DEMISE AND FALL OF THE AUGUSTAN MONETARY SYSTEM

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According to the jurist Paulus, coinage originated from the need for a common medium of exchange. To fill this need a *materia* was chosen of which the enduring value was generally recognized (*publica ac perpetua aestimatio*). This *materia* was stamped by a public design (*forma publica*), to be used not so much *ex substantia* (...) *quam ex quantitate*.¹ Monetary value was created by the *forma publica* and was by definition a legal construct, creating the enforceable obligation to accept coins 'bearing the imperial portrait'. Although coinage required a valuable substance as bearer, the *forma publica* was not intended to guarantee the commodity value of this substance.²

The ambivalence of coinage as currency combining intrinsic and nominal value continues to set the terms of the debate today. Money in the ancient world is still seen primarily as coined metal: *materia* subjected to legal norms regarding weight, size, purity, form, design, production and use. The debate still revolves around the question how important the contribution of coins' metal value was to uphold purchasing power and face value.

The distinction between 'money' and 'currency' is mostly limited to the role of cheques and bank money. The difference, however, is more fundamental and crucial to a proper understanding of how money and currency functioned. The essence of money is the social institutionalisation of its primary tokens (whether coins, cowrie shells, bullion, bank notes or anything else). 'Money' exists *qua* money only

¹ E. Lo Cascio, 'How did the Romans view their money and its function?' in C.E. King and D.G. Wigg (eds.), *Coin finds and coin use in the Roman world (13th Oxford Symposium on coinage and monetary history, 1993)* (Berlin 1996), 273–287; C. Nicolet, 'Plin, Paul et la théorie de la monnaie', *Athenaeum* 72 (1984) 105–135; R. Wolters, *Nummi Signati. Untersuchungen zur römischen Münzprägung und Geldwirtschaft* (München 1999), 350–362.

² *Sententiae Pauli* 5.25.1; cf. Arrianus, *Epicetus* 3.3.3; K. Verboven, 'The Monetary Enactments of M. Marius Gratidianus' in C. Deroux (ed.), *Studies in Latin Literature and Roman History. Vol. VII* (Bruxelles 1994), 117–131; Lo Cascio 1996, op. cit. (n. 1), 278.

when the acceptance of its tokens as tokens (and not for instance as bullion in the case of metal coins) in exchange for goods and services is taken for granted.³ These institutional aspects are money's deepest soul and secret. No monetary system can survive if the acceptance of its tokens is not self-evident.

There are always three interrelated sides to a developed monetary system. The first and most visible are the material and immaterial aspects of money tokens. The second is that of the socialised mind, taught to accept as self evident the value of money tokens. The third is that of the norms and regulations imposed on money tokens by a political authority. The socialised mind is used to a specific form of monetary system, embodied in official regulations and material aspects. Intrinsic values and legal tender may (or may not) be required, but these are largely backup systems, comforting reassurances against doubt.

Currency

The silver *denarius* was the central denomination in the Roman coinage system for over 400 years (211 B.C.E.–238 C.E.). Nero debased it slightly (reducing its weight standard from 1/84 to 1/96 pound, and its purity from ca. 98% to ca. 93.5%). Over the next 90-odd years the silver content diminished to ca. 90%. Marcus Aurelius again cut purity by ca. 10%. The following 50 years the decline continued. By the time of Caracalla purity had fallen to ca. 50%. The last *denarii* struck under Gordian III contained ca. 48% silver and were considerably underweight.

It remains a point of debate whether the public was aware of this evolution. There were no reliable non-destructive assay techniques for silver in the ancient world. The surface of *denarii*-flans since Nero was artificially enriched, so Gordian's last *denarii* looked as 'fine' as ever.⁴ Average weight declined under the Severans, but weight variations

³ Cf. E. Christiansen, *Coinage in Roman Egypt. The hoard evidence* (Aarhus 2004), 15.

