William V. Harris*
Credit-Money in the Roman Economy

https://doi.org/10.1515/klio-2019-0006

Summary: This article, in order to advance the debate about the nature of Roman money, sets out the strongest arguments in favour of the crucial importance of credit-money in the Roman economy (carefully distinguishing the use of credit-money from merely buying on credit). It invokes some texts that were not employed in previous discussions. The article also replies to the chief arguments of those scholars who have more or less maintained the traditional view that all, or almost all, Roman money consisted of coins. The most important question here concerns trust and information: to what extent did Romans know enough about those who owed them money to accept payment in documentary form? On this question, the author takes the ‘optimistic’ view.

Keywords: credit, money, Roman economy, banking, trust

I. The Problem

When a terrible fire damaged the centre of Rome in the year 192, consuming the storage-space that Galen owned on the Sacra Via, the physician lost some major valuables – as we now know (peri alupias 4) –, including sumbolaia, that is to say IOUs, as well as gold and silver and other material.¹ That is just what we should have expected him to possess: well-to-do Romans normally kept a considerable proportion of their assets in various forms of IOU;² the generic Latin word was nomina.

This is well-known, but what is less well established is the extent to which Romans made use of nomina to effect payments – as they legally could by means of various procedures, including the one known as delegatio. This in turn is part

---

¹ Galen’s equanimity may have been helped by the fact that, even though the bonds had been burnt, he could still sue for repayment if he had an inventory (Dig. 26.757 pr., Scaevola Dig. 10; cf. Cod. Iust. 4.21.5).
² Thus Seneca, describing the forms that wealth might take, includes diplomata [travel passes, presumably] et syngraphas et cautiones (benef. 79.3).

*Kontakt: William V. Harris, E-Mail: wvh1@columbia.edu
of a larger question about Rome’s money supply, a question with a very important bearing on the nature of the Roman economy. Yet the suitability of the concept ‘money supply’ for Roman economic history also requires further discussion (see below, p. 177).

In a set of earlier papers I argued that the old consensus view that all Roman money consisted of coins – a view which had already been undermined to some extent by previous scholars⁢ – should be decisively discarded.⁴ The inhabitants of the Roman Empire frequently, demonstrably, and on a significant scale made payments by means of credit-money, thereby greatly increasing the flexibility of their financial operations in diverse milieus. Their use of credit-money created a ‘multiplier effect’, which meant that in high classical times the Roman economy was not constricted, as might otherwise be supposed,⁵ by an inelastic money supply.

Philip Kay meanwhile, in his book about the economy of the republican era, has argued cogently for the multiplier effect of Roman banking operations, and for the visibility of bankers in Rome as early as the time of Plautus.⁶ His study may be considered to have established the importance of credit-money at Rome beyond reasonable doubt, though he did not explicitly answer all the objections of the scholars referred to here (n. 12). Now furthermore Boudewijn Sirks has shown that written acknowledgements of debts (chirographa) were, by the second century AD at least, considered not simply as evidence of debts but as constitutive of debts, and that in consequence they could be bequeathed or sold and were therefore ‘negotiable instruments’.⁷ Thus even such (minor?) inconveniences as were involved in delegatio could be avoided.

The Roman monetary system was not by any means modern; rather it had its counterparts in such economies as those of seventeenth- and eighteenth-century Britain and France.⁸ Sixteenth-century Antwerp is relevant too (below, p. 171). And much remains obscure, in particular the amount of credit-money in use at

---

³ In particular by Mrozek 1985, but also by the other scholars referred to in Harris 2011, 224 nn. 8–9 and 301 n. 70. See in addition Strobel 2002, 118–120, with the reservations of Verboven 2005, 558.
⁴ Principally Harris 2006 (reprinted with additions in 2011), 2008. This paper is intended to supplement not supersede those accounts, except as noted.
⁵ And has been supposed: Verboven 2002, 116.
⁶ Kay 2014, 107–128.
⁷ Sirks 2016. On chirographa and sungraphai see also von Reden 2012, 278.
⁸ For extended comparisons between the financial systems in question and those of the Roman Empire see Rathbone – Temin 2008, Temin 2013, chapter 8. But these financial systems were evolving in important ways, in particular because of new forms of state borrowing.
any given time, especially when gold coins, first minted by Sulla and Caesar after a very long interval,\(^9\) came into common use from 46 BC onwards.\(^{10}\) But it should at least be possible to clarify the social and geographical range of those who made regular use of money of this kind.

In this article I shall briefly set out the strongest arguments in favour of the crucial importance of credit-money in the Roman economy (which I carefully distinguish from merely buying on credit, no doubt also a commonplace occurrence in Roman life),\(^{11}\) adding some texts that were not employed in previous discussions (sections II and III). On the way I shall have to reply to the chief arguments of those scholars who have more or less maintained the traditional view that all, or almost all, Roman money consisted of coins,\(^{12}\) but I shall give as little space as possible to polemic. The most important question here (IV) concerns trust and information: to what extent did Romans know enough about those who owed them money to accept payment in documentary form?\(^{13}\)

Current opinion about Roman credit-money seems to be divided. In contrast to the ‘conservatives’, those who deny its existence or at least its importance,\(^{14}\) I note in particular that Sitta von Reden, a widely acknowledged expert on ancient money, has articulated views similar to mine. Barbara Stelzenberger has done so too,\(^{15}\) while Dominic Rathbone and Peter Temin have argued that the high classical Roman economy was “permeated by credit created through paper trans-

---

\(^9\) Gold coins had been minted during the Second Punic War, but as Crawford remarks (1974, 691), “there is little reason to suppose that [they] ever entered normal circulation”. For other gold coins minted between Sullan and Caesarian times see p. 178. De la Hoz Montoya (2009, 280) suggests, in an important discussion, that the minting of substantial issues of gold coins from Caesar’s time onwards may have been a reaction against a level of payments by means of credit-money that the Roman elite considered excessive, but that is scarcely a plausible theory (p. 174).

\(^{10}\) The issue of 46 (Crawford no. 446) was fairly large: 111 obverse and 122 reverse dies are known (Molinari 2003, 182), but far more dies are known for e.g. Crawford nos. 443 and 458 (denarii). De Romanis 2012, esp. 176, has argued that gold coins only became the preponderant part of the Roman coin-supply under Tiberius.

\(^{11}\) For the difference between these two practices see e.g. von Mises 1953, 264 f. (‘Sachkredit’ versus ‘Zirkulationskredit’).

\(^{12}\) The chief recent representatives of this view have been de la Hoz Montoya 2009, Verboven 2009, and Andreau 2010 (which I cite from the original, not from the defective English translation of 2015). Lo Cascio, meanwhile, who previously recognized that credit played a large part in the financial system (Lo Cascio 1981, 76; 2003, 10 and 13), has expressed some doubts about that (see below) and has concluded that the role of credit-money was “limited” (Lo Cascio 2011, 35).

\(^{13}\) It is on this topic that my argumentation goes furthest beyond what I have written before.

\(^{14}\) Von Reden 2012, 276–284. See also the lucid discussion of Rollinger 2012.

\(^{15}\) Stelzenberger 2008, 168–178.
actions, multiplying many times the level of monetisation achievable through coinage alone”.16 I am not at all sure about “many times”, and will return to that claim later (p. 181).

In another section (V) I shall comment briefly on the role of banks before discussing some of the objections to my central thesis (VI). I shall attempt to trace the history of the Roman Empire’s money supply from the late Republic and the rise of gold coinage down to the financial troubles of the third century, ending with Melania the Younger in the first years of the fifth century (VII–VIII).

II. What is Money?

Standard definitions of money include its use as a store of value and as a unit of account, but give a crucial role to its exchange function (formulated in various ways): “the distinguishing feature of money among all assets [...] is its role as the medium of exchange”,17 and money is “the stock of assets that can be readily used to make transactions”.18 It is “anything that serves as a commonly accepted medium of exchange or means of payment”.19 But in any complex society it can be difficult to determine what should be counted as money and what should not; hence the widespread use of the concept ‘near-money’. As to Roman ideas on the subject, the jurists are unanimous to the effect that pecunia was not by any means limited to coinage,20 and other texts show that the jurists were not in this respect contradicting ordinary urban opinion:21 Cicero in the fifth Verrine (17) takes it for granted that nomina are money.22 In other words, no one in the senatorial or

---

16 Rathbone – Temin 2008, 417.
17 Fischer – Dornbusch – Schmalensee 1988, 141.
18 Mankiw 2003, 76.
19 Samuelson – Nordhaus 1998, 158. On the distinction between a medium of exchange and a means of payment see e. g. Peacock 2013, 31f.
20 Harris 2011, 231.
21 I take it that the reason that Gaius, Ulpius and Hermogenianus insisted on this point was that it was not obvious to the whole citizenry.
22 Clamare ille, cum raperetur, nihil se miserum fecisse, nihil commississe, pecuniam sibi esse in nominibus, numeratam in praesentia non habere. When Verboven 2009, 97, wrote that “there can be little doubt that coinage was to a Roman mind the only form of ‘real’ money”, he was ignoring the actual usage of well-to-do Romans. Kay 2014, 109, noting that nomen can also mean an “account entry”, suggests that in this passage it could “refer to deposit accounts with a bank or banks”, but I can find no passage in which nomen means a deposit account. In Verr. 2.1.100 and Colum. 3.3.9, which Kay adduces as parallels, it simply means “account entry”. His suggested
equestrian order is likely to have said, if offered a *nomen* as payment, “But that is not *pecunia*”.

Joaquín de la Hoz Montoya raises a significant question about Roman financial instruments when he writes that it has not been proved that Roman credit-money acquired the legal status of being acceptable “ante cualquiera”, to everyone, which in his opinion is “the identifying characteristic of money”. But the quality of *universal* recognition or acceptance is artificial: there are all sorts of circumstances in which stuff that is undoubtedly money will not be accepted, and the important question is whether a given type of instrument is acceptable to the persons who are usually asked to accept it. Montoya’s objection takes in any case too little notice of Roman concepts of *pecunia*.

