INTRODUCTION

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'Money makes the world go around' is a commonplace, admittedly trite expression, yet one that has profound importance for the evolution of the global economy, well beyond the Industrial Revolution era that marks the temporal terminus of this collection of ten essays.[1] Understanding how market-based economies functioned from even ancient times to the present is impossible without considering the role of money. Thus the ten authors of essays in this volume do not accept the Classical School of Economics' view that money is 'neutral', in terms of its impact on economic change – a view that has led some economists to ignore the role of money. Often allied with that view is a disdain for so-called 'monetarism'. But, to cite the famous Nobel Prize-winning Italian economist Franco Modigliani (1918–2003): if 'monetarism' simply means that 'money matters', so that monetary changes are not merely passive, neutral phenomena, but have some active role of their own, then 'we are all monetarists'. The authors of this volume all agree that 'money matters' and support as well the famous corresponding observation of Marc Bloch (1886–1944): that monetary phenomena may be compared to peculiar 'seismographs that not only register earth tremors, but sometimes bring them about'.[2] All ten chapters in this volume focus, to one degree or another, on three inter-related themes: bullion (uncoined precious metals), coinages (precious-metal commodity moneys) and their debasements, and substitutes for precious-metal moneys.

But what is meant by 'money' in this volume? We may begin with the catechism presented in so many introductory economics courses: on the four functions of money. The first and most important is in serving as a medium of exchange. For Aristotle, medieval scholastics and for many in the Classical School, this was and is the only true function of money. But the other three roles of money are also vitally important: as a 'money of account', or standard of value used in reckoning prices, costs and values; as a store of value (i.e. if the purchasing power of money remains stable); and as a standard of deferred payment (money in the form of a wide variety of credit instruments). First, we must understand the difference between bullion and coin; and, second, we must

understand the link between coined money and moneys of account. Only then can we appreciate why debasement is so important in monetary history, and why it helped create the conditions for producing substitute moneys.

Bullion in International Trade

The term 'bullion' means any form of precious metal that is not in the form of legal tender coins, and any such precious metal that was destined to be minted into such coin, rather than directed to industrial or artistic purposes. Certainly a considerable amount of international trade was conducted in bullion rather than in coin. In late medieval Europe, however, from the onset of the widespread *guerres monétaires,* wars of highly competitive coinage debasements, most princely governments – thus notably excepting the Italian city-states – imposed bans on any trade in or on the export of 'bullion' and on the circulation of most foreign coins (usually excluding Italian gold florins and ducats). The objective of these bans was to force foreign coin and bullion in to the domestic ruler's mints: both to promote their own debasements and to defend themselves from neighbours' debasements. The penalties of fines and confiscations for violating these bans (or the cost of acquiring export licences) thus raised the transaction costs of dealing in bullion and demonetized foreign coin. Most west European states did permit the export of legal tender coins (domestic and foreign), with the significant exception of England, whose Parliament banned the export of all forms of precious metals (gold and silver, bullion and coin) from January 1364 to May 1663.[3]

Several studies in this volume – especially those by Herman Van der Wee, Nicholas Mayhew, Renate Pieper, Arturo Giraldez, and John Deyell – examine the importance of bullion payments in early-modern international trade, especially from the mid-sixteenth century, when a veritable flood of Spanish American silver vastly expanded western Europe's ability to finance a new global commerce, especially with 'the East': the Baltic and Russia, the Levant, southern and eastern Asia. Most of these regions had a limited demand for European manufactures and raw materials, except for silver and copper, especially because the long , peril-ridden maritime voyages, with high transaction costs, made most such goods prohibitively expensive (except in the nearby Levant). Normally, silver prevailed over gold, because these regions generally maintained a bimetallic ratio more favourable for that metal; and silver was also a useful ballast for half-empty outbound European ships.

Table I.1: Gold and Silver Exports of the East India Company to Asia in kilograms of pure metal, in Pound Sterling values, in decennial means, 1660–9 to 1710–19.

