departure is the striking similarity in supposed purchasing powers of the sestertius and the follis. If these two coins were really close in purchasing power, did they behave similarly in the archaeological record? Here a major problem arises for the areas of the Western Empire for which information is already collected, Britain, France and Italy, do not give a uniform picture of coin loss. In Britain, folles form from 1% to 3% of the coins found on any site: e.g. Canterbury, with a total of 1,845 coins, has 31 folles minted between 294 and 317 (when their size decreased sharply). In the north of Italy, values for folles range from 2% to 8% of the total coins found on any site: Pavia, with a total of 4,361 coins has 268 folles of the relevant period. A comparison with sestertii of, say, Hadrian (117–138) gives results which are hard to interpret. In general, British sites have about three times as many folles as sestertii of Hadrian, the actual ratio varies between 1 and 8 but the mode as well as the mean lies at around 3. In Italy, eleven sites lie around this value of 3, but four sites have much higher ratios of around 12, and the Italian mean is therefore around 5. Even if the four Italian sites were dismissed, the picture still needs further adjustment, for although nearly all the coins found which belong to the dates 294 to 317 are folles, not all the coins of Hadrian are sestertii; we have to add silver denarii, and small change. This immediately complicates the issue beyond reasonable inquiry, for sites both in Britain and Italy may produce as many denarii as sestertii of Hadrian, and this will immediately multiply the value of coins by a factor of four.

Results of such calculations might suggest that the gold unit value of the coins lost on any site will remain constant reign by reign. If this were true it would be very tempting to go a stage further and use archaeological evidence of site losses to suggest values

for coins of the fourth century where relative values, and gold values, are not known for sure from any written sources.

Unfortunately, there are difficulties for the gold value of site finds in Cirencester for its first hundred years of occupation (43–138), as for its fourth-century occupation, is between four and five gold pieces, whereas at Dijon, a site chosen in France for comparison because of size, history of local collections and total number of coins surviving, the early first century provides coins to the value of between 15 and 16 aurei, while the fourth-century losses do not add up to one gold solidus. All sites seem to have their own particular curves of coin loss, which is to be expected when each has its own particular history of foundation, expansion and recession, but all sites tend to lie within a framework common to the province or area in which the site lies. Thus Cirencester shows a property common to English sites, whereas Dijon shows a property of French sites; above and beyond these regional characteristics each site then shows its own deviations from the regional picture (Reece 1973b).

A second barrier to a wide application of the theory of 'constant unit loss' is the absence of correlation, or more accurately, direct proportionality between the frequency of coin loss and the value of the coin. Gold coins are rare as site finds, and the sensible conclusion is that they were rarely lost; small copper coins of the later fourth century are commonly found on sites, so again, the inference is that they were commonly lost. But, as already mentioned, the commonest coin on sites early in the first century is the as, around 100, the sestertius, and after 200 the denarius. Under the emperor Claudius (41–54) there are far more asses found than sestertii and far more sestertii than denarii. This is as it should be if value were the determining factor in loss. Under Hadrian (117–138), more sestertii are found than either asses or denarii, though a few sites even show losses of more denarii than any other coins. Here is the main problem: a more valuable coin is being lost in preference to a less valuable coin. As the critical reader will see, such points depend on the assumption that all coins supplied during the reign of Hadrian were lost then; this is demonstrably untrue (Reece 1974). From coin loss we may comment on coin supply, but there is bound to be error when we transfer the evidence to the subject of coin use.

If we supposed that the currency consisted of an equal number of all denominations circulating side by side, then the expectation of more coins of low value being lost seems reasonable. Whether we can argue the converse must at present remain doubtful but in the case of the coinage of Hadrian, as judged from site finds, it does seem safe to suggest that the pattern of losses, whenever they happened, could proceed only from a currency in which coins of middle value (sestertii) were in a considerable majority, coins of high value (denarii) next in number, and coins of lowest value (asses) least well represented in general circulation. To the idea of loss by value we must therefore add loss by proportional representation, and immediately the second variable appears hopes of simple solutions to our problems fade.