⁴ Awareness of debasement: Wolters 1999, op. cit. (n. 1), 374; surface enrichment: L.H. Cope, 'Surface-silvered ancient coins', E.T. Hall and D.M. Metcalf (eds.), *Methods of chemical and metallurgical investigation of ancient coinage* (Symposium Royal Numismatic Society, London, 1970) (London 1972), 261–278.

between specimens of the same silver coin types had always been large without demonstrable effects on circulation patterns.⁵

Nevertheless, you cannot fool all of the people all of the time. The debasement of the silver coinage could not be hidden from assayers and bankers. Through them, the general public must have been able to know – if they cared.

The introduction of the *antoninianus* in 215 tarified at 2 *denarii* but weighing only 1.5, betrays the confidence the imperial administration had that its manipulations would be accepted. It was a handsome coin, even though it contained less than 50% silver. There was little enthusiasm at first and its production was stopped after a few years. But its reintroduction in 238 on a massive scale and the near simultaneous abandoning of the *denarius* production does not appear to have caused much concern. The appearance of *antoniniani* together with *denarii* in hoards confirms the trust they inspired.⁶

Its average weight declined from 4.5 g to a little under 4 g under Decius, but this was masked by the traditionally wide margins allowed for silver coin. However, in the 250's and 260's the *antoninianus* rapidly deteriorated in silver content and weight to a miserable shadow of its former self.⁷

The Egyptian monetary system was long dominated by the base silver *tetradrachms* (13 g, ca. 16% silver) introduced by Nero in 64 C.E., officially equated to 1 *denarius*.⁸ In 176/177 Marcus Aurelius issued a small emission of under weight further debased *tetradrachms* (ca. 12 g, ca. 8% silver), which Commodus adopted as his new standard. From the 180's until ca. 250 this 'Commodian' standard was followed and although output decreased, it was well respected until the sole reign of Gallienus (260 C.E.). From then on the Alexandrian *tetradrachms* suffered the same rapid deterioration as the *antoninianus*.⁹

⁵ Cf. R. Duncan-Jones, *Money and Government in the Roman Empire* (Cambridge 1994), 225.

⁶ Bland and Lo Cascio believe the *antoninianus* was (re)tarified to 1.5 *denarii*, corresponding to the silver content in both. If so, however, what was the point of replacing *denarii* by *antoniniani*? R. Bland, 'The development of gold and silver denominations, A.D. 193–253' in C.E. King and D.G. Wigg 1996, op. cit. (n. 1), 74–80, and E. Lo Cascio, 'Dall'*antoninianus* al "laureato grande": l'evoluzione monetaria del III secolo alla luce della nuova documentazione di età diocleziana', *Opus* 3 (1984), 139–144.

⁷ K.W. Harl, *Coinage in the Roman economy, 300 B.C. to A.D. 700* (Baltimore and London 1996), 130.

⁸ Christiansen 2004, op. cit. (n. 3), 44–45.

⁹ Christiansen 2004, op. cit. (n. 3), 117–119 ; L.C. West and A.C. Johnson, *Currency in Roman and Byzantine Egypt* (Princeton 1944), 178.

The most innovative feature of the Augustan system, was the regularity and abundance of its gold currency.¹⁰ *Aurei* had a face value of 25 *denarii* and the Pompeian evidence shows that although gold coins were relatively rare (2.34% of the money supply), their face value was huge (60.70% of the total).¹¹

The purity of the *aureus* remained unaffected until the mid third century. Antonine and early Severan gold was metrologically indistinguishable from Nero's post-reform gold, introduced in 64 C.E. Gold currency consisted almost exclusively of *aurei* minted with great accuracy at 45 to the pound, 7.2 g. *Aurei* from Antoninus Pius in the British Museum weigh an average 7.23 g, with a VarCo of only 2.2%; only 3.5% deviate more than 5% from the average. Caracalla's pre-debased *aurei* weigh an average 7.29 g, with a VarCo of 2.2%, only 2.3% deviate more than 5% from the average. Output plummeted after Marcus Aurelius, but the stock of *aurei* minted between 64 and 215 C.E. was huge and dominated the total supply until at least the mid third century.

In 215 Caracalla reduced the weight standard to 1/50 of a pound (average 6.57 g), which was followed until Alexander Severus. Initially quality control was very strict (none of Caracalla's debased *aurei* deviate more than 5% from the average), but it soon loosened. The average weight of Alexander's *aurei* is 6.39 g. VarCo has risen to 6.2%; 33.3% deviate more than 5% from the average, 11.1% even more than 10%.