It has also been claimed that, whereas I have argued that in the Roman world certain kinds of non-bank loans added to the money-supply, modern economics text-books do not count such loans as part of the money-supply. But I do not claim that *credit as such* added to the money-supply, only that *credit-money* does so. I explained the difference: a Roman could make payments by means of privately-issued *nomina*, whereas in a modern economy the central bank attempts to monopolize the creation of money, and to a considerable extent succeeds in doing so – whereas I am arguing for the existence in ancient economies of endogenous as well as exogenous money. Andreau tells us that in “economics textbooks” claims based on loans by private individuals “are never taken into account” in estimating the money-supply, but such is not the case. Historically

---

23 “No consideramos demostrado que éste [Roman credit-money] llegara a adquirir en la circulación la condición de derecho exigible de forma abstracta ante cualquiera, algo que a nuestro juicio es marca identificativa del dinero”, de la Hoz Montoya 2009, 276. My colleague could undoubtedly find in the macroeconomics literature statements that would seem to support his view, but only in appearance. Parguez – Seccareccia 1999, 105, for example, say that their definition of money “requires that there are agents capable of issuing debts upon themselves that are generally accepted by all other agents as a means of payment”, but they are thinking of a world of banks regulated by central banks not of the historical past. Similarly, Dornbusch – Fischer 1994, 374, tell us that “money is whatever is generally [not ‘universally’] accepted in exchange”, but their focus is on one culture and one time, namely the present.

24 Try paying a bill in Copenhagen with euro cash, or for that matter in cash kroner. I imagine that some difficulty would have faced anyone in late-republican Italy who tried to pay a bill in non-Roman currency, quite apart from the inevitable exchange *agio*. Perfect liquidity probably does not exist.

25 Andreau 2010, 160.
aware economists such as Ludwig von Mises and John Hicks may be cited.\textsuperscript{26} Here, for instance, is von Mises:\textsuperscript{27}

“Credit money [is] that sort of money which contains (enthält) a claim against any physical or legal person […]. [Older terminology] corresponded […] to the naïve and confused popular conception of value that sees in the precious metals something ‘intrinsically’ valuable and in paper credit money something necessarily anomalous.”

### III. Roman Ways of Making Payments

As for making payments, the second- and third-century jurists quite explicitly recognize that the performance of delegatio by the purchaser, that is to say payment by means of a documentary debt-transfer, pays off a debt or completes a purchase.\textsuperscript{28} Gaius describes a standard procedure, which he calls transcriptio.\textsuperscript{29} A decontextualized passage of Ulpian in the section of the Digest entitled De verborum significatione confirms that delegatio counted as payment (50.16.187, Ulp.32 ad ed.).\textsuperscript{30} Digest 46.2 provides ample legal details,\textsuperscript{31} and sections 4, 11–13, 19, 27, 31 and 33 of that chapter quite plainly refer to payments in credit-money.

\textsuperscript{26} Cited by me in all my previous discussions (see 2011, 229 f.).
\textsuperscript{27} Von Mises 1953, 61 (with a slight correction in the translation). “The legislator […] endows these fiduciary media with the legal power of settling all obligations contracted in terms of money – in doing which he only confirms a usage that has been established by commerce” (266). I admit that he later equivocates slightly: “Such claims to money, if there is no doubt whatever concerning either their security or their liquidity, are, simply on account of their equality in objective exchange-value to the sum of money to which they refer, commercially competent to take the place of money entirely” (ibid.). Von Mises’ reactionary politics and his affection for the gold standard are not relevant here. See further Hicks 1967, 157 f., and also Dornbusch – Fischer – Startz 2008, 395 (on the relationship between the stock of money and the stock of ‘high-powered’ money).

\textsuperscript{28} For the legal technicalities involved in delegatio see Zandrino 2010 and 2014.
\textsuperscript{29} A persona in personam transcriptio fit, veluti si id quod mihi Titius debet tibi id expensum tulero, id est si Titius te delegaverit mihi (Gai. inst. 3.130). He goes on to contrast such account entries with arcaria nominia, which refer to cash.
\textsuperscript{30} Verbum ‘exactae pecuniae’ non solum ad solutionem referendum est, verum etiam ad delegacionem. The word exactae hints at the reason why Ulpian needed to specify this.
\textsuperscript{31} I would no longer cite the statement of Berger 1953 (s. v. delegatio) that its “most practical form occurs when a creditor orders his debtor to pay the debt to a third party of whom he himself is a debtor”, since there is no reason to think that delegatio commonly resulted in an immediate cash payment by the original writer of the IOU.
It is of considerable importance here that there was in fact a market in *nomina*, in other words a purchaser who wished to make a payment by means of *delegatio* might shop around for a *nomen* (presumably buying one at a discount from a seller who desired cash).\(^{32}\) The well-to-do took *delegatio* for granted over a period of several centuries. I will discuss in an appendix the argument of Jean Andreau to the effect that “there were juridical constraints which slowed down very severely (*très fortement*) the passing on of debts” and ensured that they were not “very habitual”.\(^{33}\) It seems to me to be mistaken.

And this was only a fraction of the story, for there were other ways of making cashless payments, not all of which are perfectly understood: we have information about *permutatio* (a means of making payment at a distance), but exactly what was going on, for instance, when Cicero told Atticus that he planned to make a certain payment of HS 200,000 by “writing back” (*sed cum videas […] reliqua rescribamus*, Att. 16.2.1) it is apparently impossible to know.\(^{34}\) The interest of *permutatio* in this context is that it meant that the intermediary (who might be a *publicanus* or simply a financier like Atticus) added to the money-supply by providing cash against a simple written request.\(^{35}\)

I have on previous occasions described particular cases in which it is reasonably plain that payments were made by means of credit-money, and these cases have within certain limits a good claim to be typical of the financial practices in the periods in question. We can start with large property transactions, which at the top end of the market might amount to the equivalent of at least fourteen tons of silver coins on a single occasion. No doubt it is true, as I noted in previous publications, that in some cases such payments were made in three instalments, but in others they were more or less clearly not.\(^{36}\) In my previous articles I may

---

\(^{32}\) Cicero knows that he could sell the *Faberialnum* (on which see below, p. 166). For other references to the buying, giving and bequeathing of *nomina* see Cic. Att. 12.3.2 (there is scarcely any other way of interpreting *aut Vettiieni condicione semissem*); Dig. 30.44.5–6 (Ulp. 22 ad Sab.); 32.59 (Iulianus 34 Dig.); Cod. Iust. 4.10.2 [260 AD], 8.41.1 (Severus Alexander). Hence Andreau (2010, 160) is mistaken to say that there is no evidence of any such market.

\(^{33}\) Andreau 160.

\(^{34}\) The term *rescriptio* is not attested in a corresponding sense.

\(^{35}\) On *permutatio* see most recently Hollander 2007, 39–44 (who points out that while this procedure was sometimes used for making payments that was not its usual role in the cases we know about), Rollinger 2012, 116–124 and von Reden 2012, 277.

\(^{36}\) It seems likely that Lucullus paid the full sum at once when he bought a property at Misenum that had belonged to Marius for ten million HS (Plut. Marius 34), that Cicero paid the full sum when he bought his house on the Palatine (fam. 5.6.2; he supposedly had two million of the 3½ million purchase price as a loan from P. Sulla, Gell. 12.12.2), and that the Roman knight of Cic. off. 3.59 who bought the property at Syracuse did likewise (otherwise the deceived buyer would not perhaps have been so indignant). Verboven 2009, 98, suggests that transactions such as Cicero’s
have understated the possibilities of gradual payment (I overlooked the evidence in the Cicero letter just quoted, Att. 16.2.1, to the effect that the orator had paid the major pars of a third instalment prior to the due date), but the overall picture is scarcely affected. Very large sums – very heavy and inconvenient if in the form of silver coins – were often involved. And as Israel Shatzman remarked, citing a well-known passage of Pliny (nat. 36.109), “sumptuous houses, costing several million sesterces, became common in [late-republican] Rome”. We should also recall that in the same period, if not before, Roman grandees acquired extensive properties in the provinces as well as in Italy, which they must from time to time have sold to each other.

As for Cicero’s purchase of his house on the Palatine for 3 ½ million sesterces, enough has probably been said elsewhere. Andreau suggests that Cicero may indeed have paid nearly three-and-a-half tons of silver coins, though not in one go, rather in three or four tranches. But, as I have already pointed out, we in fact know how well-to-do Romans of this period paid for expensive real estate, that is to say largely with nomina. One can help Andreau’s case by pointing out that in Ad Atticum 12.25.1 Cicero does in fact seem to envisage the payment of cash to the value of HS 600,000 on another occasion – as part of a purchase price –, but Andreau’s hypothesis is entirely unnecessary. Next time he wishes to pay someone 600,000 euros, we shall see whether he prefers to pay in inconvenient banknotes (not to mention coins, which a prudent recipient would have to count) or with a cheque; I know which I would prefer to receive. One chooses the most convenient method that is in regular use. Nor is there, as far as I know, any evidence anywhere in Roman literature, epigraphy, papyrology or archaeology that suggests that the largest payments by individuals were ever made in cash.

purchase on the Palatine were “infrequent”, and in the late Republic they were no doubt still confined to the senatorial-equestrian elite. But members of that elite may easily have spent 100 million HS a year on property purchases (if every one of the one thousand wealthiest Romans spent a mere million once every ten years).

37 Rollinger 2012, 111, invokes payment by aestimatio, a procedure involving an exchange of properties that seems to be alluded to in Cic. Att. 12.25.1, as a normal way of paying for property, but I can see no other allusion to such a procedure.

38 Shatzman 1975, 23.

39 Shatzman 34 (rather cautious). One thinks of the allusions to provincial conditions in Varro rust.

40 Harris 2008, 175f.

41 Andreau 2010, 157.

42 This will have been the minority of the proposed purchase price.

43 As Lo Cascio has observed (2008, 166), “the transfer of coin was altogether to be avoided whenever possible”.


Other known instances of payments or proposed payments for property in which credit-money was involved include the much-discussed Faberianum negotium.\textsuperscript{44} In this case Cicero planned to pay for the Silius property partly by means of funds that were owed to him by Faberius or with a nomen that was owed to Faberius (Att. 12.25.1; cf. 12.31.2, 13.2a.1).