A further point which unites regional variation with loss by value is the pattern of loss of small change in the first century, and larger copper denominations in the later fourth century. The subdivisions of the as were struck in fair numbers in the early first century but are never found in numbers comparable with the number of asses from any site. This suggests straight away that asses were in a considerable preponderance, and that the

small change formed a relatively small part of the coinage in circulation. We have to add to this the fact that the small change seems to stay mainly in the central provinces of the empire, for the coins are better represented in Italian finds than in finds from France, and in Britain they are very rare indeed. In the late fourth century a completely different picture can be seen. When two copper denominations were being struck at mints in Gaul and Italy, the larger denomination seldom was lost in Britain in any numbers (3 compared with 56 smaller coins at Cirencester, 7 compared with 1,083 at Richborough). On the Continent, and especially in Italy, the larger coins appear in greater absolute numbers, and they usually overshadow the smaller coins (Aquileia 310 large to 102 small, Pavia 23 large to 5 small). This suggests a considerable preponderance of large coins in the currency in circulation in Italy, and perhaps a preponderance of small coins in Britain, but it also suggests an odd shift so that the small change of the first century was minted in Rome and circulated mainly in the central provinces of the empire, while in the fourth century the small change was sent to the outer provinces, and the large coins stayed near the centre and the mints. Interpretation of such observations is probably best left to economists.

In the fourth century the coinage was changed often and swiftly. For this reason coin loss, and therefore coin supply, may be a much better guide to coin use, with each issue dropping quickly out of general circulation. In Britain the number of coins lost in the three successive periods, 296–317, 317–330 and 330–348, climbs from 1% to 2%, to 3% to 4%, to between 15% and 40% of the total coins found on any site. This rise is not well represented in any other area. What happens in Britain if we assume over this fairly short period, and over this total trend, a general uniformity of gold value and try to gain some insight into the value of coins lost through the number of coins found? The following table can be constructed from the results for nineteen groups in Britain by taking the mean of the percentages of coins found in each period, dividing by the number of years in the period to get the percentage loss per year, and then comparing this percentage loss with the percentage loss per year of the follis, whose unit value is at least partly known.

Now these figures must be interpreted, if that is possible. The table has been projected backwards to the middle of the third century as well as forward into the fourth century. Around 270 the coinage sank to the lowest point reached during the empire so that the only coins supplied were small copper 'radiates' with 1% or 2% of silver in. In Britain many copies of these coins, produced at roughly the same time as the originals, circulated, and the overall average of value of the poor official coins and the British copies should be far lower than the newly reformed 'radiates' of Diocletian to which our calculations give a value of 1·5 units. Values of 0·23 and 0·46 fit well and make these earlier, poorer coins somewhere near the value of Diocletian's laureate coins, or, the very poor ones, near the value of the theoretical denarius. I have suggested elsewhere (Reece 1973a) that the poor official coins which were still circulating at Diocletian's reform were given a value of two denarii (0·6 units), and that the even poorer radiate copies were in fact used as denarii. This latest calculation is somewhat too shaky in its present form to act as the base for any further calculations, but it is of interest that the earlier, subjective, view can be reached by a numerical method. From 378–388 the small number of coins, and their correspondingly high unit value, is a result of a stoppage in

supply of small coins, not a supply of large coins. Otherwise the units reflect well the size and weight of the coins in use.

There is one further point at which the 'unit' values can be partly checked. In two laws the value of a gold solidus is given against bronze and bronze coinage, and from this it might be possible to compare an actual gold value against a calculated gold value. In section 11.21.2 of the Codex Theodosianus we are told that the price of bronze or copper is to be so regulated that 1 solidus should be paid instead of 25 librae of bronze. Translation into the small bronze coins of the time (A.D. 396) is dangerous, but if the libra is taken to be *c.* 327 g., and the small bronze coin is taken to have an average weight of *c.* 1·25 g., then 1 solidus is going to represent about 6,500 small copper coins. In a later law of Valentinian III (Novel 16·1 of A.D. 445) the price of a solidus is specifically fixed between 7,000 and 7,200 'nummi'. If we made the totally unjustified assumption that 'nummus' is the name for the small common copper coin of the late fourth and fifth centuries, then the two laws slot neatly together. Unfortunately, there are two further problems. The small copper coin is unlikely to have circulated at its metal value, but may, like many other Roman coins, have been over-valued by the mint and issued with a token value. This must be true to some extent unless the mint were subsidized by the state to strike coins for the public benefit. All available evidence, and most modern comment, suggest that, on the contrary, the state regarded the mint as a source of revenue, which probably means that every coin had included in its purchasing power or tariffed value its metal value plus at least the cost of its production. When dealing with gold coins the production costs are only a small fraction of the metal value; for small copper coins it would not be surprising if the production costs equalled the metal value, this giving the coin a minimum tariff of twice the metal value. It might help to remember that when Anastasius reformed the coinage in 498 he made the smallest coin a 5-nummus piece and this continued the tradition of the *c.* 1·2 g. coin.