Maximinus Thrax virtually abandoned gold coinage. Gordian III resumed it at a much lower standard and at more erratic weights. The average weight of his *aurei* is 4.89 g with a VarCo of 5.8%; 40% deviate more than 5%, 7.1% deviate more 10%. Philip's *aurei* weigh an average 4.62 g, VarCo is 7%; 39.4% deviate more than 5%, 15.2% more than 10%.

Since Gallus gold was minted at so widely different weights, that it is impossible to recognise any standard any more. Most specimens weigh less than 4 grams. Occasionally heavy *aurei* were minted and radiates that were presumably intended as double-*aurei*. Valerian took the final step of downgrading the purity down to sometimes ca. 65%.¹²

¹⁰ Unless otherwise stated, the data concerning weight are based on samples taken from the Hunter Coin Cabinet, the British Museum, the American Numismatic Society and auctions listed on *CoinArchives*, <http://www.coinarchives.com/>.

¹¹ R. Duncan-Jones, 'Roman coin circulation and the cities of Vesuvius', in E. Lo Cascio (ed.), *Credito e moneta nel mondo romano. Atti degli incontri capresi di storia dell'economia antica (Capri 2000)* (Bari 2003), 161–180.

¹² Bland 1996, op. cit. (n. 6), 73.

Some improvement was made under Aurelian – who restored purity to 98% – but metrological accuracy remained a distant dream. The mint of Mediolanum in 271 minted at an average of 4.53 g, with a VarCo of 10.1%; 58% deviate more than 10%. The Roman mint in 274 minted at 4.42 g with a VarCo of 9.1%; with ‘only’ 22.9% deviating more than 10%.¹³

This situation continued until Diocletian’s reforms of 293–294 restored metrological accuracy, based on an *aureus* of 1/60 pound. None deviate more than 5%.

We do not know what the impact was of these metrologically inferior issues. Stray finds suggest that output was small, but their reliability is limited. *Aurei* from Aurelian were rare before two new large hoards showed that output was higher than was thought possible.¹⁴ The absence of third century gold in hoards may reflect Gresham’s law: ‘bad’ gold circulated, ‘good’ gold was hoarded. Taxes were paid preferably in ‘bad’ gold, flowing back into the mint’s melting pots, while ‘good’ gold remained hidden in private treasuries.

Aurei seem to have been mounted in jewellery more often than before and hoarded with other gold artefacts. This might indicate that (better) gold coins ceased to have a significant surplus value over gold bullion.¹⁵ But this could easily be caused by a small increase in the price of bullion expressed in denari or sesterces.

The effects on the functionality of the currency system may have been limited. Whereas silver currency served primarily as an everyday means of payment, gold coin had always been more prestigious and was favoured particularly for gifts signifying special esteem.¹⁶

At a handout in the early third century *patroni* and *quinquennales perpetui* of the *corpus piscinatorum et urinatorum* at Rome received one gold piece each, while the magistrates in charge received the formal equivalent of 25 *denarii*.¹⁷ One of the favours Sennius Sollemnis received from his ‘friend and patron’ Claudius Paulinus, governor of Britain in 220 C.E.,

¹³ Data from a complete sample of R. Göbl, *Die Münzprägung des Kaisers Aurelianus* (270/275) (Wien 1993); n = 100 for Mediolanum 271, n = 70 for Rome 274.

¹⁴ Cf. Göbl 1993, op. cit. (n. 13), 84.

¹⁵ Cf. J.-P. Callu, *La politique monétaire des empereurs romains de 238–311* (Paris 1969), 424–430.

¹⁶ S. Mrozek, ‘À propos du “marbre de Thorigny”, *salarium in auro* (CIL 13.3162)’, *Bulletin de la Société Française de Numismatique* (1973), 335–336.

¹⁷ CIL 6.29700; S. Mrozek, ‘Les espèces monétaires dans les inscriptions latines du Haut-Empire’, *Les dévaluations à Rome. Vol. I (Actes Rome 1975)* (Rome 1978), 85.

was that his salary was paid in gold.¹⁸ *Aurei* set in jewellery or used as pendants elaborate on gold coins' functionality as status tokens, but this does not imply that gold coins in general lost their functionality as money tokens.