And large sums of money changed hands for all sorts of reasons that had nothing to do with property. In 54 BC, to take a curious example, in order to ensure fair tribunician elections, all the candidates agreed to make Cato, who was a praetor, the arbiter of their good behaviour, and each of them deposited HS 500,000 with him as a guarantee (Cic. Att. 4.15.7, ad Q. fr. 2.15.4).\textsuperscript{45} If there were, say, fifteen candidates, that would have meant in total about 723.75 kg of denarii.\textsuperscript{46} Peter Parsons supposes interestingly that even moving 3 ½ pounds of coinage would have been considered inconvenient in Roman Egypt.\textsuperscript{47} But it was on the other hand considered possible, apparently, for the younger M. Cicero to take his allowance physically to Athens (Att. 12.24.1), and it amounted to 80,000 HS (Att. 16.1.5) (weighing about 77.2 kg in silver coins).\textsuperscript{48} Caesar once paid 6 million for a pearl, according to Suetonius (Divus Iulius 50); not for the most part with coins I think. A generation later M. Lollius spent some 40 million HS (but there could scarcely be a rounder number than that in Latin) on diamonds and pearls that later adorned the person of his grand-daughter Lollia Paulina (Plin. nat. 9.117). She was willing to show the tabulae that proved how much they had cost;\textsuperscript{49} it is hardly to be supposed that M. Lollius had paid entirely with plundered goods or coins.

\textsuperscript{44} I have changed my mind about this since I wrote 2008, 198, largely because I am even more convinced than before that Shackleton Bailey, in spite of his formidable knowledge of Latin, was mistaken to translate repraesentabimus in Att. 12.25.1 as “we [will] pay cash”. Better is J. Beaujeu: “je donne[rai] en paiement”. As far as I know, the term repraesentare is never used with any clear implication that coins are specifically involved. Cf. Ker 2007, 348. In Dig. 33.4.1.2 (Ulp. 19 ad Sab.) and Dig. 35.1.36.1 (Marcellus lib.sing.resp.) repraesentare clearly means just “pay immediately” and has nothing specifically to do with coins.

\textsuperscript{45} Precisely what happened on this occasion would involve an analysis of Plut. Cato Minor 44 that would take us too far out of our way.

\textsuperscript{46} The same year two of the consular candidates offered the consuls bribes of HS 4,000,000 each (Cic. Att. 4.17.2, with Shackleton Bailey ad loc.).

\textsuperscript{47} Parsons 2007, 120.

\textsuperscript{48} Stelzenberger, however, considers that if the permutatio had not been arranged the student might have taken his allowance to Athens in some documentary form (2008, 168).

\textsuperscript{49} Ipsa confestim mancupationem tabulis probare; nec dona prodigi principis fuerant, sed avitae opes, provinciarum scilicet spoliis partae. This probably refers in the main to the time when Lollius (PIR\textsuperscript{2} L 311) was the first governor of Galatia. But the spolia may have been valuables of any kind.
As to the introduction of credit-money at Rome, von Reden is clearly right that “the Roman monetary economy had taken off when the Romans became engaged in Magna Graecia and the Hellenistic Mediterranean”, but I would not discount Carthaginian influence either. *Delegatio* is in fact first attested in Cato’s *De agricultria* (ch. 149), and *permutatio* not in the relevant sense until Cicero (ad Q. fr. 1.3.7, 58 BC; Pis. 48, 55 BC), but there is no reason in either case to think that the practice was new – on the contrary, its functioning is in both cases taken entirely for granted.

Of the cases I have listed previously in which payment seems to have been completed at least partly by means of documents, it is especially worth emphasizing those that concern people outside the senatorial-equestrian elite. This applies to Plautus’ audience (I am not forgetting the complexities involved in describing that audience), who must, many of them, have understood what is going on in the *Asinaria* when the wine-merchant Exaerambus makes a payment by “writing *nummi*” (440). How to make money? The *leno* in the *Pseudolus* (301–302) explains, and the audience presumably understands: you borrow money for repayment long-term, buy olive-oil, and sell it on short-term credit (a parody of real business practice obviously); in other words, you buy oil with money that your lender lists among his own assets. We should not suppose that Plautus’ thirty-four references to bankers show that many, let alone all, members of his audience had anything to do with such people, but banking was certainly on its feet in Rome by the 190s (as indeed it probably had been for a century).

Horace, much later, presents us with a marvellous scene in which one Damasippus buys old statues in Rome by means of credits (sat. 2.3.64–66). And Andreau has shown that in the Caequilius Iucundus documents from Pompeii the common verb *persolvere* probably means “to pay through an intermediary”. The differences between these various financial practices do not need commentary here.

---

50 Von Reden 2012, 283.
51 The text of this passage is problematic, but *pecuniam [pecunia Mommsen][...]* *delegarit* is certain.
52 Concerning the latter passage R.G.M. Nisbet says that the term was “rare and technical”, but Cicero certainly expected his readers to understand it without an explanation.
53 Much of what has been written about the composition of Plautus’ audience is too subjective. What we know is that the wooden seating in the forum, plus the space for standees, cannot have accommodated more than at most a very few thousand people, and that both senators, their satellites and ordinary citizens were present (cf. Liv. 34.54).
54 Line 303 shows that the scene is Graeco-Roman not purely Greek.
55 On this passage cf. Harris 2011, 242.
56 Andreau 2008, 218; cf. Harris 2011, 243.
In the provinces the most spectacular seven-figure ‘paper’ transactions probably concerned the acquisition of grain (one recalls the enormous sums allegedly entrusted to Verres) (Cic. Verr 2.3.163). Luxuries such as pearls, diamonds, purple and desirable slaves will regularly have required non-coingage payments. But credit-money had a far wider range of uses. From Britain to Dacia to Egypt, paying by means of credit-money was a commonplace procedure for several centuries. We still lack a comprehensive account of the extent to which the inhabitants of Roman Egypt paid for large-ticket items by means of bank transfers. Quite often, they paid for what we might consider medium-level assets, such as small properties and single slaves, by means of cash. Yet private bankers – the kind who concern us here – were to be found all over the province and did business with quite ordinary people. (These ‘banks’ would not, however, in the eyes of some, merit such an appellation because they very seldom if ever lent their own funds, as distinct from acting as intermediaries in the lending by one client to another).

Sitta von Reden writes, correctly as I think, that it is “highly likely that loan documents became proper monetary/ instruments to be used among a wide social range of people and a wide range of transactions”. Yet there were probably limits: the range of people involved may not have extended far into the countryside or among the illiterate poor, urban or rural.

There is still more evidence that loan documents could be used to make payments. When Caesar in 49 wanted to shore up the credit market and compelled (as far as he was able) the wealthy and those of moderate wealth as well – the sort of people who might have more than HS 60,000 at home in cash – to lend (Dio 41.38), this was the direct and immediate effect; borrowers gained funds to the extent of x million HS, while lenders did not lose them (barring some bad debts of course). The well-to-do lenders could continue to pay for major assets by means of nomina – otherwise we would have to suppose, absurdly, that Caesar intended to close down the high-level property market and indeed the markets for all other expensive goods and services.

Lo Cascio has observed that when Caesar wanted to solve the liquidity problem of 49 he attempted to force more coins into circulation, which he takes

---

57 On bank payments and cash payments for slaves in Roman Egypt see Straus 2004, 80–82 and 97–102.
58 Bogaert 1995.
59 Cf. Lerouxel 2008, 171.
60 Von Reden 2012, 278f.
61 Yet we know now that the countryside was more monetized than some used to believe (see Howgego 1992, 20–22), and we must suppose that the poor often survived by means of credit.
62 Caesar claimed that he was reviving earlier laws to this effect, but Dio does not seem to have believed him.
as evidence that coins were the main part of the money-supply. But this is no evidence that credit-money was unimportant, because Caesar, having no central bank at his disposal, was in no position to put credit-money into circulation (unless he did so as a private individual, at great personal risk). The fact that Rome’s rulers, lacking both a central bank and government bonds, had no way of directly increasing the supply of credit-money is plainly no argument at all against the actual existence and importance of such money.

Hadrian was once called upon to rule exactly what counted as the pannicularia, roughly the ‘personal effects’, of a person who in the normal course of Roman rule had been executed by a military unit. What could the soldiers claim for themselves? The nummuli that the prisoner had in his purse, by all means. But if he had on him an expensive jewel or a chirographum magnae pecuniae, “an IOU for a large sum of money”, such things are to be handed over to the governor for official use (Dig. 48.20.6, Ulp. 10 de off. proc.). It is implicit that a chirographum often has a monetary value, and since, unlike jewels, it has no intrinsic value it has to be a negotiable instrument (only usable at a hefty discount, one may suppose). This text also suggests that such chirographa commonly included ‘bearer clauses’ confirming their validity to whoever happened to come into possession of the document in question (we shall shortly meet such clauses). The immediate monetary value of stolen chirographa and cautiones was also set out by Ulpian (Dig. 47.2.27 pr., Ulp. 41 ad Sab.): “one who takes away chirographa or cautiones is liable in theft not only for their intrinsic value but for what they represent, which means the amount of the sum contained in the document”.

IV. Information and Trust

If an act of delegatio was to be accepted, the new creditor would wish to know the character of the original debtor, as Cicero observes (Att. 12.5a). The problem of whether to trust will certainly have been an inhibiting factor: buying or accept-

---

63 Lo Cascio 2011, 32 and 34. When he laments that if I am right about credit-money much of the labour of those who have attempted to quantify late-republican Rome’s production of coins has been wasted, I fear that I have to agree.

64 Pace Lo Cascio 34. He appears to say that credit cannot have been important because governments did not take action about it – but they did.

65 This part of Ulpian’s opinion was not it seems a matter of controversy. For other evidence and commentary see Sirks 2016, 269 f.

66 De Caelio tu quaeres, ut scribis; ego nihil novi. Noscenta autem est natura, non facultas modo. See also 16.3.5. Shackleton Bailey compares Sen. benef. 1.1.2.
ing in payment an existing *nomen* depended on the buyer’s/recipient’s trust in the original debtor. “Within a town it will have been possible to dispose of information”, says Sirks, and it seems probable that *delegatio* normally took place within single communities. But as Sirks has also observed, extensive long-distance trade such as took place in the Roman Empire would have been impossible without credit-money and trust. And trust is still, in different ways, an important factor even in contemporary financial systems (remember Madoff), particularly of course in countries in which the behaviour of financial professionals is poorly regulated.