Decade	Silver kg	Silver value in £ sterling	Gold kg	Gold Value in £ sterling	Total Treasure in £ sterling	Silver %	Gold %
1660–9	5,729.600	51,445.568	175.140	22,576.832	74,022.400	69.50	30.50
1670–9	11,364.000	102,063.850	1,015.300	132,027.550	234,091.400	43.60	56.40
1680–9	29,276.000	262,839.775	929.070	120,867.926	383,707.700	68.50	31.50
1690–9	18,179.000	163,230.172	24.690	3,331.228	166,561.400	98.00	2.00
1700–9	36,294.300	325,887.606	79.540	11,121.294	337,008.900	96.70	3.30
1710–19	41,133.600	369,189.591	14.970	2,228.509	371,418.100	99.40	0.60
TOTAL	141,976.500	1,274,656.563	2,238.710	292,153.337	1,566,809.900	81.35	18.65

Source: K. N. Chaudhuri, 'Treasure and Trade Balances: the East India Company's Export Trade, 1660–1720', *Economic History Review*, 2nd ser., 21 (December 1968), Table 1, pp. 497–8.

But were the precious metals so exported actually in the form of bullion or coin? For there is much evidence that the Spanish and many other Europeans used virtually fine silver *peso* coins minted in Mexico (New Spain); and, from the early seventeenth century, the Dutch East India Company and other merchants used high-denomination silver coins known as *negotiepenningen* (or *rixdollars* – chiefly *Rijksdaalders, Leeuwendaalders, Rijders,* and silver *Dukaats*).

In seventeenth-century England, its East India Company had been forced to evade the long-standing export ban on bullion and specie, until the Company finally exerted enough pressure to convince Parliament, in May 1663, to repeal most of the restrictions, thereby permitting the free export of 'all sortes of Forreigne Coyne or Bullion of Gold and Silver'.[4] But this statute still retained the ban on exporting English coin, a ban that was not repealed until July 1819.[5] What then did the East India Company export between 1663 and 1819: 'all sortes of Forreigne Coyne' (e.g. Spanish and Dutch), or actual bullion? That question remains to be answered. But Nicholas Mayhew's fascinating essay on 'Silver in England, 1600–1800' demonstrates a third use of bullion from the goldsmiths' accounts: as manufactured plate (and other jewellery), which could be readily converted into either coinage or an export commodity. Indeed, in some years, the goldsmiths' output of hallmarked silver in Troy lb (373.242 g) exceeded either the Tower Mint's outputs or the silver exports of the East India Company.

Bullion and Precious Metal Coins

What is the real difference between bullion and coin? In this volume, the term 'coin' usually means a non-fiat commodity-money that is minted from precious metals, gold and silver. In Europe, as opposed to the ancient, subsequent Islamic worlds, and India, for example, such coins always contained at least some precious metal – even the very low denomination, base or petty coins known as

monnaies noires – until about the mid-sixteenth century. Even though the silver contents were so meagre in base coins, their presence was necessary to convince the public that such coins were still legitimate forms of money.

Coins minted from these two precious metals had two obvious advantages over bullion. First, they enjoyed the unique status of legal tender, denied to bullion, including the freedom to export them – with that notable exception of late medieval, early-modern England. Second, their use provided a significant saving in transaction costs in obviating the error-prone tasks of weighing the precious metals, assaying their exact fineness and assigning market values. So long as the issuing authority – prince or city – could retain respect for its own coins, those coins would circulate by 'tale' – i.e. by counting alone, at 'face value'. By enjoying these two advantages coins normally commanded an *agio* or premium over bullion, one that equalled the sum of minting fees: the mint-master's *brassage* and the ruler's *seigniorage* (coinage tax).

