

Deflation and the Petty Coinage Problem in the Late-Medieval Economy: The Case of Flanders, 1334-1484*

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Monetary historians have debated whether too many or too few petty coins, those most needed by the general populace, were struck in medieval Europe. But exactly how many were struck can be determined only for Flanders, where petty coinage usually accounted for 1% or less of the bullion minted. These mint-output statistics are explained in part by the demand for high-denomination coins by most merchants who supplied bullion to the mints; but equally also by the relatively small need to replace stocks of petty coin. Severe petty-coin scarcity was not likely a chronic condition in medieval Flanders, but did occur in the deflationary mid-fifteenth century, instigating innovations in state monetary policy.

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One of the least-well-studied aspects of European monetary history is the role of petty coinage, especially in the medieval economy. In the current but scant literature on petty coinage, we find two contradictory views: that either too much or too little was struck. Thus Herman Van der Wee (1969, p. 375) has contended that frequently so many petty coins circulated that "under these circumstances an inflation of what we would call fiduciary currency occurred . . . which resulted in a disappearance of the silver 'link' money from circulation because of actual undervaluation." In terms of the familiar Gresham's Law, therefore, the overabundant and thus "cheap" or "bad" petty coins drove out the good "dear" silver money. Philip Grierson (1976, p. 113), however, drawing upon the work of his former student Peter Spufford (1970), has stated the contrary: that medieval "moneyers preferred to strike high denominations to low ones . . . and were apt to leave the public desperately short of small change." What constituted such a shortage was not, however, specified.

Whether too much or too little petty coinage was struck in this era is

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indeed a question that cannot be easily resolved for most of Europe. Carlo Cipolla (1956, pp. 32–33), to be sure, has stated that late-medieval Italian minting policies resulted in “a chain of alternate periods of shortages of petty coins and excessive coining” from periodic debasements; and that the latter proved more beneficial than harmful in this era when “the overall supply of precious metals proved to be extremely inelastic.” But again conditions of coin scarcity or excess are not really defined; and his thesis cannot be verified because Italian mint account data are too sparse.¹ French mint accounts, commencing in the early 14th century (1308), have survived in far greater abundance, but with many lacunae; they are certainly incomplete for the entire kingdom.² Only for Flanders and England do we possess mint accounts in a virtually complete, unbroken series in the late-medieval era. Regrettably the English accounts cease giving information for each coin denomination struck after June 1351.³ Only the Flemish accounts continue to do so; and only for Flanders, therefore, can we answer the questions: how much petty coinage was struck from year to year, and what proportions of total mint outputs were struck in that form?

To understand properly the significance of this debate and the Flemish mint data, we must also (1) understand the nature of medieval minting; (2) define precisely the term “petty coin”; and (3) acquire some quantitative measure of its purchasing power in the economy of late-medieval Flanders. Virtually everywhere in medieval Europe, certainly in Flanders, minting was undertaken at least partly for profit, potentially derived from two charges imposed on coinage.⁴ The first was a feudal tax on minting that went directly to the prince as *seigniorage*. His profit, however, was only

¹ His thesis is too complex to reproduce here: see Cipolla (1956, pp. 27–33; and also 1963, 1982); Spengler (1966, pp. 208–214); Cannan (1926, pp. 25–31); and p. 393 below. Bernocchi (1976, Vol. 3, pp. 252–256) has published summaries of the Florentine mint accounts for silver from 1345, but with many gaps: accounts are missing for the years 1392–1422, 1450–1451, 1453–1463, 1465–1471, 1477–1478, 1495–1502. The Venetian mint accounts are still missing; see Lane and Mueller (1985, Chap. 10, Appendix B); for Genoa, Milan, Florence, and Venice, see Day (1978, pp. 23–35, 40–42, 53–54).

² For the French mint accounts, see Miskimim (1963, 1984) and Spooner (1972); they provide mint outputs only in total livres and fine *marcs* struck, not by coin denominations.

³ For an explanation see below pp. 402–403 and n. 15. The various silver coin denominations had been differentiated in the English mint accounts from the first extant accounts, in 1234, to June 1351.

⁴ For the numismatics and economics of the following, see Munro (1973, Chap. 1, “The Economics of Bullionism,” pp. 11–36; 1979, pp. 178–187; 1983, pp. 109–126); Feavearyear (1963, pp. 1–45); Grierson (1975, pp. 94–123); De Roover (1948, pp. 220–246); Spufford (1970, pp. 29–54, 130–146); Challis (1978, pp. 1–28, 165–198); Van der Wee (1977, pp. 290–300). Prince and mint-master usually also shared another source of profit on minting: any left-over precious metals, the *remèdes* or “tolerances” in fineness and weight that had to be allowed, because of the mechanical crudity of coin stamping and cutting in medieval minting. See the Appendix.

a residual revenue after paying the salaries of his monetary officials and mint inspectors and the capital costs of the mint buildings. The second fee, known as *brassage*, went to the mint-master, to cover his costs for copper alloys used in the coins, the production of coin dies, the wages of his employees, and any funds expended in leasing ("farming") the mint from the prince; his profit was thus also the residual amount. In return for the bullion supplied to the mint, the money-changer or merchant received payment based on the "mint price": the official monetary equivalent or *traite* value of the bullion coined *less* the deductions for seigniorage and *brassage*, per pound or *marc* (244.75 g) of precious metal, illustrated in Table 1 and the Appendix.

Merchants would supply bullion only if the coins received enjoyed a "premium" over their bullion contents high enough to cover the seigniorage, *brassage*, and transactions costs. Coins normally commanded such a premium, to circulate by "tale" or number at face value, because of their recognizability (the coin's "stamp"), portability, divisibility, and general convenience in trade. But they could do so only so long as they remained physically unimpaired, to command public confidence, and their circulating quantity did not grow beyond total public demand for coined money.⁵ The state (in Flanders and England) sought to protect that premium by preventing the circulation of most foreign coins and by making the mint, its licenced changers, and a few licenced jewelers the sole purchasers of bullion, banning any other bullion transactions. The mints were not, however, always willing and able to buy bullion: most would remain open only so long as the bullion influx and thus coinage revenues were large enough to cover their variable costs.

Frequently medieval princes sought to induce a greater bullion influx by a coinage debasement: reducing the coin's precious metal content, by weight and/or fineness (alloy), in order to strike a higher *traite* or official value of coinage from a given quantity of precious metal. That increase in the *traite* thus permitted the mint to increase its bullion price for the merchants, the prince's seigniorage, the mint-masters' *brassage*—and also necessarily the coinage premium. The relationship between the physical and monetary changes, between debasement and the new *traite* values, was a reciprocal one, expressed by the formula: ΔT (*traite*) = $[1/(1 - x)] - 1$, in which x is the percentage reduction in the silver content of the penny or other coin linked to the money-of-account. Such changes can be also be seen in Table 1, for the Flemish debasement of November 1428. Thus an 11.76% reduction in the pure silver content of the 2d. coin (from 1.725 g. to 1.522 g.) resulted in a 13.32% increase in

⁵ Compare with the recommendation of the late 17th-century Italian writer Geminiano Montanari that the state "not strike more [petty coins] than [are] sufficient for the use of his people, sooner striking too few than striking too many." Cited in Cipolla (1956, p. 30), Spengler (1966, p. 211), Monroe (1923, p. 98). See also p. 407, n. 23; and p. 417, n. 50 below.

Double mite (courte)	June 1418	November 1428 ^e
Value ^a	2 mites = 1/12d. gros	2 mites = 1/12d. gros
Fineness ^b	9 grains AR = 3.125% fine = 2.995% pure	8 grains AR = 2.777% fine = 2.662% pure
Weight ^c	180 cut per marc = 1.360 g	180 cut per marc = 1.360 g
Fine silver content AR	0.043 g	0.038 g
Pure silver content	0.041 g	0.036 g
Traite per marc ^d	$180 \times 1/12d. = \frac{15}{9/24/12} = 0.03125$	$180 \times 1/12d. = \frac{15}{8/24/12} = 0.02777$
argent-le-roy		45s.0d.
Division of the	Value in	Value in
traite per marc AR	Flemish gros	Flemish gros
	Number of	Number of
	coins	coins
	Percentage of	Percentage of
	the traite	the traite
Brassage	18s.6d.	20s.5d.
Seigniorage	4d.	7d.
Total mint charges	18s.10d.	21s.0d.
Mint bullion price	21s.2d.	24s.0d.
Traite	40s.0d.	45s.0d.
	2664	2940
	48	84
	2712	3024
	3048	3456
	5760	6480
	46.25	45.37
	0.83	1.30
	47.08	46.67
	52.92	53.33
	100.00	100.00

^a Face value of the coinage: 1 penny or 1d. gros = 12d. (1s.) parisis = 24 mites; 12d. gros = 1s. (sol, shilling).

^b Fineness: reckoned out of a total of 12 deniers *argent-le-roy*, with 24 grains per denier; a full 12 deniers *argent-le-roy* was commercially fine silver = 23/24ths or 95.833% pure silver.

^c Weight: reckoned in terms of the *taille* or number cut per *marc de Troyes* = 8 Paris ounces = 244.753 g.

^d The traite per marc: official value of the coinage struck per *marc argent-le-roy*, calculated as:

$$T = \frac{\text{taille per marc} \times \text{face value of the coin}}{\text{fineness in deniers and grains out of 12 den. AR}}$$

^e Period of minting double mites: 9 March 1430 to 27 September 1432.

the *traite*: from 22.667s. (22s.8d.) to 25.6875s. (25s.8d.6m.) per fine silver *marc argent-le-roy*.