Account money

Currency was not the only form of money. Thus, army pay was not normally paid in full. The army provided a deposit, cashier and payment service to soldiers, which allowed them to buy items from the camp's workshops and storehouses through a simple transfer between accounts.¹⁹ Papyri show it was common for private individuals to deposit money at a bank and to make and accept payments through bankers.²⁰ Bankers in the west disappear from view around the middle of the third century.²¹ In Egypt, however, *trapezitai* continue to operate throughout the third century, although there appears to have been a crisis in the 260's.

The continued existence of account money implies that money users had confidence that the purchasing power of the coins they received or which were paid out on their behalf was roughly that of the coins they deposited. It presupposes 'monetary' stability in spite of the manifest 'currency' instability.

Gresham's law

Denarii from the Flavians and the early Antonines disappear from circulation hoards in the late second century (presumably as an effect of reminting), but they continue to appear in saving deposits until deep

¹⁸ *CIL* 13.3162. Cf. H. Devijver, *Prosopographia militiarum equestrum quae fuerunt ab Augusto ad Gallienum* (Leuven 1976–2001), II 729–730, IV 1718.

¹⁹ Cf. K. Verboven, 'Good for business. The Roman army and the emergence of a 'business class' in the north-western provinces of the Roman empire', in L. de Blois and E. Lo Cascio (eds.), *The Impact of the Roman Army (200 B.C.–A.D. 476): Economic, Social, Political, Religious and Cultural Aspects*. Impact of Empire 6 (in print).

²⁰ Cf. R. Bogaert, 'Les documents bancaires de l'Égypte gréco-romaine et byzantine', *Ancient Society* 31 (2001), 255–258.

²¹ J. Andreau, 'Declino e morte dei mestieri bancari nel Mediterraneo Occidentale (II–IV D.C.)', A. Giardina (ed.), *Società romana e impero tardoantico* (Roma – Bari 1986), 601–615; 814–818.

in the third century.²² The occasional appearance of small numbers of ‘good’ old *denarii* in hoards consisting almost exclusively of later *denarii* and *antoniniani*, suggests that saving deposits were brought back into circulation whenever large payments had to be made, dowries provided or inheritances divided.

Dio Cassius’ claim that Caracalla ‘adulterated’ the silver and gold coinage may reveal discontent over Caracalla’s introduction of the *antoninianus* and the reduction of the gold standard.²³ Early Severan *denarii* dominate hoards until Gordian III, while early *antoniniani* were avoided.²⁴ But that does not mean that these circulated at a discount or were avoided as means of payment. Until the 250’s *antoniniani* were still avoided in saving hoards, but they dominate circulation hoards.

Egyptian hoards show that Commodus’s *tetradrachms* were avoided for saving purposes until the sole rule of Gallienus, when they suddenly appear in substantial numbers. Die studies suggest that Commodus’ issues were large.²⁵ They mixed in with the mass of ‘Neronian’ *tetradrachms* for almost a century. Yet papyri do not show a trace of their rejection as means of payment.

These observations are well in line with Gresham’s law, predicting that when coins of a reduced silver or gold content are brought into circulation at the same nominal value as coins with a significantly higher gold or silver content, the latter will be preferred for savings and exports. Gresham’s law is not an indication of primitiveness. Significantly, it presupposes that legal tender laws are effective in enforcing the equal face value of ‘good’ and ‘bad’ money.²⁶ The reduction of the silver content of the US half-dollar in 1965 from 90% pure to 40% drove the former out of circulation.²⁷

²² J. Van Heesch, *De muntcirculatie tijdens de Romeinse tijd in het Noordwesten van Gallia Belgica. De civitates van de Nervii en de Menapii (ca. 50 v.C. – 450 n.C.)* (Brussel 1998), 94–97; Callu 1969, op. cit. (n. 15), 248–187; Duncan-Jones 1994, op. cit. (n. 5), 200–205.

²³ Dio Cassius 78.14.4.