TABLE 2

Period	Mean %	Years	Mean %/Y	Unit value
259–275	16·9	16	1·05	0·23 by calculation
275–296	10·9	21	0·52	0·46 by calculation
296–317	1	21	0·04	6 on 'unit gold standard'
317–330	3·7	13	0·28	0·86 by calculation
330–348	23·8	18	1·32	0·18 by calculation
348–364	10·9	16	0·68	0·35 by calculation
364–378	11	14	0·78	0·31 by calculation
378–388	0·5	10	0·05	4·80 by calculation
388–402	6·0[1]	14	0·43	0·56 by calculation

[1] In the last period the collection at Richborough, which is generally assumed to be highly abnormal, has been replaced by the average of the other sites.

The various strands therefore give us the following information. By 498 the 5-nummus piece was the 1·2 g. copper coin which had been in circulation since the end of the fourth century. The solidus in the fifth century was to be bought and sold at *c.* 7,000 nummi. At a similar time the metal value of 25 librae of bronze was 1 solidus, giving an absolute

minimum metal value to the 1·2 g. coins of *c.* 6,500 to the solidus. The solidus at 400 gold units would suggest a comparable absolute minimum of 0·05 gold units for the small coins; this is one-sixth of the Diocletianic denarius, which was probably a smaller value than any official coins minted at the time. The tentative picture drawn from archaeological finds in Britain gives a gold unit value of about 0·5 for this small coin. If we combine these strands we have a copper coin called a 5-nummus piece with a gold unit value of *c.* 0·3 units, issued for circulation at roughly five times the value of its metal content, which, when judged on the archaeological record, was lost about ten times as frequently as the follis of 296–317 and therefore deserves an archaeological value of around 0·5 to 0·6 units.

To take things just one point further in the line of argument we might return to the Richborough collection, excavated in the 1920s and 30s, which contains some 51,726 identifiable coins. In table 2, I omitted the value for the last period in the fourth century with the justification that Richborough is generally held to be totally aberrant (Reece 1968). Of those 51,726 coins, 44% belong to the last years of the fourth century, 388 to 402. The usual explanation for these coins is the presence in the general coin list of one very large, or several scattered, hoards which were not noticed during the excavation, or rather the clearance, of some of the fort ditches. While this explanation could be correct, I have never been convinced by it, partly because at Richborough, unlike most other sites, coins of Constantine III prove that coinage was still coming into the site, and circulating until at least 410. The 44% of late coins have therefore to be spread over a period with a minimum of twenty-two years, after which no further coinage appeared from the Continent, so that losses at Richborough perhaps approach total coin loss on a site. If we take the value of 44% and the minimum period of twenty-two years, and rework the last reading on table 2, we have an average of 2% per year which leads to a unit value of 0·12. We have the position in which the mean of British sites overvalues the last Roman coins; they are not common enough, and one site which is known to go on into the fifth century importing coin undervalues the coins – there are too many. This strongly suggests a matter of supply by which the majority of Britain was undersupplied with coin at the end of the Empire, though the port and fort of Richborough was well supplied to the end.

The new thoughts on Roman currency embodied in this paper are few and all are of cliff-hanging reliability; what matters is the material and the approach. At present Roman archaeology is lagging behind other branches of the subject in this respect, with the result that when model-builders get to work they often ignore several very useful and usable deposits of information. This may be because of the historical cross-checks available which might contradict their carefully constructed models. To the pure methodologist the mixture in this paper of 'objective' data and questionable historical references must seem highly unfortunate; far better perhaps to concentrate on the one or the other. Yet in spite of the difficulties involved, I return to my point of departure and suggest that the massive sequential issues distributed over very large areas of the ancient world which comprise the Roman currency, form an unrivalled body of data for the controlled explanation of an ancient economy and way of life.

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References

Reece, R. 1968. Summary of Roman coins. *Richborough V* (ed. B. Cunliffe). Society of Antiquaries Research Reports.

Reece, R. 1973a. Wages and prices. *Archaeological Theory and Practice* (ed. D. E. Strong). London.

Reece, R. 1973b. Roman coinage in the Western Empire. *Britannia.* IV:227–51.

Reece, R. 1974. Numerical aspects of Roman coin hoards in Britain. *Coins and the Archaeologist* (eds. J. Casey and R. Reece). British Archaeological Reports 4.

Abstract

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Roman currency: new thoughts and problems

The Roman currency was one of the most widespread coinage systems of the pre-industrial world. Coin use, and often even coin values, have to be reconstructed from the pattern of modern coin finds, but this method of study raises many problems which have so far received little attention. In this survey a fresh method of dealing with coin finds is proposed in which each coin is regarded as a fraction of a pound of gold. This avoids the endless complications with which pursuit of the life cycles of individual denominations has so far littered the path of archaeological numismatics.