The Relationship between Precious-Metal Coins and Moneys of Account

The values of legal-tender coins can be understood only by examining the link between coins and the region's money of account systems. In western Europe from late Carolingian times, the most widespread system was the familiar one of pounds, shillings, and pence. Originally, the pound money of account equalled the value of a pound weight of fine silver. For accounting purposes, that notional pound (*libra, livre, lira*) was subdivided into 20 shillings (based on the Roman gold *solidus*), which in turn were subdivided into 12 pence (based on the Roman silver *denarius*): hence the standard notation of £, s, and d. The only coins struck in Carolingian times, however, were silver pennies (and subdivisions), so that the pound weight of fine silver was initially coined into 240 pennies. Not until the early thirteenth century were higher denomination European silver coins struck – some but not all worth a shilling (= 12d). From then to the French Revolution (in Great Britain to 1972), the 'pound' moneys of account were always equal to 240 currently circulating silver pennies in countries using this system.[6]

Coinage Debasement and European Moneys of Account

In medieval western Europe, however, the initially firm relationship between the pound weight of fine silver and the pound money of account soon broke down for one simple, universal reason: debasement. That term simply means a diminution in the quantity of fine precious metal represented in the unit of money of account. Such a change was undertaken by one or more of the following three techniques: (1) by reducing the weight of the coin, so that more coins were struck from the mint-weight; (2) by lowering the fineness of the coin, simply by adding more base metal, almost always copper (hence the very term

'debasement'); and (3) by increasing the coin's official money of account value. Whatever the combination of methods, the corresponding automatic result was an increase in the money of account value of the mint-weight of commercially fine metal: i.e. a greater number and nominal value of coins so struck.[7]

That third technique was virtually never applied to the penny itself, but only to some higher denomination silver coins and more especially to gold coins. If the ruler refused to debase higher-valued coins to the same degree, or failed to increase sufficiently their money of account values, then the market would have dictated an appropriate increase, relative to the penny's debasement.[8] The problem was the more acute with gold, whose coinage issues were first resumed in the West, in 1252, with the Florentine florin and the Genoese genovino. The next European gold coin issued was the French *écu* (shield), issued as part of Louis IX's monetary reform of August 1266; somewhat surprisingly, the Venetian ducat was first issued only in 1284–5. Other northern European realms did not issue their own gold coins until the 1330s and 1340s. The ensuing European monetary regimes were not really bimetallic: for the chief medium of exchange in most domestic economies was the silver coinage, while the gold coins were primarily reserved for regional and international trade (and 'priced' in terms of the silver-based moneys of account). For this reason, the majority of debasements in medieval Europe were of local silver coinages, since so many rulers were reluctant to damage their prestige abroad by tampering with their gold coins, as a symbol of their sovereignty, especially those that served internationally as 'dollars of the Middle Ages' – the Italian florins and ducats. Alan Stahl's chapter thus focuses on the assiduous determination of the Venetian governments to maintain the full purity of the gold ducat, in fineness, if not always in weight (from the sixteenth century), throughout the ensuing medieval and early modern eras (to 1797, having long been known as the *zecchino*, from *zecca* = mint).

The Florentine *florin*, last issued far earlier, in 1532, was not quite so successful in maintaining that pristine purity, though the changes were relatively minor compared to those in other, far less renowned European gold coins. Both Florence and Venice, while using gold-based moneys of account for international trade and finance, allowed the market to determine the exchange values of these gold coins, in terms of the silver-based *piccioli* (or *piccoli*) moneys of account. For the far better documented gold florin, we know that its market value in terms of the *lira di piccioli* rose from the initial £1 0s 0d in 1252, to £2 18s 8d in 1306, to its final value of £7 10s 0d in 1531–2: an overall increase of 650 per cent. That increase reflected, of course, not the physical debasement of gold but rather of the Florentine silver *denari*, *quattrini* and *soldi* coins. One might well say that the market imposed a corresponding 'debasement' on the florin, in terms of its money of account value, to correspond with the silver debasements.