But how far did such trust extend, and how easy was it to obtain the information on which it might be based? Montoya has speculatively suggested that a large role for credit-money in the Roman economy would depend on an implausible level of trust between its various actors, but the Roman trading economy as we know it from multifarious sources could not have functioned without quite a high level of mutual confidence. Long-distance business correspondence was commonplace as was long-distance travel. There was a network of what Taco Terpstra has called “trading stations” – modest by the standards of the Venetians and the Genoese, but presumably effective in increasing the trust between locals and outsiders. *Fides*, as we know from a variety of studies, was buttressed by a number of social and institutional factors.

 Needless to say, the evidence referred to here only takes us so far. But similar difficulties in acquiring information did not prevent a great growth in European commerce between the fourteenth and sixteenth centuries – when conditions were arguably more difficult because of the great number of currencies that were in play. And a striking feature of the early modern English economy is that a rather high rate of defaulting debts did not prevent either massive lending or economic growth.

This is the point at which to consider the possibly insoluble problem concerning what I have called ‘serial delegatio’, that is to say the ‘delegation’ of a debt that had already been delegated at least once. I am not at all sure how common it

67 Sirks 2016, 279, q.v.
68 Sirks 2016, 280f. Gabrielsen 2016 tends strongly in the same direction with regard to the classical and Hellenistic Greeks.
69 De la Hoz Montoya 2009, 278.
70 But we lack a good modern survey of this topic.
71 Terpstra 2013.
72 In truth there is room for a new study linking public life, law, religion, financial affairs, *clientela* and the Roman taste for moralizing.
73 See Howell 2010, Introduction.
74 Muldrew 1998, esp. chapter 7.
was.\textsuperscript{75} There is in any case a modest amount of evidence that such serial \textit{delegatio} did sometimes take place, as indeed the existence of a market in \textit{nomina} (above, p. 164) implies.

I have suggested elsewhere that the phrase \textit{eive ad quem ea res pertinebit}, “or to whom that matter may belong”, or its abbreviation “\textit{e.a.q.e.r.p.”, which appear in loan documents from Alexandria (153 AD) and from Alburnus Maior in Dacia (162 AD)\textsuperscript{76} – and now very interestingly in three of the much earlier Bloomberg tablets from early Roman London –,\textsuperscript{77} provide evidence of this practice. I do not insist on this interpretation, but it looks as if the practice was commonplace enough by the time of the Alburnus Maior documents to be referred to by an abbreviation. This is the sort of ‘bearer clause’ that appeared in IOUs in the financial world of sixteenth-century Antwerp.\textsuperscript{78} Furthermore the places in question, Alexandria and so on, while they were more or less cosmopolitan, were remote both from Rome and from the senatorial-equestrian circles which produced much of the other evidence. The objections to this interpretation of the five documents in question seem to me to be insubstantial. These documents do not of course specify by what means the debt might pass from the ownership of the creditor to someone else (bequest perhaps), but sale should not be excluded.\textsuperscript{79}

\textsuperscript{75} According to de la Hoz Montoya 2009, 276, this is the crucial question (“la prueba del fuego”).

\textsuperscript{76} P. Fouad I.45 = FIRA III no. 121 = Ch.L.A. XLII.1207 (a loan document; \textit{tibi aut procuratori heredive tuo aut ad quem ea res pertinebit sine controversia} […]; some letters are restored); CIL III, 934–935 (no. V) = FIRA no. 122 = IDR I.35 (“\textit{e.a.q.e.r.p.”).\textsuperscript{76}

\textsuperscript{77} Tomlin 2016, tablets 44, 54 and 55 (none of them abbreviate the formula).

\textsuperscript{78} See Puttevils 2015, 110.

\textsuperscript{79} De la Hoz Montoya 2009, 277, claims that both here and in \textit{T[abulae] P[ompeianae] Sulp[iciorum] 48}, where a similar expression is used, “la fórmula se centra más en el problema de la representación que en el de la delegación”, but TPSulp 48 is an entirely different kind of document. The fact that \textit{eumve at quem ea res pertinebit} or some very similar phrase (abbreviated in one case) also appears in sale documents from Alburnus Maior (IDR I.36–39) seems to strengthen not weaken the likelihood that the creators of IDR I.35 envisaged a possible sale of the debt. IOUs and other assets were on the same footing. – As far as I know there is no evidence in the papyri of the serial transfer of money debts. But P.Oxy. XXXI.2591 of 158/159 AD shows not merely a transfer of grain stored in a state granary, but two more transfers entered in the same document, which therefore seems to be a negotiable instrument. Is it pure chance that we have no similar documents about the transfer of IOUs?
V. More about Banks

Some of the cases of non-cash payments that have been mentioned here involved banks, and several aspects of Roman banking are worth emphasizing at this juncture. A first point to observe is that if, as we must, we consider the whole Roman Empire as an economic unit (without making any exaggerated claims about its economic integration), we can see that the banks’ potential contribution to the money supply was considerable. Not only were Greek cities all more or less provided with complex financial instruments of the kind revealed by the Ephesian Debt Law of 85 BC (SIG 3 742), even those cities that remained formally outside Roman control could be deeply involved in Roman financial networks, as was the case with late-Ptolemaic Alexandria. An emblematic, though not typical, late-republican man of affairs was Cicero’s client Rabirius Postumus, an *eques* (and later senator) who was at one time the financial controller of Egypt. He “was very active in the public arena, conducting a great deal of business, for he possessed large shares (*partes*) in the public contracts” (Cic. Rab.Post. 4). Kay sums up his other business affairs:

“Rabirius also lent money throughout the Mediterranean, employed a freedman agent at Ephesus and Naxos, engaged in overseas commerce with his own cargo fleet (importing paper, linen and glass from Egypt), and produced wine and oil for export on his own estates.”

His affairs must have entailed the massive use of credit-money. It is also reasonably plain that Rabirius lent other people’s funds as well as his own and was “functionally at least” a banker.

A second, related, point concerns the involvement in banking of the upper social elite. The rarity of explicit allusions to bankers in Cicero is well-known, and I would suppose that we should accept that in his time at least they were much more active in other parts of Italy and the more sophisticated provinces than they were in the capital. At Rome itself they will mostly, in these years, have operated on a second social level, the highest level of finance being occupied by

---

80 For some previous comments see Harris 2011, 236–238.
81 On this text see Harris 2011, 233.
82 Kay 2014, 193. For Rabirius’ affairs see also D’Arms 1981, 28–30.
83 Kay 2014, 257.
84 Kay 2014, 237 f.
senators and knights, who were of course exempt from the not yet stringent laws governing the conduct of *argentarii*.\(^{85}\)

Some of these knights may have counted as *faeneratores*.\(^{86}\) Vitruvius (6.5) distinguishes *faeneratores* as well as *publicani* from those qui *communi sunt fortuna* and tells us that their houses should be more spacious and elegant, before going on to speak of advocates and those who hold public office – in other words the *faeneratores*, in his eyes, are of fairly high standing. Their relevance here is that they may for a time have largely displaced bankers in the capital, as far as money-lending was concerned.

Thirdly, it may be worth repeating that while for a long time bankers were not supposed to lend out funds that they had received as *deposita*, they could lend what had been deposited with them as a *mutuum*, an arrangement that entitled the depositor to receive interest.\(^{87}\) And eventually lawyers discovered circumstances in which bankers could also legally lend out what they received as *deposita*.\(^{88}\)

Before returning to the significance of credit-money for the economy of the Roman Empire, certain objections to the case I have been making deserve responses.

**VI. Some Objections\(^{89}\)**

1. Some argue that late-republican Romans commonly made large payments by means of bullion.\(^{90}\) There is indeed some evidence for making payments by means of bullion, but in effect it all relates to frontier areas, the eastern frontier

---

\(^{85}\) On which see Kay 244. A later instance of the involvement of the upper elite with bankers concerns the settling of Herodes Atticus’ bequest to the citizens of Athens. Philostratus (soph. 2.1.549) describes how when the beneficiaries went to “the banks” through which Herodes’ son was to distribute the five *mnai* due to each of them, they were unpleasantly surprised to find that the sums that they had long owed to Herodes were to be deducted (which nicely shows how Herodes accumulated *nomina*).

\(^{86}\) On the connotations of this term in the late Republic see Kay 2014, 240 f.

\(^{87}\) On bank deposits designated as *mutua* see Harris 2011, 236.

\(^{88}\) Johnson 1999, 87. The earliest known evidence for this is Dig. 16.3.28 (Scaevola 1 resp.), probably written during the reign of M. Aurelius.

\(^{89}\) Andreau 2010, 160 (cf. 22) traces my errors in this matter to the fact that, like Peter Temin, I am a ‘modernist’. But that is scarcely correct (compare the title of Harris 1993). It is true that I consider it misguided to try to understand the Roman economy without such concepts as ‘capital’, ‘labour’, ‘supply’ and ‘demand’.

\(^{90}\) Verboven 2009, 110, maintains that “there is a wide consensus that gold bullion was used for large payments” in the late Republic.
in particular\textsuperscript{91} and also, so it has been claimed on weak evidence, at the Magdalensburg.\textsuperscript{92} If payments by means of bullion had been common within the Roman Empire, they would necessarily have left at least a modicum of physical evidence. Andreau has shown that ingots of precious metals, unlike coins – and even financial documents – have proved to be entirely absent from the Vesuvian cities.\textsuperscript{93}

2. Elio Lo Cascio gives an account of the late-republican and early imperial credit market that is at odds with any suggestion that the volume of credit-money tended to increase at least until gold coinage came into common use. As is generally recognized, there was a slowing down in the production of precious-metal, i.e. silver, coinage after about 79 BC.\textsuperscript{94} I have hypothesized that this caused no inconvenience to the well-to-do because “a large, and probably increasing, proportion of their sizeable financial transactions was being carried out wholly or mainly by means of documents”.\textsuperscript{95} Lo Cascio disagrees,\textsuperscript{96} apparently because there was sometimes a shortage of credit in the late Republic. But there was only one credit crisis under the Republic after 79 BC and that was caused by civil war not by any development in normal economic or financial life. In 54, so Cicero asserts, intense political rivalry – involving heavy expenditures – quickly caused interest rates to double (Cic. Att. 4.15.7) – but from four per cent to eight, that is to say from a very low rate by Roman standards to another rate that was still well below the maximum permitted. Caesar’s civil war, for easily understandable reasons, produced the first major shortage of credit in a generation.\textsuperscript{97}