²⁴ Wolters 1999, op. cit. (n. 1), 380–381.

²⁵ Christiansen 2004, op. cit. (n. 3), 108–109.

²⁶ Cf. A.J. Rolnick and W.E. Weber, ‘Gresham’s Law or Gresham’s Fallacy?’, *Journal of political economy* 94 (1986), 185–99, 185–99; G. Selgin, ‘Salvaging Gresham’s Law: The Good, the Bad, and the Illegal’, *Journal of money, credit, and banking* 28 (1996), 637–49. Strobel misinterprets Gresham’s law (K. Strobel, ‘Geldwesen und Währungsgeschichte des Imperium Romanum im Spiegel der Entwicklung des 3. Jahrhunderts n.Chr.’, K. Strobel (ed.), *Die Ökonomie des Imperium Romanum. Strukturen, Modelle und Wertungen im Spannungsfeld von Modernismus und Neoprimitivismus* (Stuttgart 2002), 94). For Roman legal tender laws see Arrianus, *Epictetus* 3.3.3; *Sententiae Pauli* 5.25.

²⁷ R.Z. Aliber, ‘Gresham’s law, asset preferences and the demand for international reserves’, *The quarterly journal of economics* 81 (1967), 629 n. 3.

Inflation

Monetarist theory predicts that Gresham's law provokes inflation because sellers anticipate that they will be paid in 'bad' money and raise their prices in response. However, it now seems almost certain that such a 'monetary' inflation did not occur before at least the second half of the century. Papyri show price stability until ca. 274 C.E., while inscriptions indicate that at least until the 250's there was no structural inflation in the west.²⁸ The presence in hoards until the 260's of *denarii* alongside *antoniniani* and Antonine and early Severan *denarii* alongside younger *denarii*, indicates that it was not worthwhile for private persons to melt down these coins and consequently that the price of silver bullion had not (yet) surged.

The absence of inflation despite Gresham's law is noteworthy, but not inexplicable. It indicates that price levels were little dependent on changes in the silver currency. In part the vast purchasing power locked in gold currency may have acted as a stabiliser. Probably more important is that currency inflation is a form of demand inflation, while pre-industrial economies were predominantly supply economies. Demand was usually inelastic; most consumers had little surplus to spend and transportation costs were high. Supply on the other hand was unpredictable and often irregular. Crop failures, heavy weather disrupting trade lines, epidemics, droughts etc. shook prices continuously.

Exchange rates

Dio Cassius confirms that the face value of the *aureus* under Alexander Severus was still 25 *denarii*.²⁹ Whether Gordian upgraded the face value of the 'Antonine' *aurei* when he introduced his own light-weight *aureus*, is not known. Some inscriptions from Nubia seem to imply that the

²⁸ S. Mrozek, *Prix et rémunération dans l'occident Romain (31 av. n.è.-250 de n.è.)* (Gdansk 1975), 103–126; H.-U. von Freyberg, *Kapitalverkehr und Handel im römischen Kaiserreich (27 v. Chr.–235 n. Chr.)* (Freiburg im Breisgau 1988), 84–87; on prices doubling in late second century Egypt: D. Rathbone, 'Monetisation, not price-inflation, in third-century A.D. Egypt?' in C.E. King and D.G. Wigg (eds.) 1996, op. cit. (n. 1), 334–335; Christiansen 2004, op. cit. (n. 3), 112–113.

²⁹ Dio Cassius 55.12.4–5; T.V. Buttrey, 'Dio, Zonaras and the value of the Roman *aureus*', *Journal of Roman Studies* 51 (1961), 40–45; Wolters 1999, op. cit. (n. 1), 346; Harl 1996, op. cit. (n. 7), 127.

aureus under Philip was sold at 43.75 *denarii*. But they are too untypical to carry much weight.³⁰

However, the practice of ‘fixed exchange rates’ is not clear cut. An official rate of 16 *assaria* to a *denarius* is attested for Cibra in 74 C.E. and for Syros under Severus.³¹ In Pergamon under Hadrian, bankers bought *denarii* for 17 *assaria*, and sold them for 18.³² In Ephesus in 104 C.E., an inscription stipulating handouts from the proceeds of an endowment, reckoned the *denarius* as 18 *assaria*, making a special provision in case the *kollybos* would rise. Apparently, loans out of the endowment were expressed in *denarii*, which would be changed into *assaria* for the smaller hand-outs.³³ These cases suggest that the ‘official’ rate of the *denarius* in Asia and the Aegean was 16 *assaria*, but that bankers charged a commission (*kollybos*) of 1 to 2 *assaria*, which could be anticipated in private transactions.