In other European realms, their less prestigious gold coins often did undergo debasements: in both physical alterations and increased silver-based money

of account values. Very often princes undertook such debasements by issuing entirely new gold coins, attempting to establish a new money of account value for such effectively debased coins in order to keep the mint's bimetallic ratio in line with the market ratios. If these princes failed to do so properly, the market would respond – in a manner so well described in Peter Spufford's chapter on Burgundian-Habsburg coinage debasements. The market would also respond, not just in raising the money of account value of the gold coins but also in promoting their export, if they remained undervalued, in accordance with Gresham's Law: that 'cheap' money drives out 'dear'.

The Motives for Coinage Debasements

Much of the economic history literature treats coinage debasements with ill-concealed disdain: for both the princes' ulterior motives and the often dire consequences for the public. Peter Spufford's long chapter on the 'Scourge of Debasement', in his magisterial *Money and its Use in Medieval Europe* (1988), presents a sound case for contending that the overall impacts of medieval European debasements were very harmful.[9] Those negative views are not always justified, everywhere, at all times, especially not in early-modern Europe. For debasements had not one but two powerful motives: aggressive and defensive, with very different consequences.

We begin with the first: the aggressive motives. As noted earlier, one of the costs that a merchant had to pay in having his bullion minted into legal-tender coin was the ruler's tax known as seigniorage. When so many rulers found that their fiscal resources were limited or constrained, they often had no recourse but to exploit their mints to produce greater seigniorage revenues (as explained in Chapter 1). That was especially true in times of war. Who can deny that a ruler's chief obligation was the defence of his realm, for most warfare was viewed in such terms (even by most aggressors)? It is hardly necessary to prove that the mint-seigniorage provided the major role in financing warfare: only that such revenues were important *at the margin*, when the ruler's ability to raise funds quickly from taxes or feudal dues was severely limited. The significance of coinage debasements for such fiscal purposes in financing warfare and defence is also well demonstrated and documented in Harl's Chapter 2 on third-century imperial Rome, in Spufford's Chapter 4 on the late fifteenth-century Netherlands, and in Mateos Royo's Chapter 7 on seventeenth-century Aragon.

These fiscal motives may also have been present in the chronic, long-term silver-coinage debasements in late-medieval India, particularly in the Delhi sultanate (if not in Bengal), from *c.* 1340 to *c.* 1500, as discussed in John Deyell's essay. But possibly there, and more certainly in late-medieval, early-modern Europe, an opposite motive often prevailed: defensive debasements to protect the ruler's mints and his realm's coinages. Such debasements had three major aspects, of roughly equal importance, in most countries. The first was, obviously, defence against aggressive debasements from mints in adjacent lands, for such

debasements proved to be the most successful in attracting foreign bullion when debased coins so issued could be spent abroad: coins that were often imitations or direct counterfeits of a neighbouring realm's own coins that again circulated by tale.[10] A second related defensive reason was to counteract a form of internal and private criminal debasement: i.e. the clipping, filing and 'sweating' of coins. But the third reason was simply to remedy the silver losses from normal wear and tear in high-velocity coin circulations (i.e. of low denomination silver coins).

When the domestic coin circulation had suffered considerable deterioration from all these causes, the ruler's coin would lose the public's confidence and thus its premium or *agio* over bullion. Merchants would, consequently, no longer deliver bullion to the mint, and would cull recently, properly minted and thus overvalued silver coins and sell them along with bullion for export, usually to offending foreign mints. This form of Gresham's Law was frequently cited in so many late medieval monetary ordinances as a justification for a defensive debasement. Clearly such a debasement was absolutely necessary, under such circumstances, to restore the *agio* on coinage in order to reactivate the mints and to protect the realm against further exports of precious metals. That necessarily meant a newly issued coinage whose precious metal content was reduced to match the level of currently circulating coinage. In many instances, however, a legitimate defensive justification was used to disguise a new round of aggressive debasements: undoubtedly on the grounds that the best defence was offence, especially if it proved to be profitable.[11] We may readily detect the difference simply by comparing the seigniorage rates: high with aggressive debasements, low with defensive debasements.