As Table 1 further demonstrates, the principles of debasement, or of any coinage alteration, were the same for both large and small coin denominations. It is imperative to realize, second, that the Flemish petty coinage was an integral part of the silver money system. Fully convertible legal tender, it always contained some silver (until 1543), diminishing with debasements and increasing with *renforcements* (coinage reforms), more or less proportionally with changes in other silver coins, according to officially prescribed monetary ordinances (Tables 1, 3, 5).⁶ Thus *not* included in this definition are any token coins: i.e., those base-metal jettons of tin, pewter, lead, or copper, containing no precious metal, issued by the Church, other charitable organizations, or even individuals, as unofficial coins, invalid for taxes or official payments, that served only as private credit instruments.⁷

The values assigned to genuine petty coins were some specified constant fractions of the silver penny or other "link money" that anchored the circulating coinage to the prevailing money-of-account. A modern synonym is thus fractional coinage. In medieval Flanders, the most common and very apt synonym was "black money"—*monnaies noires*, *zwart geld*—because of the coins' very high base-metal contents.⁸ Their more formal names were *mites*: the single mite, worth 1/24 of the silver penny *gros* or *groot*, and the double mite or *courte*, worth 1/12d. *gros*.⁹ These were the only petty coins struck in 14-century Flanders; but thereafter we may arbitrarily add the quarter-gros, the *gigot* or *zeskin* of 6 mites, first struck in that form in 1410.¹⁰

⁶ See sources cited in n. 4 above; and also nn. 5, 23, 41, and 50. Medieval canon lawyers were agreed that the amounts of petty coinage that had to be accepted in payment should be limited (Monroe, 1923, pp. 36, 96); but in Flanders no specific legal limitations were imposed.

⁷ See Mitchiner and Skinner (1983, 1984); Grierson (1975, pp. 32–33, 162–171); Courtenay (1973); and Chalon (1847), on medieval accounting tokens, "jetons de calcul." See below p. 414; and n. 40.

⁸ The modern numismatic term is *billon*, a base coin with under 50% silver (Grierson, 1975, p. 193). But that term can be very misleading, since its original medieval meaning was "bullion" (Munro, 1974); furthermore, many medieval coins with less than 50% silver were not then considered "petty," while the English farthing (1/4d.), with 92.5% silver fineness, certainly was.

⁹ In the older *parisis* money-of-account system, fixed in value at 1/12th of the *gros* system from 1318–1320, the single mite was thus worth 1/2d. and the double mite, 1d.—a penny. See the Appendix; Tables 4–6; and Ghyssens (1970, 1974), Dieudonné (1933).

¹⁰ The quarter-gros struck from 1410 was silver rather than black money, with a fineness of 33.3% (falling to 16.7% by 1477). In December 1416, a 3-mite piece of 25% fineness was prescribed, but evidently not struck. See Deschamps de Pas (1861, pp. 223–225) and Tables 4–5. A quarter-gros ("petit blanc") had been briefly struck much earlier, in 1334–1336 (Gaillard, 1856, pp. 34–42). But, with a much higher silver content (85.4% fine) and

Third, one must realize that small silver and petty coins played a far greater role in medieval society than they do in today's economy. For most people, such coins were then certainly the principal means, for many the only means, of transacting retail trade, in buying and selling daily necessities. As Table 2 demonstrates, furthermore, the purchasing power of such coins was surprisingly high in late-medieval Flanders, because prices and wages were then so low.¹¹ The expression "a penny for your thoughts" takes on new meaning when we find, ca. 1350, that a penny would then buy over 5 lb of cheese or a gallon (4.8 l) of wheat. Thus even the Flemish *courte* (double mite), with which one could have bought 6–7 oz of cheese in 1350 (or again in 1470), should not be too casually dismissed as "small change."

As Table 2 also demonstrates, the purchasing power of such silver coins changed often drastically over the 150 years that constitute the period chosen for this case study, from 1334—when the Flemish mint accounts commence—to 1484, with the transition to the early-modern Habsburg regime. Those years are particularly significant in encompassing the late-medieval economic contraction, or "Great Depression." For Flanders, the most urbanized, commercialized, industrialized, and monetized region in northern Europe, two particularly relevant, interrelated features of this economic contraction were widespread, chronic warfare—most notably the Hundred Years' War (1336–1453); and a growing scarcity of precious metals, especially from the 1370s. Warfare was significant not only for its considerable economic dislocation but more for its financing by often drastic coinage debasements that in turn spawned veritable *guerres monétaires*, especially from the 1330s, in an international competition for bullion. Both the warfare itself and the accompanying debasements were highly inflationary, temporarily overpowering and reversing the prevailing deflationary forces of this era. The intervening periods of peace generally also resulted, in most continental countries, in coinage *renforcements*, monetary reforms, to remedy the inflationary damages from debasements—especially to the prince's feudal and tax revenues, which were usually fixed in money-of-account terms. Since creditors similarly suffered from debasements, the prince's continued access to credit was ultimately dependent also upon a *renforcement*. These reforms were themselves generally deflationary, by converting the current debased coins necessarily into a smaller quantity of strengthened coins. Flanders' monetary history can thus be portrayed as an oscillating pattern of debasement and reform, perhaps similar to Italy's (Cipolla, 1956): (A) 1334–

a much higher purchasing power (Table 2)—then worth 3/4 of an English penny sterling, it did not then really qualify as petty coin.

¹¹ See also Cipolla (1956, pp. 33–34); Spengler (1966, pp. 205–208); and Munro (1975).

TABLE 2
The Purchasing Power of One Flemish Silver Penny Gros (1d.) in Terms of Selected Foodstuffs and the Price of a Basket of Consumables: in 10-year Intervals, 1350 to 1490

Year	Butter ^c Bruges (lb)	Cheese ^b Bruges (lb)	Wheat ^c Bruges (quarts)	Peas ^c Bruges (quarts)	Eggs Brussels (number)	Herring ^d Antwerp (number)	Rhine wine ^e Ghent (pints)	Basket of consumables/ Flanders (d. gros)
1350	2.05	5.14	4.34					65.7
1360	0.96	2.39	2.60					124.1
1370	0.88	2.19	1.84					162.8
1380	0.80	2.23	3.06					135.5
1390	0.79	2.15	2.23		13	7.2		166.6
1400	1.10	3.43	3.25	2.52	13	11.8	1.15	112.4
1410	1.07	2.73	2.20	3.25	13	8.3	0.98	134.6
1420	0.74	2.39	5.04	2.50	12	3.4	0.98	125.8
1430	0.63	2.34	2.69	2.69	n.a.	6.3	0.57	163.7
1440	0.85	4.18	2.26	1.86	n.a.	7.2	0.54	162.0
1450	0.94	4.05	3.19	2.79	12	8.7	0.70	128.8
1460	0.92	3.26	2.20	2.44	10	6.2	0.57	145.3
1470	0.85	4.95	3.40	3.25	7	5.9	0.65	118.0
1480	0.79	3.61	2.17	2.37	5	2.9	0.51	141.7
1490	0.38	1.55	1.50	0.84	5	4.8	0.41	307.1

^a Butter, which was much more expensive than cheese in this era, was priced by the *wage* of 83.5 kg = 184.09 lb.

^b Cheese priced by the *wage* of 60.6 kg = 133.60 lb.

^c Wheat and peas priced by the *hoet* of 172 liters = 156.22 quarts (U.S. dry)

^d Herring priced by the barrel of 833 herrings (fresh salted)

^e Rhine wine priced by the *stoop* = 2.306 liters = 4.876 pints (U.S. liquid)

^f "Basket of Consumables" contains 45.46 liters of wheat, 39.37 liters of rye, 18.18 liters of barley, 24.37 liters of peas, 163.67 liters of barley malt, 13.61 kg of butter, 13.61 kg of cheese, and 1.225 meters of cheap quality woolen cloth. It is modeled on the Phelps Brown-Hopkins "basket."

1389: warfare, debasements, with very large mint outputs, and severe inflation; (B) 1390–1416: relative peace, strong coinage, “bullion famine,” and sharp deflation; (C) 1416–1433: extensive warfare, debasements, and inflation; (D) 1433–1474: relative peace, strong coinage, followed by “bullion famine,” low mint outputs, and severe deflation; (E) 1474–1496: warfare, debasements, and severe inflation—with, as well, silver influxes from new Central European mines.¹²

During the inflationary periods (A, C, and E), the relative demand for petty coins would presumably have diminished with the fall in their purchasing power; and correspondingly such demand would have risen with their higher purchasing power during the intervening deflationary periods (B and D), as suggested by Table 2. The exact causes of these alternating inflations and deflations, the mixes of real (demographic) and monetary factors, are not our present concern. Nor can we establish here the role that such individual factors played in determining the aggregate supply of and demand for money, and the denominational composition of the gold, silver, and petty coinage circulations: all of which are reflected only imperfectly in the Flemish mint accounts.

From those mint accounts, the actual quantities of petty coin struck as mites and quarter-gros in Flanders from 1334 to 1484, and the proportions of both the total silver bullion and total values of silver coinage minted in petty coin have been computed and presented in Table 3. The physical composition and the minting costs of both mites and silver *gros* are compared over this 150-year period in Tables 4 and 5. Note first that the mint accounts record the striking of petty coins for only 61 or 40% of these years, with none struck at all from 1339 to 1375. That particular 36-year lacuna may, however, be misleading. For the previous account of 1334–1338, while noting the coinage of 2637 *marcs* of *noire monnoye*, made no official reckoning of them “because My Lord [Count Louis de Nevers] exacts no seigniorage for them.”¹³ Since the real purpose of the accounts was to record the count’s seigniorage revenues, subsequent mint-masters may have seen no need to list issues of mites so long as they remained seigniorage-free. At the same time, so long as they were seigniorage-free, the count had little financial incentive to require their coinage: especially Louis de Nevers’ successor, Louis de Male (1346–1384), ill-famed for his highly profitable coinage debasements. Indeed mites do not appear in any monetary or mint ordinance during this 36-

¹² For elaboration and evidence, see Munro (1973, 1979a, 1979b, 1981, 1983a, 1983b, 1984); Day (1978); Spufford (1970); Miskimin (1963, 1964, 1975, 1983, 1984); Van der Wee (1963, Vol. 2, pp. 3–112, 285–316, 369–410); Mayhew (1974a, 1974b); Nef (1941, 1952); Braunstein (1983); Bordo (1986).