A Transylvanian tablet from 167 C.E. implies a *denarius* trading at 20 *asses*, another mentions a sum of 1/24 *denarius*.³⁴ The Gnomon of the Idios Logos forbids ‘a coin to be changed for more than it is worth’.³⁵ Yet the Egyptian *tetradrachm* circulated at rates fluctuating between 24–30 bronze *obols*. In official transactions 28–30 *obols* was customary.³⁶

The *aureus* was officially worth 100 Egyptian *drachmae*, but *P.Sarap* 90 (ca. 108 C.E.) mentions *aurei* which used to be sold for 15 *drachmae*, being sold for 11.³⁷ Presumably, the Ptolemaic custom of imposing surcharges

³⁰ *CIG* 5008; 5010; Harl 1996, op. cit. (n. 7), 133; Callu 1969, op. cit. (n. 15), 445; S. Bolin, *State and currency in the Roman Empire to 300 A.D.* (Stockholm 1958), 278–281; Christiansen 2004, op. cit. (n. 3), 47; Rathbone 1996, op. cit. (n. 228), 337 n. 43.

³¹ Cibra: *IGRR* 4.915 (= J.R. Melville Jones, *Testimonia Numaria. Greek and Latin Texts concerning Ancient Greek Coinage. Vol. I: Texts and translations* (London 1993), no. 374); Syros: *IG* 12.5 nos. 659, 663, 664 and 665.

³² *OGIS* 484; Melville Jones 1993, op. cit. (n. 31), no. 579; R. Bogaert, *Banques et banquiers dans les cités grecques* (Leiden 1968), 231–234.

³³ *Ancient Greek Inscriptions in the British Museum* 3, 481, ll. 144–148.

³⁴ For the tablet see *CIL* 3, p. 950 and p. 1058; *CIL* 3.2215 (= *FIRA* 3, 481–482, no. 157); cf. M.H. Crawford, ‘Money and exchange in the Roman World’, *Journal of Roman Studies* 60 (1970), 43.

³⁵ Ν[ό]μισμα πλεον οὐ[κ] ἰσχύει οὐ[κ] ἐξὸ]ν κε[ρ]μ[α]τιζεῖν; W.G. Uxkull-Gyllenband, *Der Gnomon des Idios Logos* (Berlin 1934), 103–104.

³⁶ D. Rathbone, ‘Prices and price formation in Roman Egypt’, in J. Andreau, P. Briant and R. Descat (eds.), *Economie antique. Prix et formation des prix dans les économies antiques* (Saint-Bertrand-de-Comminges 1997), 189.

³⁷ = *PBad.* 37; cf. also *P.Sarap* 89c. See W. Weiser, ‘Nomisma ex telon und nummi restituti. Die Währungspolitik des Traianus (98–117) in Realität und moderner Fiktion’, *Zeitschrift für Papyrologie und Epigraphik* 125 (1999), 236; Strobel 2002, op. cit. (n. 26), 90.

on payments in silver for prices expressed in gold, still existed in the Roman period.³⁸

The available data on divergent inter-currency rates come from areas where provincial bronze and silver were dominant. Ratios in Italy are likely to have been closer to the official rates. However, reality was probably not fundamentally different.