The Special Case of Early-Modern Spain: Castile and Aragon

In early-modern Europe, the Iberian peninsula provided a remarkable exception to the otherwise almost universal pattern of silver-coinage debasements. The principal reason, explored further in the chapters by José Mateos Royo, Renate Pieper and Arturo Giraldez, is that the kings of Aragon (1372) and Castile (1474, 1497) had surrendered both their right to alter the coinage without parliament's consent, and their prerogative to collect more than the customary mint fees.[12] Indeed, the Castilian and Aragonese silver and gold coinages remained unaltered from 1497 to 1686. That monetary restriction did not apply, however, to the largely copper *vellón* or billon coinages. In 1599, Philip III issued the kingdom's first issues of purely copper *vellón* coins, subsequently debasing them, by weight.[13] The results, as Mateos Royo so well demonstrates, was a classic demonstration of Gresham's Law in both Spanish kingdoms. Because the gold and true silver coinages remained unchanged, market transactions brought about two changes: first, an increased premium value on the high-value coins, and, second, in so far as such coins remained undervalued, their increased export to France and other realms. At the same time, both Castile and Aragon were

inundated with influxes of foreign debased silver and billon coins (some from Valencia and Catalonia, outside the crown's jurisdiction), promoting a relative shift, in domestic circulation, to worn and impaired coins, further aggravating the Spanish monetary plight, which, in Aragon itself, was worsened by rising balance of payments deficits. The appeals of seventeenth-century mercantilist-minded Aragonese *arbitrists* for rational, purely defensive debasements of the silver, and for various state measures to address the balance of payments deficits were, in the face of trenchant traditionalist opposition, largely in vain (especially before the Castilian coin adjustments of 1686).

The Dutch Reaction to the Circulation of Foreign Debased Coin: the Wissebank and its 'Bank Money'

In the early seventeenth century, the young Dutch Republic was similarly being inundated by an influx of debased, counterfeit, and defective foreign coins, all the more so since Dutch trade was attracting merchants and their heterogeneous coinages from all over western Europe to Amsterdam. But as Herman Van der Wee demonstrates in his Chapter 5, the newly civic-founded Wisselbank (1609) adopted a far more efective and economically progressive solution: a coin substitute in the form of 'bank money', expressed in the bank deposit accounts and ledgers as money of account Dutch guilders (*gulden* or *florins*), each of which represented a fixed, unvarying amount of fine silver. All merchants were required to surrender all foreign coins (and suspect domestic coins) to the Wisselbank to be deposited (after being weighed and assayed) in bank accounts as such fixed-value guilders, while the Wisselbank delivered those coins to the mint for recoinage into perfectly stable *gulden* (guilders) and the aforesaid, high-value *negotiepennigen*. Merchants were also required to redeem acceptance bills (bills of exchange) at the Wisselbank, above a modest minimum. The overall result was that most merchants, domestic and foreign, while still permitted to make withdrawals in good coin, were strongly encouraged to conduct domestic commercial and financial transactions instead in bank money (bank account transfers). In doing so, they reduced transaction costs in trade, and, more important, reserved relatively scarce supplies of silver *negotiepennigen* for their most profitable use: in exports to the Baltic, Russia, the Levant, southern and eastern Asia. Late medieval private Italian banks had, to be sure, pioneered the system of *moneta di banco,* but not with the far-reaching beneficial economic consequences produced by Amsterdam's public Wisselbank in early-modern Europe.

The increasing role of copper as a substitute for silver coins

As indicated earlier, the most widespread seventeenth-century substitute for precious metal coins was copper – a genuine monetary metal of great historic importance: not just for debasements, but for the effective circulation of good-

quality gold and silver coins, since copper supplied the necessary hardening agent to counteract both wear and tear and chemical erosion. A transition to purely copper coins was thus both natural and indeed inevitable, especially with its role in debasements – so long as the public's psychological link between precious metals and 'money' could be broken. Once more we must call attention to the previous use of copper coins outside Europe: especially in the Islamic world (with *falus* coins), and before that, in ancient Rome. As demonstrated in Kenneth Harl's essay, third-century Roman emperors engaged in very extensive issues of largely copper ('silver clad') coins, known as *antoniniani* and *aurelianiani* – 'fiduciary coins', in his terminology – which proved most successful in financing the military and imperial recovery.