¹³ Gaillard (1856, Doc. Nos. 17–21, pp. 31–58, with quote on p. 45).

TABLE 3
 The Petty Coinage Issues in Late-Medieval Flanders: The Minting of Mites, Double-Mites, Quarter-Gros, and of Total Silver Coinage in
 Number of Coins, Values of Output in £ Gros, and Marcs of Fine Silver Struck, in Decennial Totals: from 1334 to 1484

Decade	No. months mint activity	Petty coinage struck			Petty coinage as percentage of total silver coinage			
		Coins issued in millions	Value (£ gros Flemish)	Marcs argent-le-Roy (244.75g)	Total silver coinage (Marcs A. R.)	(coins)	(£ gros)	(marcs A. R.)
1334-1343	109	2.444	424.3	1350	116,295	15.5	1.2	1.2
1346-1354	105	—	—	—	203,698	0.0	0.0	0.0
1354-1364	110	—	—	—	254,534	0.0	0.0	0.0
1365-1374	110	—	—	—	277,457	0.0	0.0	0.0
1374-1384	116	1.633	567.2	408	97,464	13.0	0.6	0.4
1384-1394 ^a	124	1.963	548.5	348	102,096	12.1	0.6	0.3
1394-1402 ^b	96	4.454	1056.8	694	161,947	18.8	0.7	0.4
1410-1415 ^c	51	—	—	—	76,541	0.0	0.0	0.0
1417-1424	85	1.549	537.8	260	285,153	3.5	0.2	0.1
1424-1434	119	0.993	344.8	165	247,036	2.5	0.1	0.1
1434-1444	123	0.921	285.3	161	105,294	5.0	0.2	0.2
1445-1447 ^d	26	0.456	158.3	88	126	98.8	77.6	69.8
1454-1458 ^e	55	3.515	880.4	399	3,503	65.0	18.5	11.4
1466-1474	94	2.619	909.3	450	153,299	8.9	0.4	0.3
1474-1484	113	3.994	1386.7	458	132,655	13.3	0.6	0.4

Mites and double mites only

				Quarter-gros and mites				
1410-1415 ^c	51	0.656	682.8	792	76,541	7.2	1.0	1.0
1417-1424	85	3.777	2859.3	2118	285,153	8.5	0.9	0.7
1424-1434	119	1.294	657.9	403	247,036	3.3	0.2	0.2
1434-1444	123	3.183	2641.7	1967	105,294	17.3	2.1	1.9
1445-1447 ^d	26	0.456	158.3	88	126	98.8	77.6	69.8
1454-1458 ^e	55	4.838	2258.6	1455	3,503	89.5	47.5	41.5
1466-1474	94	6.749	5212.0	3283	153,299	22.9	2.4	2.1
1474-1484	113	4.622	1939.7	712	132,655	15.4	0.8	0.5

Note. The petty coinages are considered part of the silver coinages; and gold coinages have been excluded from these tables. When the Flemish mints maintained progold ratios (ca. 1350-1390; 1425-1465), gold accounted for from 67 to 98% of the total values of coinages struck. See Munro (1983, pp. 140-141). Flemish and auxiliary mints included (a) *Ghent*: 16.09.1334-27.06.1337; 01.10.1388-23.10.1390; 17.01.1410-05.04.1447; 02.05.1459-16.03.1462; 18.06.1466-09.06.1467; 18.07.1482-21.05.1484; (b) *Bruges*: 20.08.1350-24.10.1354; 01.06.1392-16.06.1402; 02.03.1454-12.10.1458; 23.01.1468-05.04.1482; (c) *Mechelen*: 08.10.1357-02.02.1364; 30.01.1380-29.10.1392; 16.06.1454-16.01.1460; (d) *Valkenberg*: 01.11.1396-01.11.1399; (e) *Namur*: 23.10.1421-10.10.1433.

^a The mint accounts are missing for 1386-1387. See Table 4, notes *e* and *d*. Brabant's Leuven mint struck 74.472 marcs AR into 482,670 single mites between 24.03.1385 and 14.04.1386 (ARA, Rolrekening No. 2589). While legal tender in Flanders, these mites are not included in this table.

^b No minting (or mint data) from 17.06.1402 to 17.01.1410.

^c Although the coinage of mites and double mites was prescribed in the August 1409 mint ordinance (Tables 2-3), none or virtually none was struck in this period. The one possible exception is the account year July 1412-July 1413, for which the *garde de la monnaie's* account notes under "extra account, bullion received" 8 *marc d'oeuvres* of double mites and 18 *marcs d'oeuvres* (alloyed marcs) of single mites, without specifying that they were struck. Had they been, that would have amounted to: 6096 coins, worth 25s.10d. gros, from 0.833 *marc argent-le-roy*. The mint-master's account for the same year, however, explicitly states that no double or single mites were struck (as do all the accounts from January 1410 to November 1419).

^d Mites and double mites only; no quarter gros. No silver was struck from 05.04.1447 to 02.03.1454.

^e No silver was struck from 12.10.1458 to 18.06.1466.

TABLE 4
The Coinage of Double Mites (Courtes) and Silver Gros in Flanders, 1334-1484: Taille (Weight), Fineness, and Pure Silver Contents

Date of ordinance or first minting	Double mite		Double mite ^a Percentage fineness argent-le-roy	Double mite ^a Grams of pure silver	Double mite		Gros ^c Grams of pure silver	Silver content of Double mite as percentage of silver in the gros
	Taille	No. cut to marc			Traite per marc A.R. in shillings	Traite per marc A.R. in shillings		
01.10.1334 ^b	264		14.58	0.130	6.286	3.484	3.73	
12.01.1375 ^c	250		6.25	0.059	27.778	1.114	5.30	
16.07.1384 ^d					22.500	1.173		
18.04.1386 ^e	210		5.56	0.062	26.250	1.022	6.07	
29.10.1386 ^e	210		5.56	0.062	26.250	1.006	6.16	
03.04.1387 ^e	210		4.51	0.050	32.313	0.849	5.89	
01.10.1388	240		4.17	0.041	40.000	0.781	5.25	
20.12.1389 ^f	183		4.17	0.053	30.500	1.018	5.21	
30.04.1407 ^g	156		4.17	0.063	26.000	1.104	5.71	
07.07.1407 ^g	184 [sic]		4.17	0.053	30.500	1.018	5.21	
17.08.1409 ^h	168		4.17	0.058	28.000	1.182	4.91	
06.12.1416 ⁱ	—		—	—	—	0.958	—	
12.06.1418	180		3.13	0.041	40.000	0.850	4.82	
07.11.1428 ^j	180		2.78	0.036	45.000	0.749	4.81	
12.10.1433	216		4.17	0.045	36.000	0.814	5.53	
15.10.1456 ^k	240		4.17	0.0407	40.000	0.814	5.00	
23.05.1466	198		3.47	0.0411	39.601	0.703	5.85	
13.10.1467	204		3.47	0.040	40.799	0.677	5.91	
27.10.1474 ^l	—		—	—	—	0.597	—	
20.12.1477	216		2.78	0.030	54.000	0.522	5.75	
18.07.1482	196		2.08	0.025	65.333	0.466	5.36	

^a Silver contents are given in terms of 100% pure silver, rather than in fine or *argent-le-roy* (95.833% pure).

^b Evidently struck as single rather than double mites, but, if double mites, then a traite of 12.751s. gros Flemish.

^c There is no record of minting of mites between 07.11.1338 and 12.01.1375; and the silver gros coinages of this interim period are omitted from this table.

^d In July 1384, Flanders and Brabant agreed to strike a common coinage, to be legal tender in both principalities. The Flemish monetary ordinance prescribed no mites or other petty coinage; but Brabant's Leuven mint struck single mites from 24.03.1385 to 14.04.1386 (not included in Table 4): 180 per marc of 8 grains AR (silver content of 0.036 g)

^e The mint accounts for 1386-1387, covered by these three ordinances, are missing. See Tables 3, 5.

^f The mint ordinance of December 1389 made no mention of double mites (single mites only); but minting of double mites commenced at Mechelen in November 1390. In January 1391, a monetary ordinance, revoked in 1393, reduced slightly the weight of the double gros, but left the single gros untouched.

^g The proposed monetary ordinances of 1407 were evidently failures.

^h Very few, if any, mites resulted. See Table 3, note *b*.

ⁱ No mites were prescribed; instead a new coin of 3 mites was prescribed. But with a fineness of 25%, it was silver rather than black money; and no issue is recorded in the mint accounts.

^j Coinage of mites did not result until March 1430. Contemporary coinage alterations in Namur are omitted from this table (though Namur's silver outputs are included in Table 3).

^k The new coinage did not commence until September 1457. A previous change in the taille of the single mite in February 1437, from 252 to 300, was merely a correction of an error in the 1433 ordinance, to make the weight correspond to the decreed *traite* of 37s.6d. per marc.

^l Mint officials stated that "ne sera faite icy nulle mention des deniers de demi-gros, quars de gros, ne autre noire monnoie"; and no mites or quarter-gros were struck again until December 1477.