There may indeed have been shortages of credit in other parts of the Roman world, and given the huge scale of Roman lending to provincial communities and to foreign rulers\textsuperscript{98} – some of it consisting of funds the lenders had borrowed in Rome\textsuperscript{99} –, we might have expected such a thing to manifest itself at Rome itself. But there is no good evidence that during the piracy crisis of 67 or the subsequent

\textsuperscript{91} See Harris 2011, 226 f.
\textsuperscript{92} By Grassl 2005, 31, on the basis of a graffito published by Egger 1961, 8 no. 27 (not in AE).
\textsuperscript{93} Andreau 2008.
\textsuperscript{94} Lockyear 1999. Whether this meant that the stock of silver coin decreased will depend on the rate of loss, a problem that is discussed in detail by Verboven 2003, 58–62.
\textsuperscript{95} Harris 2008, 197. De la Hoz Montoya argues (2009, 280) that the (hypothetical) growth in the use of financial instruments to make payments in the late Republic may have been a forced response to decline in the production of silver coins, but that leaves him without any explanation of the latter phenomenon.
\textsuperscript{96} Lo Cascio 2011, 39.
\textsuperscript{97} For the sources see Frederiksen 1966, 132 n. 35 and 133 n. 41.
\textsuperscript{98} Kay 2014, 195 f. The total amount in the late Republic will have run to many hundreds of millions of HS.
\textsuperscript{99} See for instance Cic. Sull. 58 and fam. 13.56.1–3; cf. Verboven 2008, 216.
showdown with Mithridates there was any shortage of credit at Rome.\textsuperscript{100} During the Catilinarian crisis the problem was too much debt, not, as far as we know, the price or difficulty of borrowing. When Cicero as consul attempted to prevent the export of gold and silver via Puteoli, that was partly political theatre and partly, no doubt, intended to inconvenience any fleeing Catilinarians who intended to finance their exiles exactly in the way in which Cicero financed his own in 58.\textsuperscript{101} Our evidence is of course far from comprehensive, and there may have been difficulties of which we are not aware. But when the Senate, in very late 51 or very early 50, attempted to cap interest rates at 12 per cent (Cic. Att. 5.21.13) – a somewhat mysterious measure, if it is true that the Lex Cornelia Pompeia of 88 BC already set 12 per cent as the limit\textsuperscript{102} – that was a sign of among other things the onset of a profound political crisis. Some modern writers notwithstanding, all informed persons already knew that there was a serious danger of civil war (Cic. fam. 4.3.1, etc.).

A tight credit market would in any case have created both winners and losers, and while it would have slowed economic activity it is not likely to have radically reduced the use of \emph{delegatio}.

At some unknown date, but presumably in the years 46–44, Caesar had a law passed \textit{de modo credendi possidendique intra Italiam}; it is known to us only from a brief allusion in Tacitus (ann. 6.16). The law apparently had the aim of limiting lending and ensuring that the well-to-do kept a certain proportion of their assets in Italian land.\textsuperscript{103} It was hardly surprising that Caesar, who had seen the negative effects of falling Italian land-prices, should have wanted to support them (especially at a time when provincial land was becoming more attractive to Roman investors). Lo Cascio seems to imply that the law succeeded in preventing the ‘excessive expansion’ of credit-money; its main implication seems rather to be that by 46/44 there was a very large amount of it. Nor is there any reason to think that anyone heeded the law between 44 BC and the financial crisis of 33 AD.

\textsuperscript{100} The Lex Gabinia (probably of 67 rather than 58) that banned loans to the envoys of foreign states was presumably intended to prevent crises that arose when provinces and provincial cities were driven to the wall. See Brunt 1988, 175 f., for Roman concern in this period about usury in the provinces, both eastern and western. Cic. Att. 1.12.1 shows that in 65 some lenders were charging 12 per cent but that Cicero expected to borrow at a lower rate.

\textsuperscript{101} Cic. Vatin. 12 and Flacc. 67 (where it is of interest that Cicero claims that the Senate had “often before” banned the export of gold). Admittedly we do not know at what date in 63 the Senate passed its decree.

\textsuperscript{102} As is considered probable by Kay 2014, 256, and others. But Festus 516 Lindsay, the only evidence about the law, shows no such thing in its existing fragmentary form.

\textsuperscript{103} Lo Cascio 2011, 36.
But no one is denying that coins were a much more important component of the money supply than in a modern economy. When Octavian brought the immense treasure of the Ptolemies back to Rome and (evidently) distributed a lot of it in the form of coins, interest rates naturally sank (Suet. Aug. 41, Dio 51.25). But the same passage of Suetonius that tells us this also shows how lending increased the money-supply: when Augustus confiscated *bona damnatorum*, we are told, he lent out the funds interest-free, against 200 per cent security, which must certainly have affected the credit-market. It is indeed obvious that various factors affected interest rates (apart from the creditworthiness of the individual borrower and the quality of his securities if any).

3. A few words are necessary about the credit crisis of 33 AD,104 if only because the evidence about it shows that the highest social elite made use of banks at that time and that the latter were capable of dealing with large sums (Tiberius’ rescue package, it will be remembered, amounted to 100,000,000 HS).105 Konraad Verboven, desiring to diminish the role of banks in the Roman economy, discards the clear evidence of Tacitus (ann. 6.17.3) that Tiberius made use of banks (*mensae*) in this crisis (where the historian has no motive to distort the facts), apparently on the grounds that Dio 58.21 gives a different account.106 According to the latter, Tiberius “gave twenty-five million [denarii] to the treasury, with the provision that this money should be lent out by the men of senatorial rank [*hup’ andron bouleuton* – an interesting phrase] for three years without interest” (58.21.5). “The implication”, in Verboven’s view, “is that the *mensae* were ‘financial boards’ headed by senators such as functioned in the 4th and 3rd century BC”. Others have thought Tacitus was referring to ‘public banks’.107 One recognizes Tacitus’ distaste for official terminology,108 but *mensae* are banks not boards, and there were of course no public banks at Rome (they could scarcely have escaped mention). Few will hesitate to prefer Tacitus’ detailed account to Dio’s much hastier narrative. “Dio is careless in small matters as in great.”109 It would be plausible to combine the two versions and suppose that the senators were intermediaries between the emperor and the banks, but the banks in any case have to stay.

---

104 See also von Reden 2010, 120.
105 For Vitruvius on the *faeneratores* see above, p. 173.
106 Verboven 2009, 122 n. 126.
107 E. g. E. Koestermann ad loc. Schartmann 2012, 149, catalogues some of the curious ways in which scholars have interpreted *mensae* here.
108 Syme 1958, 343f.
109 Syme 1958, 688.
VII. The Money Supply of the Roman Empire

The concept ‘money supply’ obviously has meaning when applied to the Roman world, but it is a little anachronistic, even if we want to go all the way with Peter Temin and believe in a highly integrated Roman economy (and he goes further in that direction than I would go). The important question here for the history of the Roman economy is not in any case the total money supply, because we are not dealing with a mass-market modern economy in which the aggregate purchasing power of consumers is a good index of the health of the economy: more or less autarchic farmers who seldom bought anything with money except iron and salt, ordinary slaves, and other people who inhabited the natural economy were too numerous for that to hold good. What mattered most about the money supply was whether borrowers could find money to borrow, and at reasonable prices.

Under the Republic, there were credit crises from time to time – though not as often as some scholars have supposed and only in times of intense political crisis; under the emperors, the crisis of 33 AD was apparently unparalleled, at least in the first and second centuries. Gaius’ remarks about the variability of interest rates from place to place (Dig. 13.4.3) might be taken to mean that they tended to be reasonably stable at each particular place. Cities lent money in Trajanic times, but sometimes had serious difficulty in finding suitable borrowers. Trimalchio had the same problem, on an absurd scale naturally (Petron. 53). We do not hear of anything like a capital shortage. The fact that there were always borrowers among the poor who were sufficiently desperate to pay more than the legal maximum of 12 per cent (which may not in any case have applied to loans between non-citizens), just as there were clearly loan sharks willing to charge much higher rates, reflects the social structure not the extent of the money supply.

We cannot possibly quantify the proportion of the money in the Roman Empire that was credit-money. And historians of early modern Europe have in their turn been cautious in this respect. But it is generally agreed that the proportion became very considerable in the sixteenth-century Low Countries. A recent study of the use of IOUs in sixteenth-century Antwerp is illuminating:

110 Temin 2013.
111 Plin. epist. 10.54 and 55; Dig. 26.7.12.4 (Paul 38 ad ed.) and Cod. Iust. 5.56.3 (228 AD) may reflect the same problem.
112 Andreau 1999, 93.
113 See Bagnall 1977.
“Increasingly, these debt contracts were passed on by the creditor to others [...] commercial growth was stimulated by this transferability of IOUs yet also endangered by it [...]. Did a new creditor still know the original debtor mentioned in the contract? Did evolving laws and commercial custom render this familiarity obsolete?”

This writer avoids committing himself to any estimate of the ratio of credit-money to currency in this economy, but his work strongly suggests that at least in the more commercial parts of the Roman Empire it will have been high.

Similar financial instruments were in wide use in Britain and France by the later years of the seventeenth century if not before. A historian of Britain has cautiously estimated that about 1690 – shortly before the newly founded Bank of England (1694) vastly increased the amount of paper-money in circulation – Britain possessed some 14.5 million pounds in coin and “perhaps” 5.5 million more “in paper and government tallies”, say roughly 27.5 per cent of the total. It has been estimated by Braudel among others that by the eighteenth century France had more paper money than metallic money, and similar estimates have been made about Britain in 1776.

In the Roman case there will have been variation through time as well as space. A major variable was the introduction of gold coinage and then its widespread use. The first mystery here is why Rome did not coin in gold on a significant scale between the mid-second century BC, by which time the treasury contained very ample amounts of gold and could easily have done so (these resources then increased enormously in and after 146), and the time of Caesar. Kay has calculated that in 157 BC, when Pliny (nat. 33.55) tells us how much gold and silver was in the treasury, the gold was the equivalent of 14,624,400 HS, whereas the silver was only the equivalent of 1,853,880 HS. Sulla of course minted gold coins, as did Caesar in 48–47, but there was no large issue of aurei until the coins of Hirtius and Caesar in 46. Rich Hellenistic states had in the past minted gold......
coins,121 and Carthage did so down to the end.122 It hardly seems sufficient to say that the republican Romans did not mint gold coins because “they rarely needed them”.123 Gold coinage would have been an obviously desirable innovation, so one might think, because it would have facilitated payments by and to both the aerarium, the magistrates and individuals. Gold bullion stored in the aerarium was on the face of it largely useless.