Within early-modern Europe, the government of the Habsburg Netherlands, and not of Habsburg Spain, was the first to issue pure copper coins: in 1543. France followed suit in 1577, and laggard England only in 1672. As Nicholas Mayhew demonstrates, a primary reason for the English issue of copper coinages was a severe dearth of silver that at least partly reflects the crown's and Parliament's refusal to engage in further defensive coinage debasements after 1601, largely for ideological reasons – reasons underlying the Great Recoinage of 1696–8: one undertaken fully at crown expense, with no alteration of the coinage (and no seigniorage). As the inevitable consequence, good silver coin was undervalued and exported, while barely any new silver came to the Tower Mint. The dearth of silver was gradually remedied by not only by the use of copper coins (chiefly now from Swedish mines) but also gold coins, whose supplies from Brazil grew strongly from the 1690s; but gold coins were obviously unsuitable for low-value transactions.

The Paradox of Coin Scarcities in a World Awash with Spanish American Silver: Bullion Exports to the East

Paradoxically, as several authors in this volume stress, both New Spain (Mexico) and western Europe experienced regional scarcities of silver during the very height of the Price Revolution era, when such seemingly vast quantities of Spanish American silver were entering Europe, especially from the 1550s to the 1620s, and were even then held responsible for that inflation.[14] In New Spain, as both Renate Pieper and Arturo Giraldez demonstrate, we find strong evidence for such a dearth of silver, even from the early seventeenth century. In their well documented view, despite evidence for the riches of the Zacatecas and other Mexican mines, the dearth of silver was largely due to the vast scale of silver exports: especially to Spain (via Seville) and elsewhere in Europe, but also, across the Pacific, to the Philippines, to finance the very important trade in Chinese silks. Evidently the remaining domestic supplies of freshly minted Mexican silver could not keep pace with the growth of the colonial economy and its population. Space limitations do not permit any discussion of Pieper's valuable

conclusions on how, when, where and why Spanish American silver imports, and re-exports to Asia, affected prices in Castile and more especially on the Amsterdam's exchanges (related to the role of the Wisselbank).

Thus, while the failure to engage in defensive debasements may explain some regional European scarcities of coined silver, the strongly growing West European exports of silver to southern and eastern Asia, the Baltic and the Levant, and as also discussed by Van der Wee and Nicolas, provide a more powerful explanation, though most especially from the 1660s. For by that decade, the English, Dutch and other European exports of silver to the Baltic, Levant and elsewhere in Asia were evidently surpassing the Spanish American silver imports (though Mexican if not Bolivian-Peruvian imports did revive in the early eighteenth century, as indicated in Pieper's chapter).[15] As tables I.2 and I.3 indicate, Europe's balance of payments deficit, with the consequent need to ship bullion to remedy those deficits, was far greater in trading with southern Asia than with the Ottoman Empire and the Levant, for two reasons: the latter offered a far more favourable market for western merchandise, especially textiles;[16] and trade with the latter involved far lower transportation and transaction costs, thus keeping prices of western goods in a reasonable range for consumers in Ottoman and other Levantine markets. On average, for the periods indicated in the tables, the composition of the East India Company's export trade with India and South Asia was 79 per cent in bullion and only 21 per cent in merchandise, while West European trade with the Ottoman Empire was almost the reverse: 33 per cent in bullion and 67 per cent in merchandise.

Table I.2: Exports of the English East India Company to Asia in 'Treasure' (Bullion and Specie) and in Merchandise with values expressed in pounds sterling in decennial means, 1660–9 to 1710–19.