TABLE 5
The Double Mite (Black) and Gros (Silver) Coinages in Flanders, 1334-1484: A Comparison of Their Traits per Marc, Seigniorages, Brassages, and Total Mintage Charges, in Shillings and Pence Gros Flemish

Date of ordinance or first minting	Double mites (black money)				Gros (silver money)				
	Traite per marc argent-le-roy (s. gros)	Seigniorage per marc A.R. (d. gros)	Brassage per marc A.R. (s. gros)	Brassage as percentage of traite	Total mintage as percentage of traite	Traite per marc A.R. (s. gros)	Seigniorage per marc A.R. (d. gros)	Brassage per marc A.R. (s. gros)	Total mintage as percentage of traite
	01.10.1334 ^a	6.286	nil	n.a.	n.a.	n.a.	5.610	1	n.a.
12.01.1375 ^b	27.778	12	n.a.	n.a.	n.a.	17.538	2	n.a.	n.a.
06.11.1376	27.778	8	n.a.	n.a.	n.a.	17.538	2	n.a.	n.a.
16.07.1384 ^c	22.500	nil	8.167	36.3	36.3	16.667	12	1.333	14.0
18.04.1386 ^d	26.250	[8.917]		n.a.	34.0	19.125	4	[1.792]	9.4
29.10.1386 ^{d,e}	26.250	13	7.500	28.6	32.7	19.125	4	1.125	7.6
03.04.1387 ^d	32.313	8	10.896	33.7	35.8	19.431	5	1.181	8.2
01.10.1388	40.000	12	17.000	42.5	45.0	23.035	8d10m	1.583	9.9
10.01.1389	40.000	12	17.000	42.5	45.0	25.132	8	2.465	12.5
20.12.1389 ^f	30.500	2	13.333	43.7	44.3	25.132	6	2.465	11.8
20.06.1393 ^g	30.500	2	12.833	42.1	42.6	19.201	4	1.868	11.5
30.07.1407 ^h	26.000	2	10.083	38.8	39.4	17.708	8	1.368	8.9
07.07.1407 ⁱ	30.500	2	12.833	42.1	42.6	19.201	4	1.368	8.9
17.08.1409 ^j	28.000	2	12.667	45.2	45.8	16.535	2	1.201	8.3
06.12.1416 ^k	—	—	—	—	—	20.417	16	1.833	15.5
12.06.1418	40.000	4	18.500	46.3	47.1	23.000	4	1.500	8.0
07.11.1428 ^l	45.000	7	20.417	45.4	46.7	26.111	7	1.528	8.1
12.10.1433	36.000	2	13.083	36.3	36.8	24.000	2	1.083	5.2
15.10.1456 ^m	40.000	2	n.a.	n.a.	n.a.	24.000	2	1.083	5.2

23.05.1466	39.601	1d.12m.	13.142	33.2	33.5	27.788	1d.12m.	1.330	5.2
13.10.1467	40.799	1d.12m.	13.757	33.7	34.0	28.889	1d.12m.	1.847	6.8
27.10.1474 ^a	—	—	—	—	—	32.750	6	1.917	7.4
20.12.1477 ^b	54.000	6	19.375	35.9	36.8	37.427	6	2.802	8.8
04.12.1480	54.000	7d.6m.	19.271	35.7	36.8	37.427	7d.6m.	2.698	8.8
18.07.1482	65.333d	3d.6m.	26.667	40.8	41.2	41.917	3d.6m.	3.250	8.4
04.04.1484 ^c	65.333d	4d.1.5m.	26.660	40.8	41.3	41.917	4d.1.5m.	3.243	8.5

^a See Table 4, note *b*.

^b See Table 4, note *c*.

^c See Table 4, note *d*.

^d See Table 4, note *e*.

^e While the October 1386 ordinance basically confirmed the current coinage, a codicil slightly debased the gros coinages and raised the mint prices.

^f See Table 4, note *f*.

^g The double gros was fully restored; the mint prices for all silver coinages were raised 6d. per marc at the expense of the brassages.

^h See Table 4, note *g*.

ⁱ While the previous mint ordinances were restored, no coinage resulted at the mints.

^j See Table 4, note *h*; Table 3, note *c*.

^k See Table 4, note *i*.

^l See Table 4, note *j*.

^m See Table 4, note *k*. Either the brassage was raised to 17s.1d. (so that total mintage accounted for 43.1% of the traite) or the mint price for bullion was raised from 22s.9d. per marc AR—the price that remained for all other silver coinages—to 26s.9d.; or perhaps both were raised by 2s.0d. per marc, to induce both merchants and the mint-master to favor the coinage of mites.

ⁿ No mites were prescribed or issued. See Table 4, note *l*.

^o The brassages and mint prices for bullion for December 1477 were estimated from those given in the ordinance of December 1480. No ordinance is extant concerning the debasement of the gros and issue of new, debased mites in December 1477. If the mint price had remained unchanged at 30s.4d. per marc AR (as it evidently did for the two patard coinages), then the brassage for double mites would have been 22s.2d. gros per marc = 41.1% of the traite.

^p The Ghent mint accounts indicate that this ordinance was not observed, and that the seigniorage continued to be imposed at the former rate of 3d.6m. per marc AR, leaving the brassages and mint prices for bullion also at the former rates.

year period.¹⁴ When next recorded, in January 1375, *mites* certainly were subject to seigniorage, which, thereafter, was always charged for their coinage (Table 5). There still ensued some other significant gaps in their issue: in 1378–1385, 1403–1418 (except possibly 1412–1413), 1448–1453, 1459–1465, and 1472–1477, the third and fourth of which reflect general mint inactivity (Tables 3 and 4).

But even apart from these lacunae, and even during the periods of intense mint activity, the Flemish petty coinage outputs were remarkably small for almost all of this 150-year period. We can see from Table 3 that, in terms of the proportion of total silver bullion minted, and even of the total money-of-account values of coinage output, amounts struck as petty coins were rarely more than 1%, and generally under 1%, until the mid-15th century. Furthermore, if we exclude those quarter-gros struck from 1410, and focus only on the true *monnaies noires*, the *mites*, then those proportions just specified drop dramatically to about 1/10th of 1% in some decades, with the significant exception again of the 1440s and 1450s, to be analyzed later.

If, however, we consider the outputs of petty coinage in terms of the *number* of coins struck, we see that in four of the decades well over 4 million were struck; and in one (1466–1474), 6.8 million, accounting for 23% of total coins then issued. If the prince and his mint-masters had then been questioned about meeting their public responsibilities in providing adequate amounts of petty coinage, undoubtedly they would have pointed to such statistics, possibly with some justification. But most other observers, then and now, would likely endorse Philip Grierson's charge that their mints left the public desperately short of the very coins that most people required in paying for their daily necessities.

Grierson (1976, p. 113) and Spufford (1970, p. 44) have indeed provided a convincing explanation for that *presumed* scarcity, and one also given by Usher (1943, p. 198), Cipolla (1956, p. 28), and Spengler (1966, p. 209): that the costs of minting petty coins, with the crude technology of this era, were much too high to permit any profits for the mint-masters, who exercised a strong influence in constructing medieval monetary ordinances. Grierson's argument that "twelve times as much labour was involved in making 12 pennies as in making one shilling" has obvious merit. But it really applies in principle only to England's peculiar silver coinages, and only after June 1351, from which time all five coin de-

¹⁴ For the mint policies of Count Louis de Male, see Van Werveke (1949a, 1949b); Blockmans (1979); Munro (1981). For the mint documents: Gaillard (1856, Doc. Nos. 28, 39, 40, 43, 44, 45, 47, 52, 59, 60, 63, 70, 72, 74, pp. 74–156); and De Limburg-Stirum (1898, Doc. Nos. 848, 858–859, 913–916, 918–921, 924, 930, 946, 968, 970–971, pp. 121–218). In the only numismatic literature known to me on Louis' petty coinage, Rouyer (1847, pp. 453–454) and Piot (1855b, p. 200) have both described just one extant, undated mite: evidently the same mite, from the obverse–reverse reproductions. Rouyer's weights for three examples (0.96 to 1.06 g.) indicate that this mite was struck between 1375 and 1377.

nominations were struck of sterling fineness (92.5%, to 1542), with proportionally equal weights. Consequently a Tower Pound of sterling silver produced identical *traites* (Tower Pound's money-of-account value by tale) for each and every coin denomination struck. Thus, so long as the English mint's bullion price remained the same for each, all denominations from farthings to groats (4d.) had to bear identical mintage fees per Tower Pound of sterling silver.¹⁵

Generally elsewhere in medieval Europe, however, and certainly in Flanders, all petty coins were deliberately struck to contain proportionally less silver than that contained in higher denomination *gros* coins, with some combination of inferior fineness and nonproportional weights, as shown in Tables 1, 3–5. Consequently these petty coins enjoyed a far higher *traite* per *marc* than that for the *gros*: higher values, with proportionally many more such petty coins struck per fine *marc*. Thus the mint could exact much higher brassage and seigniorage fees on petty coins, to cover fully the higher raw material and labor costs involved, while still allowing the mint-master a fair return. He might, however, have incurred a loss with a sudden rise in copper prices or wages—but only until the next coinage debasement.

We cannot, therefore, assume that the coinage of *monnaies noires* was necessarily everywhere always a losing proposition for the mint authorities. Lane and Mueller (1985, p. 202) have found, for example, that “Venice began to make very large profits on black money before the end of the fourteenth century.” The real question to be asked instead is were the authorized brassage fees always sufficiently high to ensure that the mint-master would indeed earn a profit?¹⁶ The complete absence of *monnaies noires* (mites) in the Flemish mint outputs from April 1471 to December 1477 may be related to the very low brassage fees in that period of “strong money”: amounting to just 34% of the *traite*, compared to the mean of 44% prevailing from 1388 to 1433.¹⁷ When the coinage of mites

¹⁵ That mint policy with identical brassage and seigniorage charges for all silver coins seems to have been unique in late-medieval Europe. Brooke and Stokes (1929, especially pp. 40–42) indicate that in 1547–1550 the Tower Mint did differentiate mintage fees by coin denomination. See also Blunt and Brand (1970), Crump and Johnson (1913), Challis (1978, pp. 305–325), and Munro (1983a).

¹⁶ Spufford (1970, p. 42) has argued that coinage of mites provided “an insignificant profit margin, or even a loss, if made properly,” citing in support the 1489 Ghent mint account and estimates of current copper prices. But the authorized brassage, in fact £37.17.11d: *gros per marc argent-le-roy*, was only 32.7% of the double mite's *traite* of £116.0.5d per *marc*: proportionally the lowest such brassage on petty coinage so far in the 15th century, well below the 40.8% of 1484 (Table 5). See also Usher (1943, pp. 196–205).