I wrote previously that in the late Republic gold gave the air of luxury and corruption,124 and that interpretation could be filled out with other facts, such as that the famous Lex Oppia of 215 limited the amount of gold jewellery that a woman might wear, and that two centuries later some male writers approved of this provision and not of its repeal.125 But gold could be entirely respectable: golden crowns, to take a clear case, had for centuries been a recognized military honour.126 So while gold had an equivocal reputation, that is not enough to explain why Rome avoided regular gold coinage for so long. It is also true that it took an unusually powerful magistrate to introduce a far-reaching innovation. It took Sulla to systematize criminal law and Caesar to rationalize the calendar.127 Leading senators begrudged each other the distinction that would accrue to a successful reformer.128 It took a Sulla or a Caesar to effect a desirable innovation in the coinage system, and they at least seem not to have been excessively worried if some people saw a resemblance between them and Hellenistic kings.129

But we are not there yet. A rational consideration was probably more important than either of the considerations just mentioned. The gold in the aerarium was in a sense an emergency fund. As in the Second Punic War, it could be monetized in a truly deep crisis. Otherwise it was in reserve in case of seriously dangerous foreign enemies who threatened to exhaust the silver currency – except that after 202 there were no such enemies, not that is to say until 91. As Cicero

---

121 See Howgego 1995, 8 f.
122 Jenkins – Lewis 1963.
123 Hollander 2007, 24, endorsed by Kay 2014, 24. But the following discussion is heavily indebted to David Hollander.
124 Harris 2011, 226 n. 21. For some older explanations see Hollander 2007, 21–23.
125 Valerius Maximus 9.1.3. It is noteworthy, however, that the sumptuary legislators of the second and first centuries showed no known interest in gold as such.
126 On gold decorations in the Roman republican army see Oakley 1998, 147 f. and Linderski 2001 = 2007.
127 For signs of the practical inertia that resulted from aristocratic competition in the late Republic see Harris 1985, 159. Cf. Harl 1996, 49.
128 In 45 Caesar also reformed the bronze coinage: Harl 1996, 56 f.
129 It is inexact, however, to say that the issue of aurei dated to 84 f. (Crawford no. 359) “exalted [Sulla’s] regal pretensions” (Harl 1996, 52).
said in the 80s, a state that is going to be not just secure but *ampla* and *potens* needs appropriate resources (*idonearum rerum facultas*, inv. 2.169) to overcome its enemies – and that will have included large financial reserves. It is reasonably clear in any case that in 91 the *aerarium* had been exceptionally well provided with precious metals, so that the Social War required no gold coinage (it may have been a close call).\textsuperscript{130} In the 80s Sulla had his own personal emergency, and so minted a few gold coins in the period of civil war 84–81 (very few dies indeed).\textsuperscript{131}

At the beginning of his civil war Caesar did not rush to monetize as much as possible of his precious-metal assets. But in 46 his wish to distribute large sums to the citizens must have encouraged him to go further down the path he had already entered.\textsuperscript{132} And in the background was a crucial long-term change: seventeen years after the death of Mithridates VI we may surmise that Rome’s *potentia* was finally felt to be fully secure. Once, therefore, the near-taboo about gold coinage had been broken, everyone joined in, Caesar’s senatorial assassins as well as his political heirs.\textsuperscript{133}

But what was the proportion of gold in the early imperial money supply? It is obvious that after 46 the inconvenience of paying large amounts in coin greatly decreased. Richard Duncan-Jones has established that the gold coins found at Pompeii constituted, in terms of value, no less than 61 per cent of all the coins found there.\textsuperscript{134} But even gold coins had their inconveniences: in particular they needed to be locked away and guarded. And it has been hypothesized that gold coins were used less for making payments than as a store of value, a hypothesis that is supported by their relatively limited weight loss.\textsuperscript{135}

\textsuperscript{130} Pliny (nat. 33.55) presents a lacuna at the crucial juncture, but *nec fuit alius temporibus res p. locupletior* must (pace Kay 2014, 57 n. 94) refer to all three of the dates he mentions (157, 91, 49), since the context is a catalogue of extremes of wealth.

\textsuperscript{131} Crawford nos. 359, 367/2 and 367/4, 375/1. 381 is an anomalous small issue susceptible of various explanations. For the notion that the funds in the *aerarium* were for emergency use only see App. bell. civ. 2.41, etc.

\textsuperscript{132} According to Woytek 2014, 219, “the introduction of a regular gold coinage of the Roman state under Julius Caesar and his successors was an economic consequence of the significant increase in Roman military expenditure, triggered by Caesar’s doubling of the stipendium”; but in fact legionary soldiers continued to be paid, most of the time at least, in *denarii*: Speidel 1992, 87 n. 4 (cf. Howgego 1992, 11 f.).

\textsuperscript{133} Hollander 2007, 23, takes it to be an objection that the assassins minted gold coins too, and it is certainly, as he says, ironic.

\textsuperscript{134} Duncan-Jones 1994, 71, estimated 69 per cent; for the revised figure see Duncan-Jones 2003, 164–166. This conclusion has occasioned some debate.

\textsuperscript{135} Lo Cascio 2008, 166; but there is counter-evidence, at least in the second half of the second century: 169 f.
It is not surprising that a good proportion of the evidence for documentary payments that we have surveyed postdates 46 BC. When the younger Pliny explains how he proposes to pay for a country estate he is thinking of buying (epist. 3.19.8) he sounds quite like Cicero but he leaves matters somewhat unclear, to us at least:

*Sum quidem prope totus in praediis, aliquid tamen faenero* [which probably means that he expects to pay in part by the *delegatio* of debts that are owed to him], *nec molestum erit mutuari* [implying payment with an IOU]; *accipiam a socru, cuius arca non secus ac mea utor* [where it is entirely indeterminate as to whether the term *arca* is to be taken literally or figuratively; both uses are well attested].

In the end, we can only speculate as to how much credit-money existed in the high Roman Empire. As scholars in the field are well aware, estimates of the value of the coins in circulation vary to a quite desperate extent, from 2 billion HS (Keith Hopkins on the mid-first century BC) to more than 20 billion HS (Duncan-Jones on the second century AD). Neither figure has achieved widespread acceptance, and the latter figure implies, in my view, both an improbably high amount of currency per head of the population and an improbably low rate of coin loss. If on the other hand Hopkins’ estimate was roughly right, and if coins constituted 72.5 per cent of the money supply, as specie did in Britain in 1690, the amount of credit-money in the Roman Empire would have amounted to some 759 million HS. When one recalls, *inter alia*, that the money-lender Seneca possessed a fortune of some 300 million (Dio 61.10) and the Claudian freedman Pallas 400 million (Dio 62.14), that seems too low a figure. Further work is needed. On the other hand, it is not likely that credit-money “multiply[ied] many times the level of monetisation achievable through coinage alone”, as has been claimed (above, p. 161).

**VIII. Developments in the Third and Fourth Centuries**

What happened to Rome’s financial structure in the third century AD is obscure in detail but clear I think in outline. The banking sector shrank quite drastically, and this had already begun in Severan times if we can generalize the Egyptian

---

136 Hopkins 1980, 109; 2002, 227 n. 90.  
137 Duncan-Jones 1994, 170.  
138 See further Harris 2011, 229.
evidence (and it is hard to see what would make Egypt different from other areas in this respect). It is a reasonable conjecture that this decline and the near demise of the banking system in the second half of the third century were strongly affected by a systemic conflict between inflation and the 12 per cent ceiling on legal interest rates. But the question is complicated and needs a separate treatment. Political uncertainty and declining long-distance trade also enter in.

The chronology of inflation needs careful attention here: following Dominic Rathbone’s work on prices in Egypt, we can recognize a first period of serious inflation in the years 160 to 190, which must have hurt some money-lenders but was scarcely disastrous. But then, after a long period of price stability, there came “a brusque leap in price levels around 274 by a factor of ten or more”, which must have ruined all or almost all of them. How much these results are applicable to the bulk of the Roman Empire is debatable, but it is very likely that the major inflation that certainly took place there too came in rapid and destructive bursts. It can be presumed that those non-bank lenders who survived took counter-measures by investing more in property and by contriving to evade the 12 per cent maximum. Surviving bankers, if they were to remain both liquid and legal, could do neither of these things and must in many cases have closed down. Some banks continued to function, but there seems to be no significant improvement under the Tetrarchs or Constantine, and bankers are scarcely

139 See Inoue 1999/2000, 97, for a graph representing the number of papyrus documents in which private banks appear, by twenty-year periods, 20 BC to 500 AD. The steepest decline by far is from the period 141–160 to the period 161–180.
140 Clearly though crudely argued by Silver 2011, 312 and 321, who, however, ignores Rathbone’s work on inflation. See Temin 2013, 189.
141 Rathbone 1996, 1997. The price series in question concern, wheat, wine and donkeys, but the increases are very varied, and the exact chronology is impossible to establish. There may well have been short periods when the increase in consumer prices exceeded 12 per cent a year. For further discussion see Temin 2013, chapter 4.
142 It is intriguing that no bankers are attested in Greece between 212 and the end of the century (Bogaert 1997, 85).
143 Rathbone 1997, 215. A conventional Fisher explanation would link the abrupt inflation of 274 to an abrupt increase in the money-supply. But one cannot believe in a huge increase in the money-supply either in Egypt or more widely in the year or two in question. The cause, I think, was rather a fairly swift loss of confidence in the value of the silver coinage, leading to what I have called post-fiduciary coinage, in which the government was obliged to improve the coinage’s precious-metal value.
144 See for example Cod. Iust. 4.34.8 (293 AD), Dig. 26.7.50 (Hermogenianus 2 iuris epit.) (in spite of the special pleading of Andreau 1986, 814 n. 11; this paper was reprinted in Andreau 1997). For nummularii as bankers in the second half of the third century see Andreau 1986, 605. For private bankers in fourth-century Egypt see Bogaert 1997.
visible in the fourth-century legal sources (it appears from Cod. Theod. 16.4.5 that there were *nummularii* in Rome in 404; they were perhaps just money-changers).