Scaevola mentions the case of a banker's client wishing to close his account. The banker acknowledged owing him 380,000 sesterces plus interest and a separate sum of *aurei*, which would be refunded without interest. Scaevola's words, *summa aureorum quam* (not *aureos quos*), indicate that the sum in gold was not a closed deposit but a normal bank deposit. Apparently, the banker kept separate accounts for sums in gold and sums in bronze and silver, implying that they had to be handled differently.³⁹ Paulus notes that a creditor could not be forced to accept payment in a different 'form' of coins (*aliam formam*) if this would be to his detriment.⁴⁰

Officially, face values remained fixed. Florentinus claims stipulations were valid if the promised sum equalled the stipulated sum, even if the former was expressed in *aurei* and the latter in *denarii*.⁴¹ In stead of thinking in terms of a fixed exchange rate however we should think in terms of a guaranteed nominal value, above which a premium could be set, linked to the commission charged by exchange banks. Exchange commissions in Pergamon were fixed by the city, but there was clearly no general rule. *PSarap* 90 shows that *strategoï* could intervene to check excesses, but they did so on an *ad hoc* basis.

The existence of variable inter-currency commissions and premiums helps to explain the strength of the Augustan system. Fluctuations in bullion value could easily be smoothed out. When the silver currency degraded, exchange commissions (the 'price' of gold coin) may simply have risen.

³⁸ R. Bogaert, 'Les banques affermées Ptolémaïques', *Historia* 33 (1984), 186; in third century B.C.E. *epallagē* was 11.11% for *trichrysa*, and 4% for *mnaiēia* and *penta-kontadrachma*.

³⁹ *Digesta* 2.14.47.1.

⁴⁰ *Digesta* 46.3.99; Wolters's view (1999, op. cit. (n. 1), 359) that this refers to 'Provinzialprägungen' is not convincing; if these enjoyed legal tender throughout the empire, there could be no *damnum* in a legal sense, if they did not, the rule would be superfluous.

⁴¹ *Digesta* 45.1.65.praefatio 1; cf. Volusius Maecianus, *Assis distributio* 44.

A crucial role was played by bankers. As long as bankers could be relied upon to accept coins at face value plus a reasonable commission, the actual bullion value of coins was irrelevant. The administration did not have the means to enforce nominal values in private transactions, but control on professional bankers was easy. Not coincidentally, the Athenian legal tender law of 375/374 B.C.E. focused on *dokimastai*.⁴² In Rome as well in 85 B.C.E. Gratidianus focused on *nummularii* to remedy a monetary crisis.⁴³

Currency discontent

A famous papyrus from Oxyrhynchus from 260 C.E. shows exchange bankers closing in order to avoid having to change the 'imperial money'. The *strategos* ordered the exchange bankers to reopen and accept all genuine coins and warned businessmen to do the same.⁴⁴ In 266 C.E. we find for the first time transactions being expressed in 'Ptolemaic' or 'old silver' as opposed to 'new silver'.⁴⁵ 'Commodian' *tetradrachms* now begin to turn up in significant numbers in hoards. There is no indication, however, that 'old' silver circulated at a premium. One papyrus (from 289 C.E.) indicates that at least in some cases loans expressed in 'Ptolemaic' silver could be repaid in the same amount of 'new' silver.⁴⁶ These data indicate discontent with the debased currency of Gallienus and his successors. As the heterogeneity of the currency increased, bankers found it increasingly difficult to buy gold and 'old' silver. Presumably, local regulations limited their possibility to raise exchange commissions.

⁴² R.S. Stroud, 'An Athenian law on silver coinage', *Hesperia* 43 (1974), 157–188; E.D. Tai, '“Ancient greenbacks”: Athenian owls, the law of Nikophon, and the Greek economy', *Historia* 54 (2005), 359–381.

⁴³ Cf. Verboven 1994, op. cit. (n. 2); Lo Cascio 1996, op. cit. (n. 1), 278–279; M.H. Crawford, 'The edict of M. Marius Gratidianus', *Proceedings of the Cambridge philological society* n.s. 14 (1968), 1–4.

⁴⁴ *POxy* 12 (1916) 1411; Bogaert 1968, op. cit. (n. 32), 33; R. Bogaert, 'Les kolubistikai trapezai dans l'Égypte gréco-romaine', *Trapezitica Aegyptiaca* (Firenze 1994), 109–112; T. Pekary, 'Studien zur römischen Währungs- und Finanzgeschichte von 161 bis 235 n. Chr.', *Historia* 8 (1959), 470–471; Bolin 1958, op. cit. (n. 30), 287–288.