Decade	Total Treasure in £ sterling	Merchandise in £ sterling	Total Value in £ sterling	Treasure %	Merchandise %
1660–9	74,022.400	41,085.200	115,107.600	64.31	35.69
1670–9	234,091.400	89,990.800	324,082.200	72.23	27.77
1680–9	383,707.700	56,170.200	439,877.900	87.23	12.77
1690–9	166,561.400	72,065.200	238,626.600	69.80	30.20
1700–9	337,008.900	60,876.500	397,885.400	84.70	15.30
1710-19	371,418.100	97,771.300	469,189.400	79.16	20.84
TOTAL	1,566,809.900	417,959.200	1,984,769.100	78.94	21.06

Source: K. N. Chaudhuri, 'Treasure and Trade Balances: the East India Company's Export Trade, 1660–1720', *Economic History Review*, 2nd ser., 21 (Dec. 1968), Table 1, pp. 497–8.

Table I.3: European Exports to the Ottoman Empire (Levant) in 1686–7 in Merchandise and Bullion, with values expressed in Turkish Piastres.

Exporter Nation	TOTAL PORTS Merchandise	%	Bullion	%	Total
France	660,636	52.16	605,900	47.84	1,266,536
England	1,415,138	80.76	337,075	19.24	1,752,213
Holland	926,780	62.88	547,000	37.12	1,473,780
Venice	569,200	78.92	152,000	21.08	721,200
Livorno	167,100	45.03	204,000	54.97	371,100
Genoa	115,250	100.00	0	0.00	115,250
Ragusa	0	0.00	8,000	100.00	8,000
Messina	0	0.00	20,000	100.00	20,000
Malta	0	0.00	7,000	100.00	7,000
TOTALS	3,854,104	67.20	1,880,975	32.80	5,735,079

Source: Michel Fontenay, 'Le commerce des Occidentaux dans les échelles du Levant en 1686–1687', in Bartolomé Bennassar and Robert Sauzet (eds.), Chrétiens et musulmans à la Renaissance: Actes du 37e Colloque International du Centre d'Études Supérieures de la Renaissance (1994) (Paris: H. Champion, 1988), Table 1, p. 351.

Finding such scarcities of silver in India may seem equally paradoxical, since we are led to believe that so much of that silver ended up in India. As John Deyell has demonstrated, however, many late-medieval Indian states (Delhi, Jaunpur, if not so much Bengal) recorded periodic scarcities of silver; and India in general had not received all that much silver from Europe before the 1570s. Only thereafter do European supplies make a major impact – an impact diminished, however, by the vast scale of the Indian and other Asian economies. As indicated earlier, a prolonged series of silver coinage debasements in the Delhi sultanate provide further possible evidence of an Indian 'silver problem' before 1575 (when Deyell's essay terminates).

Substitutes for Coined Silver, as 'Small Change': Indian Cowries and Mexican Cacao Beans.

One solution to that silver dearth, adopted in both late medieval India and early-modern New Spain, was yet another silver-coin substitute: in both places, non-metallic. In India, as elsewhere in the Indian Ocean basin, the most common alternative form of money was a seashell, known as cowries, produced and distributed in the millions. Their exchange value was determined not by fiat but by market operations through standard operations of 'supply and demand' – with obvious problems in establishing stable money of account values in relation to traditional gold and silver coinages. Copper coinages were not unknown in India; but the growing Portuguese copper imports (along with some silver, though chiefly to the East Indies) – the product of the Central European min-

ing boom in *argentiferous cupric* ores – do not seem to have made any impact in India before Deyell's study ends in 1575.[17]

Our current concern thus directs us to the importance of Arturo Giraldez's research on the cacao bean, as an effective coin substitute, but with the same problems in establishing stable exchange rates with silver and gold coinages as seen with cowries in south Asia. Its value as medium of exchange, with a large geographic distribution, was based on its earlier and continuing role as an important commercial commodity: first, for as a major item in domestic food consumption and then as an export to Europe and Asia, where it created a new craze for chocolate (food and drink).