As far as Egypt is concerned, Hidetaro Inoue has argued convincingly that payments by means of the documentary procedure known as *epitheke*, which was already known in previous times but became notably commoner in the third century, was used to “fill the vacuum caused by the decline of banking”. Nevertheless, the volume of credit-money had probably been shrinking for some time before the 270s, perhaps even for the best part of a century, and shrank a lot more after 274.

With the introduction of the *solidus*, the credit market might have revived. Money-lending by individuals obviously continued. The clearest individual case of paying with credit-money that I am aware of in late-antique Rome appears in the apparently contemporary Latin life of the younger Melania, who sold off much of her immense property (this will have been in Rome in the first decade of the fifth century), and was paid partly with gold, partly with silver and partly with *cautiones*, because, the hagiographer says, the purchasers, though rich, could not afford to pay the prices “in semel” (no other details are given). Early Constantinople may have known such practices, and Justinian’s Code still contains a chapter on *novationes* and *delegationes* (8.41), but the latest known legislation that deals explicitly with *delegatio* in the relevant sense dates from 294 (Cod. Iust. 8.41.5 and 6). The prevailing terminology evidently changed but Anastasius is known to have legislated about a similar procedure, using the term *cessio* (Cod. Iust. 4.35.22 of 506).

**IX. Conclusions and Implications**

On a previous occasion I noted that among the numerous (>150) commercial shipwrecks of the period 200 BC to 200 AD whose contents are reasonably well known, not one has ever produced a collection of coins large enough to suggest that a big cargo had been paid for in cash. That was partly because many vessels were engaged in cabotage, partly because maritime merchants attempted if possible to invest in return cargoes. But there was a change in the later third century AD,

---

145 Inoue 1999/2000, 97.
146 Cf. Carrié 2003, 267.
147 Vita S. Melaniae junioris 1.15 (Analecta Bollandiana 8 [1889], 32).
148 Harris 2011, 227 and 254, based largely on Parker 1992. It is of course possible that officials sometimes sent large quantities of coin by sea, though in previous times they had virtually always avoided doing so.
attributable, I suggest, to a change from the use of credit-money back to a reliance on coins. Five such wrecks are now in question, from Majorca to the Aegean, not to mention other evidence of later date. I will present the details in a separate article.149

That credit-money existed and was employed on a substantial scale is hardly to be contested. Its importance was evidently not uniform across time or space; the rise of gold coinage may have diminished its importance, and it was undoubtedly more important in commercial cities and towns, including such places as Alburnus Maior, than elsewhere. Its use in any case extended far beyond the senatorial-equestrian elite.

Much evidently depended on the trust that creditors were willing to extend to IOUs and depositors were willing to extend to bankers, and it is possible to take a ‘pessimistic’ view of this matter (de la Hoz Montoya). But the sheer extent of Roman commerce in the period 200 BC to 200 AD, with long lines of trade crisscrossing the Mediterranean and the adjoining land-masses, together with the other evidence we have encountered, make such a view hard to sustain. The Roman Empire failed to exploit the blessing of fossil fuel and its productive technology created no large factories, but it was as well endowed with capital as was any European state until after 1700.

Appendix

Andreau argues that “there were juridical constraints which slowed down very severely (très fortement) the passing on of debts” and ensured that they were not “very habitual”.150 The new creditor and the debtor had to make a new contract, he says.

The legal texts actually leave matters somewhat obscure, but scarcely suggest that ordinary payments of this kind within a single community will have been difficult. According to Gaius (inst. 2.38–9) if I want to transfer to you quod mihi ab aliquo debetur (taken to be a commonplace event), there can either be a new contract between you and my debtor – that is, a novatio, which requires a stipulatio on the debtor’s part –, or I can transfer the debt to you without novatio. In the latter case there is no mention of a stipulation, but if you subsequently need to sue the debtor you will have to do so not tuo nomine but as my cognitor or procurator. There is no apparent reason why this would have been a serious

149 See Athenaeum 107 (2019), 150–155.
150 Andreau 2010, 160.
deterrent to your accepting a transferred debt. Later, at Dig. 46.2.11.1, Ulpian (27 ad ed.) asserts that *delegatio* comes about *vel per stipulatum vel per litis contentationem*, but that seems inconsistent with his opinion that a person who could not speak could effect a *delegatio* (46.2.17, 8 ad ed.). The theory was apparently that the debtor had to consent for a *delegatio* to be valid (Cod. Iust. 8.41.1, Severus Alexander), but that same passage admits that *nomina* are commonly sold even in cases in which the debtor is unaware or even unwilling.

Acknowledgements: I thank Sitta von Reden and Paolo Malanima for their constructive help with this essay. I also owe relevant information to Graham Claytor, Bruce Frier and Henrik Mouritsen.

Bibliography

Andreau 1986: J. Andreau, Declino e morte dei mestieri bancari nel Mediterraneo occidentale (II–IV s. d. C.), in: A. Giardina (ed.), Società romana e impero tardoantico, I: Istituzioni, ceti, economie, Rome – Bari, 601–615 and 814–818, reprinted in Andreau 1997.

Andreau 1997: J. Andreau, Patrimoines, échanges et prêts d’argent. L’économie romaine, Rome 1997.

Andreau 1999: J. Andreau, Banking and Business in the Roman World, Cambridge 1999.

Andreau 2008: J. Andreau, The Use and Survival of Coins and of Gold and Silver in the Vesuvian Cities, in: W. V. Harris (ed.), The Monetary Systems of the Greeks and Romans, Oxford 2008, 208–225.

Andreau 2010: J. Andreau, L’économie du monde romain, Paris 2010.

Bagnall 1977: R. Bagnall, Price in ‘Sales on Delivery’, GRBS 18, 1977, 85–96.

Beaujeu 1983: J. Beaujeu (ed. and trans.), Cicéron. Correspondance VIII, Paris 1983.

Berger 1953: A. Berger, Encyclopedic Dictionary of Roman Law, Philadelphia 1953.

Bogaert 1995: R. Bogaert, Liste géographique des banques et des banquiers de l’Égypte romaine, ZPE 109, 1995, 133–173.

Bogaert 1997: R. Bogaert, La banque en Égypte byzantine, ZPE 116, 1997, 85–140.

Brunt 1988: P. A. Brunt, The Fall of the Roman Republic and Related Essays, Oxford 1988.

Carrié 2003: J. M. Carrié, Solidus et crédit: qu’est-ce que l’or a pu changer?, in: E. Lo Cascio (ed.), Credito e moneta nel mondo romano, Bari 2003, 265–279.

Crawford 1974: M. H. Crawford, Roman Republican Coinage, Cambridge 1974.