¹⁷ Furthermore, the Flemish monetary ordinance of October 1474 had pointedly if inexplicably refrained from prescribing the coinage of either mites or quarter-gros. No quarter-gros were struck either between April 1472 and December 1477. See Table 4, n. 1; Tables 3, 5–6; Algemeen Rijksarchief (Belgium: hereafter ARA), Rekenkamer, Nos. 580 (fo. 100v),

was resumed in the December 1477 debasement, the brassage was again raised, finally to 41% of the *traite* by 1482 (Tables 3–6). Occasionally the prince himself exacted too high a seigniorage at the direct expense of the mintmaster's brassage or of the merchants' bullion price, or both: as Tables 3–4 and 6 suggest for 1375–1376, 1386–1389, 1430–1432, and 1477–1482. But otherwise the seigniorage fees were either less than or no more than those imposed on the higher denomination coins (and nil in 1334–1338).

Obviously the monetary authorities had to ensure that they did not set the total of brassage and seigniorage fees so high, at the expense of the mint price for bullion, that they thereby encouraged merchants to deliver their bullion to foreign mints. But merchants would rarely have gone to foreign mints just to obtain petty coins, since their traveling and transactions costs would have been much too high in relation to the coins' value. Presumably, therefore, merchants would have been willing to accept domestic petty coins that had proportionally lower silver contents and higher mintage fees, so long as that higher cost did not exceed the petty coins' greater utility—than that for higher-valued coins—in effecting day to day transactions, in paying wages and in buying food, drink, and other daily necessities.

There is thus no justification for the argument that the cost of minting petty coins was universally too high for the prince, the mint-master, or the merchants. A more important criticism of the Grierson thesis, however, is that it fails to specify what amount of petty coinage constituted a "shortage," and under what circumstances. Admittedly, most historians will scoff, retorting that the figures presented here, with chronically less than 1% of mint outputs issued in petty coin, make such shortages self-evident. We must therefore find alternative explanations for these skewed mint statistics, while asking whether such small outputs of petty coins made them truly scarce in relation to (1) the demand for such coinage, and (2) the quantity that circulated domestically.

Indeed, in analyzing the composition of mint outputs, we must first consider the demand for petty coins on the part of those merchants and money-changers or bankers who supplied bullion to the mints. Insofar as such merchants were engaged in the regional and international commerce and finance of the medieval Low Countries, their demand presumably would have been strongly biased in favor of high-value coins, and would thus not reflect the more general, domestic public demand for coinage.

Consider in particular the different spheres of circulation for the various coinage denominations in the Low Countries. Flemish petty coins normally circulated just within Flanders itself; and, as Peter Spufford (1970, p.

and 18,107–18,111; Rouyer (1848, p. 430); Deschamps de Pas (1862, pp. 357–360); Spufford (1970, p. 180).

42) has remarked, Burgundian coinage unification in 1433–1434 “did not extend below the quarter-groat,” as each province continued to strike its own separate *monnaies noires*. But the higher-value silver gros, patards, and double patards (1d., 2d., and 4d.) had a much wider circulation: throughout the Low Countries and the Rhineland, and sometimes even further abroad.¹⁸ Indeed, occasionally the Flemish resorted to silver (coin and bullion) in financing international trade, when mint ratios so warranted, as may be demonstrated by the wool trade at England’s continental staple of Calais. So long as England’s Calais mint had favored gold, the Flemish purchased their English wools there with that metal, which accounted for most of its mint outputs. But when, from 1425, the Burgundian mint ratios were altered to favor gold even more strongly than the English, most wool payments were evidently made in silver at Calais, whose mint now “favored” that metal, indeed coining it almost exclusively from the later 1420s.¹⁹ Thus, in view of the medieval Low Countries’ prominent role in the regional and international commerce of northern Europe, we should not be surprised to find that high-denomination silver coins normally accounted for a disproportionately high share of mint outputs in that metal. For the reasons just analyzed in the Calais trade, that proportion should have been higher, *ceteris paribus*, when the domestic Burgundian mints favored gold the most strongly, compared to neighboring mints (ca. 1425–1466).

Questions of the relative demand for various kinds of coinage cannot be divorced from those of coinage supply. Indeed one of the central considerations of medieval mint production was the continual replenishment of coinage stocks, which were far from being imperishable. They diminished from coin wear in circulation, from clipping and “sweating,” from hoarding or conversion of precious metals into *objets d’art*, from piracy and shipwrecks, from careless losses, and from precious metal exports in financing international trade, diplomacy, papal taxation, and warfare. Such a listing, to be sure, groups together different types of metal losses: those that were permanent, and those that were temporary, or were offset by dis- hoarding and bullion imports; the loss of the coins themselves, temporary or permanent, and the loss of precious metal from the circulating coin.²⁰

While each type of metal loss played its own role in determining the

¹⁸ See Spufford (1964, 1970, pp. 55–129); Munro (1972, 1973, 1981, 1983a). One exception must be noted: Brabant’s Brussels mint struck exact copies of Flemish double mites from 06.10.1435 to 31.10.1437. ARA, Rek., Reg. Nos. 17,987–17,988.

¹⁹ See Munro (1973, pp. 65–126, especially Table 1, p. 95; 1979), and for the later 14th century, Munro (1981, especially pp. 102–107).

²⁰ “Sweating”: removing precious metal from coins by shaking them together in a leather bag. For various and differing views on the extent of medieval metal losses from all these various causes, see Patterson (1972), Mayhew (1974a), Grierson (1963, 1975, 1976); Munro (1979b, pp. 178–190; 1983a, pp. 97–112); Craig (1953, pp. xvi, 60); Miskimin (1964, 1983, 1984, pp. 25–90); Johnson (1956, pp. xi–xii). See also n. 4 above and n. 22 below.

need to replenish coin stocks, the last provides an important explanation for many recoinages, the nature of which in turn explains why petty coins normally constituted such a small share of total minting. Any general deterioration in the average quality of the circulating coinage—from wear, tear, clipping; “sweating,” and also from the introduction of foreign debased or underweight coins—inevitably reduced and finally eliminated the premium that coins necessarily commanded over bullion (see p. 392). The same result would occur if foreign mints or industrial markets raised their bullion price. In reaction to that loss of metal and coin premium, merchants would discount the entire silver coinage, good and bad alike, by bidding up bullion prices (even commodity prices), high enough that the domestic mint would no longer receive metal. Merchants would then cull any remaining good, high denomination coins and sell or export them as bullion. If the prince wished to revive his mints and coinage circulation, he had three choices: to restore the coinage to its former standard by a compulsory reminting at the public’s expense; to do so at his own expense; or to effect a general debasement that more than matched the current inferior standard, while providing himself, the mint-master, and bullion merchants some profit.²¹

For obvious reasons, medieval princes generally selected the third option. To induce merchants and the public to surrender their silver coins voluntarily, the prince’s mint necessarily had to offer a bullion price that exceeded at least the *traite* value per marc on the previous coin issues. Thus, in the Flemish silver debasement of November 1428, shown in Table 1 and discussed on p. 389, Duke Philip the Good increased the mint’s bullion price for a *marc argent-le-roy* from 21s.2d. to 24s.0d.: from 127 to 144 double gros. To obtain the equivalent amount of fine silver in full-weight double gros of the previous standard set in June 1418, a merchant would have had to supply only 136 such coins: i.e., 22s.8d., the former *traite* value per marc, for a profit of 8 double gros or 16d. per marc. Thus, so long as such coins had not lost more than 5% of their silver from wear, tear, and clipping in circulation, merchants would have gained by surrendering them as bullion to the mint.²² But a *marc argent-le-roy* derived solely from double mites struck since 1418

²¹ See Feavearyear (1963, pp. 10–20); Munro (1973, pp. 11–42); Bordo (1986).

²² Full weight double gros of the 1418 standard should have contained, on average, 1.800 g fine silver (or 1.725 g pure silver: Table 1). If they had lost 5% of their silver contents, to contain on average only 1.710 g fine silver, then the merchant would have had to supply 143.13 such coins (244.753/1.710), worth 23s.10d.6m. gros by tale in current circulation, to obtain the silver in a *marc argent-le-roy*. If the average silver loss had been 6%, he would have required 144.65 old double gros (244.753/1.692), worth 24s.1d.7m by tale. For medieval England, Craig (1953, pp. xvi, 60) has estimated that circulating coins lost on average 0.2% of their silver per annum, i.e., 1.83% per decade; Patterson (1972, pp. 220–221) has given a much higher estimate of 1.0% loss per annum. See also Grierson (1963), whose calculations are closer to Craig’s; and n. 20 above.

would have required 5760 such coins, whose monetary value of 40s. gros by tale (= *traite* per marc) was 66.7% greater than the new mint price for bullion. As can be readily determined from Tables 1, 4–5, no profit-seeking merchant would have ever voluntarily surrendered mites as bullion to the mints during any debasement in late-medieval Flanders, because the mint's bullion price per fine *marc* was always less than the previously assigned *traite* value for such petty coins. For most debasements, merchants delivering other small coin (quarter-gros, demi-gros) as bullion would have rarely broken even, and only if such coins had been full weight, a most unlikely condition in view of their presumably high velocity. Thus one may doubt that even the most rigorously enforced recoinage would have produced much petty coin for reminting.

For that very reason indeed, princes and their mint-masters may have preferred to limit the proportion of scarce bullion minted into such coins: insofar as they anticipated that few petty coins would ever return for subsequent debasements, and thus as a source of mint profit. The mint-masters would hardly have welcomed them for recycling, moreover, with the high cost of extracting so little silver from them. But there is no documentary evidence citing such reasons, nor any such evidence that mints deliberately limited petty coin output to protect the premium and support high mintage fees, as later theorists argued.²³

If domestic reminting of petty coins was largely precluded by their minuscule silver contents, high brassage fees, and thus high *traites*, then similarly that same combination, and the aforementioned adverse value:weight ratio, usually also prevented the export of petty coins as bullion to foreign metal markets or mints, except in times of unusual scarcity.²⁴ Consequently, losses from precious-metal exports, for whatever reason (or gains from imports), would necessarily have been largely in the form of high-value coins and bullion.