The Role of Bank Money and Paper Credit from the 1660s

The importance of cowries and cacao beans as coin substitutes lies more in reflecting relative monetary scarcities than in providing effective long-term solutions. In the Dutch Republic, from *c.*1610, and in England, from the 1660s (but more the 1690s), such a solution was found in expanding the role of 'bank money'. In Restoration England, the various new goldsmith banks soon came to excel the Dutch in issuing a wide variety of fully negotiable (and discountable) forms of paper credit – including bank notes – as effective money substitutes. Of even greater importance, was the Financial Revolution from the 1690s, including the vital role of the Bank of England, both in becoming a lender of last resort, to replenish cash reserves of financial institutions (a function that the Wisselbank as a *giro* bank could not fulfil), and in managing a permanent, funded national debt in the form of fully negotiable annuities traded on the Amsterdam and London exchanges. But those events take us from the monetary to the financial sphere, even if closely related, and thus lie beyond the scope of this volume.

Some Conclusions on the Role of Coinage Debasements in the Pre-Industrial World

Given the overriding importance of coinage debasements in this volume, we must attempt an answer to the inevitable question: were they, overall, harmful or beneficial? That depends on whether they were aggressive or defensive and on their extent. Without much doubt, aggressive fiscally motivated debasements often did have dire consequences: in transferring incomes from the wage-earning poor (including many proletarian peasants) to the profit- and rent-seeking merchants, but also from the church and landed aristocracy dependent on fixed incomes, as defined in nominal moneys of account. Yet many small farmers and those in natural resource industries, as well as merchants, benefited from rising prices of their products (often rising in fact in *real* terms). Furthermore, the findings of Harl (for ancient Rome), Spufford and Munro (for the fifteenth-century Netherlands

and sixteenth-century England) refute the contention that debasements produced inflations that were in any way proportional to the extent of precious-metal reductions. Spufford indeed, as his major contribution to this debate, contends that percentage increases in mint prices for bullion rather than percentage reductions in precious-metal contents was the far more decisive method by which debasements affected both exchange rates and prices; and he demonstrates how debasements, though the exchange rates, promoted exports (and curbed imports).

Whatever the actual consequences of debasements, the still politically powerful aristocracies resolutely maintained their hostility to debasements in any form, in medieval and early modern Europe. That resolute consistent opposition (except in times of war) did not necessarily promote the public good in peacetime, when defensive debasements were so often clearly required.

Certainly, the historical record demonstrates that debasements, in either form, failed to provide any long-term solution to the two major 'bullion famines' of the later fourteenth and fifteenth centuries, when European debasements were the most prominent. At the same time, we must also admit the possibility that aggressive debasements aggravated monetary scarcities during this era, in two respects: first, by causing a Gresham's Law chain reaction that encouraged both hoarding and specie exports; and, second, by seriously curtailing the use of credit, since creditors were generally reluctant to accept repayments, those stipulated in moneys of account, in depreciated currency (i.e. to accept an anticipated *real* loss).

Another, very different view is presented in the recent, highly praised monograph, *The Big Problem of Small Change* (2002), by Thomas Sargent and his co-author François Velde.[18] They contend that the primary role of coinage debasements had long been to remedy chronic shortages of 'small change'. The historic record, for both medieval and early-modern Europe, does not support this view (in either motivation or results), as indicated in this volume and many other studies. Debasements certainly did not provide effective solutions for remedying shortages of small change. For if debasements had been confined just to the petty billon coinages, leaving the higher-denomination coins unchanged, the result would have been those examined in seventeenth-century Spain, with an aggravated monetary scarcity. The two authors fully admit, however, that the effective 'small change' solution lay in steam-powered technological innovations of the Industrial Revolution era, in coining money (to prevent counterfeiting, clipping, 'sweating', etc.), along with the subsequent establishment of a proper Gold Standard. Again, these monetary solutions lie beyond the temporal boundaries of this volume of essays.