⁴⁵ Rathbone 1996, op. cit. (n. 28), 336–337; E. Christiansen, 'On *denarii* and other coin-terms in the papyri', *Zeitschrift für Papyrologie und Epigraphik* 54 (1984), 295–299; Christiansen 2004, op. cit. (n. 3), 119–120.

⁴⁶ *POxy* 31 (1966) 2587.

Aurelian

Around 274 C.E. papyri document a sudden tenfold increase in prices.⁴⁷ The change is so abrupt and huge that it cannot have been merely an Egyptian phenomenon. Remarkably, prices afterwards again stabilised until Diocletian's reform in 296 C.E. Bankers and money-lenders as well continue to appear in papyri.

Such a phenomenal leap preceded and followed by price stability, cannot seriously be attributed to inflation. It indicates a devaluation by imperial decree and must be tied to Aurelian's currency reform. Many theories have been made about this reform, particularly concerning the meaning of the XXI mark on the new silver-clad radiate (the *aurelianus*) and its relation to the *aureus*. The source material is too meagre and ambiguous to go into to these theories here. Most likely, however, the face value of the *aureus* was drastically altered, perhaps with the additional provision that inter-currency commissions and premiums would fluctuate according to weight. The XXI mark as well probably refers to a new face value attributed to the *antoninianus*.

Aurelian's reform heralded a new era. From now on, the central denomination in the monetary system, was not a silver coin – however much debased – but a silver-clad coin. The system he devised was not merely a quantitative improvement of the horrible coinage of the 250–260's, but was a qualitatively different system, with different nominal values and exchange rates.

Significantly, however, Aurelian did not change the material aspects of currency or exchange practices. His new radiates appeared simply as an improvement on the radiates in circulation, his *aureus* as an improvement on those in circulation.

The monetary stability documented in the Egyptian papyri between 275–296 C.E. shows that the reform worked. Although it undoubtedly impoverished those who had savings in silver or bronze, it did not affect those with savings in gold or kind. Whether it succeeded in drawing back gold currency into circulation – if that was the intention – is hard to tell. Stray finds of *aurei* minted since the 260's appear to increase, which might indicate an increased circulation since the 270's. But, the numbers are too low to constitute more than a hint.⁴⁸

⁴⁷ Rathbone 1996, op. cit. (n. 28), 335–338.

⁴⁸ Bland 1996, op. cit. (n. 6), 91.

Diocletian

The breakdown of monetary stability came only after Diocletian's reforms. Curiously the Price Edict lists gold coin as a commodity, setting a maximum price of 72,000 d.c. per pound (1200 d.c. per *aureus*). This does not imply that gold coins did not enjoy a guaranteed nominal value, but that exchange commissions and surcharges were allowed to fluctuate. Perhaps the provision was intended to prevent competition between the old and new *aurei*.

The half-hearted attempt to reintroduce the Neronian *denarius* – now called *argenteus* – which had been so successful before, and the choice made in favour of the silver-clad *nummus*, which replaced Aurelian's radiate as the central denomination, is remarkable. To argue that mass production of the *nummus* required so much silver that not enough was left for the *argenteus* is circular reasoning. Why did Diocletian not opt for the Augustan solution, combining a high value *argenteus*, with supplementary denominations in bronze?

Whatever the details of the reform, monetary instability ensued; inflation soared. In 301 Diocletian reacted by fixing maximum prices and issuing a currency decree doubling the face value of at least the *argenteus* and the *nummus*. Both attempts failed miserably.

Why did a reform that produced intrinsically more valuable and more handsome coins turn so fast into total disaster? The main difference with Aurelian's reforms is that Diocletian completely threw over board the existing currency system. Familiar radiate 'silver' largely disappeared in the imperial melting-pots. The Neronian *denarius* had disappeared too long ago to lend trust to the *argenteus*, while the *nummus* was virtually an innovation *ex nihilo*. The public reacted by hoarding the *argenteus* because of its silver-purity, and avoiding or discounting the *nummus* because of its obvious overvaluation. Both features had existed previously, in the Augustan system (the pure silver *denarius*) and the Aurelian system (the silver-clad radiate), but never as parts of a single currency system. The reform failed because it lacked the support of tradition and habit.

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