Only in two minor respects was the need to replenish stocks of petty coins possibly greater than that for high denomination coins: the greater likelihood of careless loss, with a small incentive for retrieval; and greater damage in circulation, so as to render the coins unacceptable in trade or taxes. Presumably petty coins had a much higher circulation velocity, to increase the likelihood of damage or careless losses; and certainly

²³ See Monroe (1923, pp. 96–98); Cipolla (1956, pp. 27–33); Spengler (1966, pp. 208–214) on 17th-century Italian writers. See also Cannan (1926, pp. 25–31), Usher (1943, pp. 193–236), and nn. 5, 50. One may argue that the very high mintage fees for petty coinage, representing real costs for both bullion supplier and the mint, would have sufficiently limited the circulation of petty coins to ensure a high enough premium.

²⁴ See above pp. 404, 406; pp. 409, 411, and nn. 27, 34 below; and De Roover (1949, p. 82); Feavearyear (1963, p. 22); Munro (1973, pp. 29–30). Bautier (1951, p. 170) recounts a Montpellier report of ca. 1310 concerning the illicit export of 100,000 marcs of *monnaies noires*—but without documentation.

their high copper contents rendered them much more susceptible to chemical erosion (Grierson, 1963, p. vii). At the same time, however, copper was more resistant than either silver or gold to purely physical erosion; and that protection may have outweighed the other disadvantages.

These arguments concerning relative coinage replenishment are put forward not to oppose but to complement the demand-based hypotheses, in explaining the small outputs of petty coin. They also reinforce the view that mint production statistics are a very imperfect reflection of actual coinage circulation. Nevertheless, even if the real need for continuous production of petty coin was much less than would be indicated by such statistics, many historians will undoubtedly still not fully exonerate the monetary authorities from Grierson's charge (p. 387) that they left "the public desperately short of small change."

Indeed not until the mid-15th century did the state show any concern about the petty coinage. But only in that era did a scarcity of petty coin become acute enough, evidently, to provoke public concern. In both England and the Low Countries, moreover, the monetary authorities did in fact respond directly with positive relief measures. So many years had passed since a general recoinage, especially in England (1411–1412), that the circulating coins had undoubtedly suffered considerable deterioration, with the consequences already indicated (pp. 405–406). Furthermore, the period ca. 1440–1470 marked the most severe phase of the late-medieval "bullion famine," of sharp monetary contraction, and of considerable deflation (Table 2).²⁵ In such circumstances, as stressed earlier, the relative demand for petty coins would have risen with their increased purchasing power. At the same time, however, a bullion famine and a deteriorated coinage standard would have seriously curtailed the mints' ability to produce even petty coinage. Indeed coinage outputs across northern Europe were extremely meager during these years, and many mints, unable to cover their costs, were forced to close: the Flemish, in 1447–1453, and again in 1462–1466.²⁶ Furthermore, when the Flemish mints were open, they maintained a strongly progold ratio (1425–1465), which would normally have discouraged the production of small silver and petty coins especially. Finally, the domestic Flemish circulation of petty coins may have been considerably reduced with the diversion of such coins to uses normally served by higher-value coins, including foreign trade payments and hoarding; and hoarding may have increased in response to the current conditions of economic depression and uncertainty discussed below (p. 416). Spengler (1966, p. 213) has argued that such diversions might occur during periods of monetary scarcity, if

²⁵ See Day (1978); Spufford (1970, pp. 118–21); Munro (1979a, 1979b, 1983a, 1983b, 1984); Miskimin (1983, 1984, 1985); Mayhew (1974b); Bordo (1986).

²⁶ Spufford (1970, pp. 116–121; also on the closure of German mints); Munro (1973, pp. 155–162; 1983a); Miskimin (1984, pp. 30–53, 127–190; 1985, for the French mints).

petty coins could be substituted for high-value coins. In fact for these very years of "bullion famine" we have evidence for both the export of *monnaies noires* (to northern France in 1457–1459) and their deposit in coin hoards (in Liège and Brussels, 1465).²⁷

Even in England, *despite* the current prosilver mint ratios there, silver coinage outputs in the 1440s had fallen to their lowest ebb since the beginning of the century, during another bullion famine: with an annual average of just 250.6 kg silver = 1,068.8 fine *marcs*. In the 1445 Parliament, a Commons petitioner complained about the "grete defaute" of silver among the poor. The Crown responded by requiring the Tower Mint to increase by 10% the number of halfpennies and farthings struck from the sterling silver pound, while leaving pennies untouched.²⁸

In Flanders, the prince's *official* response was similar but came later, despite an even greater silver shortage. In the 1440s, the Flemish mints were coining an annual average of just 510.8 *marcs* (119.8 kg) of fine silver: less than half the English output, and a very drastic drop from the high silver outputs that had followed the Burgundian monetary unification-reform of 1433–1434.²⁹ It is thus all the more striking to find that, in the 28 months from January 1445 to April 1447 (after which silver outputs temporarily ceased), *monnaies noires* accounted for 70% of the silver bullion minted and 99% of the total number of coins struck. Then in January 1454, a minor gold debasement succeeded in reactivating the Flemish mints, so that in just over 4 years they struck some 3503 fine silver *marcs* (821.7 kg), along with new gold.³⁰ Of that, 1455 *marcs* were struck in petty coins: 399 *marcs* in mites, the rest in quarter-gros, accounting for 42% of total silver bullion and 90% of the total number of coins issued. If one objects that such proportions are impressive only because total outputs were then so small, consider and compare the average annual outputs of *monnaies noires* (mites) during years of active minting in the three decades concerned, following the Burgundian monetary reform: (a) in 1434–1444: £27.95 gros—just 0.15% of the bullion coined!; (b) in

²⁷ See Spengler (1966, pp. 212–213). For the Burgundian mites (and counterfeits thereof), Rouyer (1848, pp. 423–429), Deschamps de Pas (1866, pp. 200–206): reports of French officials on confiscations of mites at Boulogne; for the coin hoards, see Tournour (1928), and n. 34 below. See also pp. 405, 407 above.

²⁸ From February 1445 to October 1447 only, the London Tower Mint struck both halfpennies and farthings at 33s. instead of 30s. per Tower Pound of sterling silver (349.91 g): i.e., 792 halfpence or 1584 farthings per lb, instead of 720 halfpence or 1440 farthings, thus reducing these coins' weight by 9.1% = 10.0% increase in their *traite* per Pound (see p. 389). G. B. Parliament (1777, Vol. 6, pp. 108–109, No. 36); Munro (1973, pp. 128–131); Brooke and Stokes (1929).

²⁹ See Table 3; Munro (1973, pp. 98–103; 1983, pp. 112–146); Van Gelder and Hoc (1960, pp. 9–12); Spufford (1970, pp. 4–6, 180–93).

³⁰ Munro (1973, pp. 149–150, 210); Spufford (1970, pp. 31–37); Van Gelder and Hoc (1960, pp. 12–16).

1445–1447: £75.23 gros; and (c) in 1454–1458: £190.93 gros—almost seven times as much as in 1434–1444. From the mid-1440s, the Flemish mints had evidently been encouraged if not directly ordered to divert more of the silver bullion into *monnaies noires*.

At that time, Duke Philip the Good was unable to adopt any more effective remedy, because of his promise to the provincial Estates in 1433–1434 not to alter the coinage for at least 20 years. But finally, on 15 October 1456, after his promise had expired, the Flemish monetary authorities issued an ordinance that was almost an exact copy of England's 1445 edict. It instructed the Bruges mint to increase by 11.1% the number of double and single mites struck per fine *marc*, by means of a 10% reduction in their weight, while maintaining the former 1433–1434 standards for all other silver coins. The Bruges mint, however, did not commence issuing the new mites until September 1457, after receiving further instructions on 31 August "to supply the poor people with *monnoye noire*."³¹ Then, just over a year later, on 12 October 1458, the Bruges mint closed. No more silver was struck for almost 8 years; a few gold coins were struck at Mechelen and Ghent until March 1462, when all Burgundian mints finally shut down (Table 3).

According to Peter Spufford (1970), significant quantities of counterfeit *monnaies noires*, very base imitations of Burgundian mites, were then circulating in the southern Low Countries. In his view, the offending mints in various petty seigniories along the eastern frontiers found it profitable to strike such *monnaies noires*, while Burgundian mints did not, by reducing the silver contents in their imitations.³² Given the small amount of silver in Burgundian *monnaies noires*, then just 4.2% fine (Table 4), one wonders whether there was any real difference in profitability. Nevertheless this was still a period governed by the 1433–1434 reform principle of "sound money," which had in fact required a 25% increase in the mites' silver contents, as well as no coinage alterations before 1454. Perhaps the 1457 weight reduction, therefore, was also designed to curb competition from those eastern seigniorial mints.

³¹ Ordinance of 15 October 1456 given in the Bruges mint account of September 1457–October 1458: ARA, Rek., No. 18,105. See also Deschamps de Pas (1862, pp. 123–124), Rouyer (1848, pp. 422–423); and also Spufford (1970, p. 42, n. 1 and p. 201), citing other documents, in particular a mint official's statement (1447) that any change in the *monnaies noires* would be a violation of the duke's promise not to alter the coinage; and also noting similar issues of new *monnaies noires* in Brabant and Holland. Whether the mint increased its silver bullion price for the coinage of mites is not certain. See Table 5, note *m*; and also Spufford (1966a), Munro (1973, p. 102); for the October 1433 ordinance, Deschamps de Pas (1861, pp. 473–475).

³² The mints of Gerdigen, Grote Brogel, Reckheim, Rummen, Elsloo, Kessenich, and Kinroi, in the Limburg-Liège-Rhineland region. See Spufford (1970, pp. 44–46, 200–202, Appendix IV); and also Meert (1970); Rouyer (1848, pp. 423–429); Piot (1842, 1855a, 1855b, 1856a, 1856b); Tourneur (1928).