---

151 It may be imagined, however, that in such a case the debtor would still have to make a *stipulatio*.

152 *Delegatio debiti nisi consentiente et stipulanti promittente debitore iure perfici non potest: nominis autem venditio et ignorante vel invito eo, adversus quem actiones mandantur, contrahi solet.* Diocletian and Maximian attempted to prevent the *delegatio* of an unwilling debtor (Cod. Iust. 8.41.6), which somewhat suggests that it had been a fairly common practice.
D'Arms 1981: J. H. D'Arms, Commerce and Social Standing in Ancient Rome, Cambridge (MA) 1981.
de la Hoz Montoya 2009: J. de la Hoz Montoya, rev. of W. V. Harris (ed.), The Monetary Systems of the Greeks and Romans, Oxford 2008, in: AIIN 55, 2009, 259–290.
De Romanis 2012: F. De Romanis, Julio-Claudian denarii and aurei in Campania and India, AIIN 58, 2012, 161–192.
Dornbusch – Fischer 1994: R. Dornbusch – S. Fischer, Macroeconomics, sixth ed., New York 1994.
Dornbusch – Fischer – Startz 2008: R. Dornbusch – S. Fischer – R. Startz, Macroeconomics, tenth ed., New York 2008.
Duncan-Jones 1994: R. P. Duncan-Jones, Money and Government in the Roman Empire, Cambridge 1994.
Duncan-Jones 2003: R. P. Duncan-Jones, Roman Coin Circulation and the Cities of Vesuvius, in: E. Lo Cascio (ed.), Credito e moneta nel mondo romano, Bari 2003, 161–180.
Egger 1961: R. Egger, Die Stadt auf dem Magdalensberg: ein Grosshandelsplatz. Vienna 1961.
Fischer – Dornbusch – Schmalensee 1988: S. Fischer – R. Dornbusch – R. Schmalensee, Introduction to Macroeconomics, second ed., New York 1988.
Frederiksen 1966: M. W. Frederiksen, Caesar, Cicero and the Problem of Debt, JRS 56, 1966, 128–141.
Gabrielsen 2016: V. Gabrielsen, Be Faithful and Prosper: Associations, Trust and the Economy of Security, In: K. Droß-Krüpe – S. Föllinger – K. Ruffing (eds.), Antike Wirtschaft und ihre kulturelle Prägung, Wiesbaden 2016, 87–111.
Grassl 2005: H. Grassl, Das Gold der Noriker, MBAH 24, 2005, 31–37.
Harl 1996: K. Harl, Coinage in the Roman Economy, 300 B.C. to A.D. 700, Baltimore 1996.
Harris 1985: W. V. Harris, War and Imperialism in Republican Rome, 327–70 B.C., corrected ed., Oxford 1985.
Harris 1993: W. V. Harris, Between Archaic and Modern: some Current Problems in the History of the Roman Economy, in: W. V. Harris (ed.), The Inscribed Economy: Production and Distribution in the Roman Empire in the Light of instrumentum domesticum, Ann Arbor 1993, 11–29.
Harris 2006: W. V. Harris, A Revisionist View of Roman Money, JRS 96, 2006, 1–24.
Harris 2008: W. V. Harris, The Nature of Roman Money, in: W. V. Harris (ed.), The Monetary Systems of the Greeks and Romans, Oxford 2008, 174–207.
Harris 2011: W. V. Harris, Rome’s Imperial Economy: Twelve Essays, Oxford 2011.
Hicks 1967: J. Hicks, Critical Essays in Monetary Theory, Oxford 1967.
Hollander 2007: D. B. Hollander, Money in the Late Roman Republic (Columbia Studies in the Classical Tradition 29), Leiden 2007.
Hopkins 1980: K. Hopkins, Taxes and Trade in the Roman Empire, JRS 70, 1980, 101–125.
Hopkins 2002: K. Hopkins, Rome, Taxes, Rent, and Trade, in: W. Scheidel – S. von Reden (eds.), The Ancient Economy, Edinburgh 2002, 190–230 (originally published in Kodai 6/7, 1995–1996, 41–75).
Howell 2010: M. C. Howell, Commerce before Capitalism in Europe, 1300–1600, Cambridge 2010.
Howgego 1992: C. Howgego, The Supply and Use of Money in the Roman World, 200 B.C. to A.D. 300, JRS 82, 1992, 1–31.
Howgego 1995: C. Howgego, Ancient History from Coins, London 1995.
Inoue 1999/2000: H. Inoue, The Transfer of Money in Roman Egypt, Kodai 10, 1999/2000, 83–104.
Jenkins – Lewis 1963: G. K. Jenkins – R. B. Lewis, Carthaginian Gold and Electrum Coins, London 1963.
Johnson 1999: D. Johnson, Roman Law in Context, Cambridge 1999.
Kay 2014: P. Kay, Rome’s Economic Revolution, Oxford 2014.
Ker 2007: J. Ker, Roman repraesentatio, AIPh 128, 2007, 341–365.
Koestermann 1965: E. Koestermann, Cornelius Tacitus, Annalen IV–VI, Heidelberg 1965.
Lerouxel 2008: F. Lerouxel, La banque privée romaine et le marché du crédit dans les tablettes de Murecine et les papyrus d’Égypte romaine, in: K. Verboven – K. Vandorpe – V. Chankowski (eds.), Pistoia dia tèn technèn. Bankers, Loans and Archives in the Ancient World, Studies in Honour of Raymond Bogaert, Leuven 2008, 169–197.
Linderski 2001: J. Linderski, Silver and Gold of Valor. The Award of armillae and torques, Latomus 60, 2001, 3–15 (reprinted in Roman Questions II, Stuttgart 2007, 216–228).
Lo Cascio 1981: E. Lo Cascio, State and Coinage in the Late Republic and Early Empire, JRS 71, 1981, 76–86.
Lo Cascio 2003: E. Lo Cascio, Introduzione, in: E. Lo Cascio (ed.), Credito e moneta nel mondo romano, Bari 2003, 5–15.
Lo Cascio 2008: E. Lo Cascio, The Function of Gold Coinage in the Monetary Economy of the Roman Empire, in: W. V. Harris (ed.), The Monetary Systems of the Greeks and Romans, Oxford 2008, 160–173.
Lo Cascio 2011: E. Lo Cascio, La quantificazione dell’offerta di moneta a Roma: il ruolo del credito, in: F. de Callataÿ (ed.), Quantifying Monetary Supplies in Greco-Roman Times, Bari 2011, 31–42.
Lockyear 1999: K. Lockyear, Hoard Structure and Coin Production in Antiquity: An Empirical Investigation, NC 159, 1999, 215–243.
Mankiw 2003: N. G. Mankiw, Macroeconomics, fifth ed., New York 2003.
Mayhew 1995: N. J. Mayhew, Population, Money Supply and Velocity of Circulation in England, 1300–1700, The Economic History Review 48.2, 1995, 238–257.
Meadows 1998: A. R. Meadows, The Mars/Eagle and Thunderbolt Gold and Ptolemaic Involvement in the Second Punic War, in: A. Burnett – U. Wartenberg – R. Witschonke (eds.), Coins of Macedonia and Rome, Essays in Honour of Charles Hersh, London 1998, 125–134.
Molinari 2003: M. C. Molinari, Gli aurei a nome di Giulio Cesare e Aulo Irzio, RIN 104, 2003, 165–253.
Mrozek 1985: S. Mrozek, Zum Kreditgeld in der frühen römischen Kaiserzeit, Historia 34, 1985, 310–323.
Muldrew 1998: C. Muldrew, The Economy of Obligation. The Culture of Credit and Social Relations in Early Modern England, London 1998.
Nisbet 1961: R.G.M. Nisbet (ed. and trans.), Cicero. In L. Calpurnius Pisonem Oratio, Oxford 1961.
Oakley 1998: S. P. Oakley, A Commentary on Livy Books VI–X (II), Oxford 1998.
Parguez – Seccareccia 1999: A. Parguez – M. Seccareccia, The Credit Theory of Money. The Monetary Circuit Approach, in: J. Smithin (ed.), What is Money?, London – New York 1999, 101–123.
Parker 1992: A. J. Parker, Ancient Shipwrecks of the Mediterranean and the Roman Provinces, Oxford 1992.
Parsons 2007: P. J. Parsons, City of the Sharp-nosed Fish. Greek Lives in Roman Egypt, London 2007.
Peacock 2013: M. Peacock, Introducing Money, London 2013.
Puttevils 2015: J. Puttevils, Merchants and Trading in the Sixteenth Century. The Golden Age of Antwerp, London 2015.
Rathbone 1996: D. Rathbone, Monetisation, not Price-Inflation, in Third-Century A.D. Egypt? in: C. E. King – D. G. Wigg (eds.), Coin Finds and Coin Use in the Roman World, Berlin 1996, 321–339.
Rathbone 1997: D. Rathbone, Prices and Price Formation in Roman Egypt, in: J. Andreau – P. Briant – R. Descat (eds.), Économie antique: Prix et formation des prix dans les économies antiques, Saint Bertrand-de-Comminges 1997, 183–244.
Rathbone – Temin 2008: D. Rathbone – P. Temin, Financial Intermediation in First-Century AD Rome and Eighteenth-Century England, in: K. Verboven – K. Vandorpe – V. Chankowski (eds.), Pisto dia tên technèn. Bankers, Loans and Archives in the Ancient World, Studies in Honour of Raymond Bogaert, Leuven 2008, 371–419.
Rollinger 2012: C. Rollinger, Zur Bedeutung von amicitia und Netzwerken für das Finanzwesen der späten Republik, in: S. Günther (ed.), Ordnungsrahmen antiker Ökonomien. Ordnungskonzepte und Steuerungsmechanismen antiker Wirtschaftssysteme im Vergleich, Wiesbaden 2012, 111–126.
Samuelson – Nordhaus 1998: P. A. Samuelson – W. D. Nordhaus, Macroeconomics, sixteenth ed., Boston 1998.
Schartmann 2012: G. Schartmann, Die Krise des Jahres 33 n. Chr., in: S. Günther (ed.), Ordnungsrahmen antiker Ökonomien. Ordnungskonzepte und Steuerungsmechanismen antiker Wirtschaftssysteme im Vergleich, Wiesbaden 2012, 145–164.
Shackleton Bailey 1965–1970: D. R. Shackleton Bailey, Cicero: Letters to Atticus I–IV, Cambridge 1965–1970.
Shatzman 1975: I. Shatzman, Senatorial Wealth and Roman Politics, Brussels 1975.
Silver 2011: M. Silver, Finding the Roman Empire’s Disappeared Deposit Bankers, Historia 60.3, 301–327.
Sirks 2016: B. Sirks, Chirographs: Negotiable Instruments? ZRG 133, 2016, 265–285.
Speidel 1992: M. A. Speidel, Roman Army Pay Scales, JRS 82, 1992, 87–106.
Stelzenberger 2008: B. Stelzenberger, Kapitalmanagement und Kapitaltransfer im Westen des Römischen Reiches, Rahden 2008.
Straus 2004: J. A. Straus, L’achat et la vente des esclaves dans l’Egypte romaine, Munich 2004.
Strobel 2002: K. Strobel, Geldwesen und Währungsgeschichte des Imperium Romanum im Spiegel der Entwicklung des 3. Jahrhunderts n. Chr., in: K. Strobel (ed.), Die Ökonomie des Imperium Romanum. Strukturen, Modelle und Wertungen im Spannungsfeld von Modernismus und Neoprimitivismus, St. Katharinen 2002, 86–168.
Syme 1958: R. Syme, Tacitus, Oxford 1958.
Temin 2013: P. Temin, The Roman Market Economy, Princeton 2013.
Terpstra 2013: T. Terpstra, Trading Communities in the Roman World. A Micro-Economic and Institutional Perspective (Columbia Studies in the Classical Tradition 37), Leiden 2013.
Tomlin 2016: R.S.O. Tomlin, Roman London's First Voices. Writing Tablets from the Bloomberg Excavations, 2010–2014, London 2016.
Verboven 2002: K. Verboven, The Economy of Friends. Economic Aspects of Amicitia and Patronage in the Late Republic, Brussels 2002.
Verboven 2003: K. Verboven, 55–44 BCE: Financial or Monetary Crisis? in: E. Lo Cascio (ed.), Credito e moneta nel mondo romano, Bari 2003, 49–68.
Verboven 2005: K. Verboven, rev. of Strobel 2002, AC 74, 2003, 556–559.
Verboven 2008: K. Verboven, Faeneratores, negotiatores and Financial Intermediation in the Roman World, in: K. Verboven – K. Vandorpe – V. Chankowski (eds.), Pistoi dia tên technèn. Bankers, Loans and Archives in the Ancient World, Studies in Honour of Raymond Bogaert, Leuven 2008, 211–229.
Verboven 2009: K. Verboven, Currency, Bullion and Accounts. Monetary Modes in the Roman World, RBN 155, 2009, 91–121.
von Mises 1953: L. von Mises, The Theory of Money and Credit, trans. by H. E. Batson, New Haven 1953.
von Reden 2010: S. von Reden, Money in Classical Antiquity, Cambridge 2010.
von Reden 2012: S. von Reden, Money and Finance, in: W. Scheidel (ed.), The Cambridge Companion to the Roman Economy, Cambridge 2012, 266–286.
Woytek 2014: B. E. Woytek, Monetary Innovation in Ancient Rome. The Republic and its Legacy, in: P. Bernholz – R. Vaubel (eds.), Explaining Monetary and Financial Innovation. A Historical Analysis, Cham 2014, 197–226.
Zandrino 2010: L. Zandrino, La delegatio nel diritto romano. Profile semantic ed elementi di fattispecie, Naples 2010.
Zandrino 2014: L. Zandrino, La delegatio nel diritto romano. Effetti giuridici e profili di invalidità, Naples 2014.