This black-money influx may have been just a temporary phenomenon explained by the current circumstances. For no such coins, or any coins below the double gros, were listed in a Brabantine mint report of December 1430, which condemned the local circulation of counterfeit coins struck by several of the same seigniories (Rummen, Reckheim, and also Arnhem, Liège).³³ Since their mint accounts have not survived, these seigniorial black-money issues cannot be quantified; their significance can be gleaned only from the analysis of two very rare hoards composed almost entirely of such coins buried in Liège and Brussels ca. 1465. Most medieval hoards contain no *monnaies noires*; indeed for that reason and many others, hoards are an unreliable measure of coin circulation.³⁴

In this era of bullion scarcity, the Burgundian mints remained closed again for over 4 years, until reactivated by the general, if minor, debasement and recoinage of both gold and silver in June 1466. The Burgundian monetary ordinance of 23 May 1466 effecting that debasement, and a reversion to a prosilver policy, was the first such decree to recognize a direct public interest in the coinage composition, particularly in terms of the public's need for petty coinage. Perhaps to some considerable extent such concern reflects the fact that Duke Philip the Good, responding to English and other foreign debasements in 1464–1465, had to seek agreement from the town-dominated provincial Estates for his own defensive debasement. Those Estates had long claimed a share in the governance of the Burgundian principalities; and seven meetings were required, from January 1465 to May 1466, before the monetary ordinance could be officially promulgated. In such circumstances, we have no grounds for dismissing its preamble as mere hypocrisy³⁵:

that one of the principal points of all good policies on which public well-being, as much for us as for the people, is founded is to have and maintain good money, sound and durable, in both gold and silver coin.

This ordinance, after determining the fineness, weights, and official values of the new coins, gold and silver, then made some stipulations about the composition of the coinage, "so that everyone may be provided with all denominations of gold and silver coins, according to each one's requirements and necessity." For each gold *marc* minted, the mint-master

³³ ARA, Rek., carton 65:2; Munro (1972, 1973, pp. 212–214). See n. 27.

³⁴ Spufford (1970, pp. 200–213, with Appendix V on Coin-Hoards); Piot (1842, 1855a); Tourneur (1928); Van Keymeulen (1973). Deschamps de Pas (1866, pp. 200–206) believes, however, that the counterfeit mites confiscated at Boulogne in 1458–1459 (see n. 27) were probably struck by Jeanne de Wesemael of Rummen. On coin hoards generally, see Grierson (1975, pp. 124–139; 1976, pp. 106–109; 1979, essays Nos. xxi and xxii).

³⁵ ARA, Rek., Reg. No. 133 (fo. 174v–179v); see also Munro (1973, pp. 150–179); Spufford (1970, pp. 44–46). Late-medieval Spain evidently also required a similar proportional striking of the silver coinage: Cipolla (1956, p. 31); Usher (1943, pp. 197–198).

was to strike 100 silver *marcs*; and for every 100 silver *marcs* minted in double gros or patards (2d.), he was to strike 10 *marcs* in double patards (4d.), 2 *marcs* in single gros (1d.), 1 *marc* in demi-gros, and 1/2 *marc* in quarter-gros. But this monetary ordinance is also significant for introducing both a new heavy silver coin, the double patard worth 4d. gros, and, more importantly, a differential in the mint bullion prices favoring that new coin (and subsequently, the patard also): 26s.9d. per *marc argent-le-roy*, vs 26s.4d. per *marc* for all other silver coinages.

Whether or not the Burgundian monetary authorities fully realized that this mint price differential contradicted the policy of promoting the petty coinages, state monetary policies had certainly changed, particularly with the provincial Estates' increasing demands for stronger controls over the Burgundian coinage. Peter Spufford (1966a, 1966b, 1970, pp. 147–163) has argued more generally that, because of the Estates' political successes in the late medieval Low Countries, “the doctrine that coinage belonged to the prince had given way to the doctrine that coinage belonged to the people.”³⁶ Indeed, at the very close of our period, in December 1480 and again in April 1484, the new Habsburg ruler, Archduke Maximilian, issued another coinage ordinance similar to that of 1466, “so that the poor people may find themselves sufficiently supplied with *petite monnaie*.” That decree required an even greater proportion of the mint output, if still a small one, to be struck in lower denominations, as shown in Table 6.³⁷ One might still cavil, however, that Count Louis de Nevers (1322–1346) was far more public-spirited than any of his Burgundian or Habsburg successors, in minting *monnaies noires* free of seigniorage; and that Maximilian, at war with his Flemish towns (1482–1494), was as rapacious as any in exploiting the mints.³⁸

Thus one may well doubt to what extent the mint-masters actually observed these public-spirited monetary ordinances, which, in effect, prevented them from fully meeting their own customers' demands for coin denominations. An analysis of the Flemish mint accounts following the ordinances of 1466, 1480, and 1484, presented in Table 6, provides a mixed verdict on the mints' compliance. Following the first, the mints

³⁶ See also Munro (1973); Blockmans (1973, 1974); Bordo (1986); and the influential 14th-century treatise “De Moneta” by Nicholas Oresme, Chaps. 6 (“Thus money belongs to the community and to individuals”) and 22, in Johnson (1956, pp. 10–11, 35–37).

³⁷ The mints were ordered to strike, for every 100 fine silver *marcs* coined into patards, 50 *marcs* in single gros, 10 *marcs* in demi-gros, and 5 *marcs* in quarter-gros. Texts in the name of Maximilian's wife and son, Duchess Marie (December 1480) and Archduke Philip the Handsome (April 1484), are reproduced in Deschamps de Pas (1862, pp. 465–470; 1869, p. 99; 1874, p. 14), who is obviously incorrect in stating that this is the first ordinance requiring such a proportional striking of coins. See also Spufford (1970, p. 45); Grierson (1975, p. 97).

³⁸ See in particular Spufford (1970, pp. 141–146, 158–163); Blockmans (1973, pp. 128–133; 1974); Van Uytven (1975).

TABLE 6
The Composition of the Silver Coinage Outputs of the Flemish Mints by Coin Denominations, as Percentages of Total Bullion Minted, in Fine Marcs: 1466-1472, 1480-1484, and 1484-1487

Coin name	Value (d.)	Ghent and Bruges		Bruges and Ghent		Ghent and Bruges	
		Percentage decreed	Percentage actual	Percentage decreed	Percentage actual	Percentage decreed	Percentage actual
Double patard	4	8.8	52.8	—	53.9	—	50.3
Patard	2	88.1	28.8	60.6	11.9	60.6	12.1
Gros (groot)	1	1.8	12.6	30.3	33.2	30.3	36.0
Demi-gros	1/2	0.9	2.7	6.1	0.2	6.1	0.0
Quarter-gros (zeskin: 6 m.)	1/4	0.4	2.8	3.0 ^a	0.1	3.0	0.5
Four mites ^b	1/6	—	0.0	—	0.0	—	0.3
Courte (double mite)	1/12	—	0.4	—	0.7 ^b	—	0.8
Total silver bullion in fine marcs			102,700.6		34,145.2		23,704.8

^a The December 1480 ordinance further stipulated that 100 silver marcs at least be minted into petty coinage of quarter-gros (zeskins) and under, in the following proportions: 14% for quarter-gros, 29% for 4-mite pieces, and 57% for courtes (2 mites). In this period, December 1480 to March 1484, the Flemish mints struck a total of 31.14 marcs *argent-le-roy* into quarter-gros and 248.56 marcs into courtes = 279.69 marcs, for an annual average of 86.1 marcs. The 4-mite piece, an entirely new coin, was not struck until after April 1484.

^b Of the 248.56 marcs AR struck into courtes in 1480-1484, 222.19 marcs or 89.4% were struck after another debasement commencing 18 July 1482, when furthermore the seigniorage was more than halved and the brassage sharply increased, as specified in Tables 4-5.

more than met their obligations, at least for denominations below the double gros: such coins accounted for 18.5% of the bullion coined, instead of the stipulated 3.1%. As noted earlier (p. 402 and Table 3), the decade following 1466 marked by far the largest issue of petty coinage in this entire 150-year period. But far less bullion was struck in those lesser denominations, except for the single gros, in the years following the next two ordinances.³⁹ Those years were highly inflationary ones of civil war and debasement during which the relative demand for petty coins presumably declined.

Those historians already convinced by all the mint-output and monetary data, and certainly those still convinced by the Grierson thesis, will be impatient with the concluding contention that the case for a *chronic* "scarcity" of petty coins has not been proven. To say that such scarcity or shortage characterized the economy of late-medieval Flanders is equivalent to stating that there persisted an excess demand for petty coins at current prices and incomes. While such conditions may have been temporarily true, especially in the mid-15th century, it is difficult to believe that such excess demand was not finally dissipated or satisfied. We lack the evidence to state precisely how—apart from the aforementioned state intervention to have more petty coins minted; but several hypotheses may be advanced, with qualifications.

First, some of that demand was undoubtedly satisfied by the resort to foreign counterfeits of Burgundian-Flemish *monnaies noires*—the very ones discussed above (p. 410)—and also to token coins, though to a much lesser extent. Mitchiner and Skinner (1983, 1984), in their exhaustive studies of medieval token coins, stress that they "should not really be conceived as a straight monetary substitute," that they "did not compete with authorised coinage either in England or on the Continent," and that their scope was severely restricted.⁴⁰ Not until 1543 did the Habsburg authorities in the Low Countries adopt the expedient of issuing their own fiat token coinage, as purely copper double mites.⁴¹

Second, another, at least partial, resolution of the coinage scarcity problem may have come from an increased resort to credit.⁴² Van der

³⁹ See in particular note *b* in Table 6, concerning the change in mintage fees in 1482. A similar exercise, for 1466–1467 and 1480–1482, with less charitable conclusions, is given in Spufford (1970, pp. 44–45).

⁴⁰ And also, the token coin "is better thought of as being a *chit-for-service*." (Mitchiner and Skinner, 1983, p. 29). Most such coins were issued by the Church for alms-giving and other charitable purposes. See n. 7 above.

⁴¹ See Van Gelder and Hoc (1960, p. 75).

⁴² See in particular for the Low Countries, De Roover (1948, especially pp. 48–75, 99–219; 1949, pp. 115–117); Van der Wee (1963, Vol. 2, pp. 337–353; 1977, pp. 300–376); and the classic if outdated Bigwood (1921–1922, 2 vols., especially Vol. 1, pp. 235–255, 507–520). For England, see especially Postan (1928, 1930); Holden (1955, pp. 4–84); Munro (1979b, pp. 213–215).

Wee (1963, 1977) has contended that in the Low Countries pawnbroking became a common expedient "to offset coin shortages" for consumption transactions from the mid-14th century; and that from the 15th century the retail trades came to utilize sales credit in the form of "tallies" (notched sticks) or current-account debits, some involving partial settlements in kind ("barter-clearances").⁴³ Nevertheless we must not exaggerate the current role of credit, most forms of which still remained tied directly or indirectly to precious metals. Peter Spufford (1986, p. xxx) contends that even in 15th-century Venice and Bruges, Europe's two leading commercial centres, only 10% of adult males had bank accounts, and that "the vast majority of transactions . . . were still carried out with actual metallic coin."

In the 15th century, furthermore, especially from the 1420s, the governments of both England and the Low Countries imposed many severe restrictions on credit—apart from the traditional usury prohibitions—as part of misguided policies to promote bullion influxes and protect their coinages. In the latter, Burgundian officials had accused bankers ("taffletiers") of exporting bullion and importing fraudulent coin; and as part of the 1433–1434 monetary reform, the government prohibited deposit-banking, a ban confirmed in 1467, 1480, and 1489. Pawnbroking was also restricted, in 1451 and more strongly in 1473 and 1477. Even municipal authorities imposed similar restrictions, in Antwerp and Lier: forbidding innkeepers to sell on credit (1442, 1457).⁴⁴

Such credit bans were, to be sure, difficult to enforce, especially in retail transactions. But Van der Wee (1963, 1977) and De Roover (1948) are agreed that deposit-banking had virtually disappeared from the Low Countries by the later 15th century; and Van der Wee contends further that "pawnbroking decayed from the second half of the fifteenth century onwards," while current-account tallies did not become truly widespread until the 16th century. Such credit restrictions may also help explain the high real interest rates of the deflationary mid-15th century: 20% on short-term public loans in Flanders, and 43.3% in pawnbroking (2d. per £ per week). In turn, public protests against high interest rates led to more state restrictions on credit.⁴⁵

⁴³ Van der Wee (1963, Vol. 2, pp. 333–340; and 1977, pp. 300–304). Also used, but more for commercial and investment purposes, were (a) the letter-obligatory (*cédule obligatoire*, a form of promissory note), for which partial settlements were also made by "barter clearances"; and (b) annuity contracts, especially the *bail à rente*, the sale of real estate for hereditary annual payments. Both were transferable, assignable to third parties.

⁴⁴ De Roover (1948, pp. 130, 338–342); Van der Wee (1963, Vol. 2, pp. 333–340, 355–358; and also 1977, pp. 302–303); and Munro (1973, Chaps. 4, 6; 1979b, pp. 194–196, 204–208; Appendices D–E).

⁴⁵ De Roover (1948, p. 131–133; 339–341); Van der Wee (1963, Vol. 1, p. 526, Appendix 45-1; Vol. 2, pp. 105–109, 335, 355–358; and 1977, pp. 302, 362, Table 26). The Burgundian Great Charter of 1477 decreed that pawnbroking interest rates be cut in half.

Deflation itself obviously brought some considerable relief to coin shortage in general, especially by the midcentury, in allowing each unit of coinage to effect transactions of greater real value; but the deflation, when achieved, did not fully resolve the problem of excess demand for petty-coins specifically. As argued earlier, the monetary and other economic conditions of this era, particularly the progold mint ratio, periodic mint closures, and the "Spengler effect" (p. 408), may have made petty coins a smaller proportion of the domestic money supply, before the midcentury state interventions, and thus even scarcer in relation to the demand for coinage. Furthermore the relationship between money supplies and prices was only indirect, particularly because of considerable institutional wage and price "stickiness": prices did not fall immediately, nor did they fall proportionally, in unison; some indeed remained stable.⁴⁶ Furthermore, as indicated earlier, the mid-15th century was a period of considerable economic depression in the Low Countries, with a fall in production and commercial transactions, especially severe in the textile and agrarian sectors of the economy, which suffered extensive impoverishment.⁴⁷ It cannot be determined, however, whether the "bullion famine" (and the accompanying deflation) contributed directly or indirectly to that depression or merely reflected it; nor can it be determined whether any petty coin scarcity restricted the volume of retail transactions.

Undoubtedly the true resolution to any problem of "excess demand" or petty-coin shortage in this era, one of limited scope and duration, came subsequently, from the latter 1460s: from the South German silver influxes, as part of the economic recovery based on the expanding Brabant Fairs, though disturbed by anti-Habsburg revolts and civil wars; and from the inflationary coinage debasements spawned by those wars.⁴⁸

Finally, one must face the limitations of these beguiling mint data and admit that the quantity of petty coin "sufficient" for the economy of the late-medieval Low Countries cannot really be specified,⁴⁹ while emphasizing a principal conclusion from this study: that the Flemish mint accounts grossly understate the amounts of petty coin in domestic circulation. At the same time, there is certainly no evidence that the Low

⁴⁶ See both the composite weighted price index for Flanders and its component series for farinaceous, drink, dairy, and industrial products in Munro (1984, Table B-5, pp. 104–105); and also Table 2 above. The quinquennial composite price index (1450–1474 = 100) fell from a high of 137.7 in 1435–1439 to 120.6 in 1440–1444, to 101.3 by 1450–1454; then rose to 113.9 in 1455–1459, falling thereafter to its nadir of 93.9 in 1460–1464, and recovering only to 96.0 in 1470–1474.

⁴⁷ Van der Wee (1963, Vol. 1, pp. 457–474, for wages; Vol. 2, pp. 61–111; and 1978); Munro (1973, Chaps. 4–5; 1979a, 1983b, 1984).

⁴⁸ Van der Wee (1963, Vol. 2, pp. 73–88); Munro (1983a, 1984); Nef (1941); Van Uytven (1975).

⁴⁹ Compare with Spengler (1966, p. 201): "It is not possible to define the extent of a coin shortage with precision, since the indicators of both supply and demand are indirect."

Countries were ever plagued by any “inflationary excess” quantities of petty coinage, especially not in the mid-15th century—when it accounted for the bulk of mint outputs. In most periods, the Flemish and subsequently the Burgundian monetary authorities evidently provided, if quite unintentionally, the essential requirements for a sound system of petty coinage, as recommended by later theorists: coins struck with a commodity value much lower than the stipulated face value; convertibility of such coins with higher denomination silver coins; state monopoly on such coinage; and strictly limited issue of such coins.⁵⁰

APPENDIX: COINAGE

1. The Flemish monetary system, its coinage and money-of-account, was originally based on the *parisis* system of northern France: with £1 (livre) = 20s. (sols) = 240d. (deniers), or current silver *parisis* pennies. From about 1318–1320, that was superseded in Flanders by the *gros* system, whose coin was originally based upon the French *gros tournois* (first struck in 1266), which ca. 1315–1320 was worth 15d. *tournois* and 12d. *parisis*. By the 1340s, the French and Flemish monetary systems had parted company fully and forever. The Flemish *parisis* system lost its own coins (except the mites) to become simply a money-of-account, subsidiary to and frozen in a permanent relationship with the *gros* system, whose silver penny had become the “link” money, anchor of the Flemish monetary system:

1 livre *gros* [*pond groot*] = 12 livres *parisis*

1 livre *gros* = 20s. *gros* = 240d. *gros*

1s. (sol, schelling, shilling) *gros* = 12d. (deniers, penningen) *gros*

1d. *gros* = 3 *esterlins* [*ingelschen, sterlings*] = 24 *mites* = 12d. or 1s. *parisis*.

2. *Marc de Troyes* was the mint weight unit of France and the Low Countries, consisting of 8 Paris *onces* (= 1/2 of the Paris *livre*), with a theoretical weight of 244.753 g.

3. *Argent-le-roy* was the official standard of fineness for silver, reckoned in terms of 12 *deniers*, with 24 *grains* per *denier*; it was 23/24ths or 95.833% pure silver, vs. English *sterling* fineness of 92.5%.

4. *Tailleis*, the number of coins to be cut or struck to the alloyed *marc de Troyes* (with a tolerance or *remède* of some specific number of coins per *marc*), indicating the theoretical weight of a coin.

5. *Traite*, akin to the French *pied de la monnaie*, is the total money-of-account value, by tale, of the mint weight unit of fine metal (*marc*

⁵⁰ See Cipolla (1956, p. 27–29); Cannan (1926, pp. 25–31); Usher (1943, pp. 193–236); Monroe (1923, pp. 96–98); Spengler (1966, pp. 208–213); and nn. 5, 23 above.

argent-le-roy, for silver), as struck into coins of the prescribed value, fineness, and weight (i.e., *taille*). Its calculation is

$$T = \frac{\text{taille (No. of coins per marc)} \times \text{official face value of coin}}{\text{percentage fineness (in deniers and grains } \textit{argent-le-roy})}$$

SOURCES FOR THE TABLES

Mint and Monetary Statistics: Tables 1, 3–6

(a) Ghent, Bruges, and Mechelen Mints, 1334–1384; Gaillard (1856, Vol. 2); Blockmans (1979, pp. 69–94); Van Werveke (1949a, 1949b); Munro (1981, 1983a).

(b) Ghent, Bruges, Mechelen, Valkenberg (Fauquemont), and Namur, 1384–1484: Algemeen Rijksarchief België, Rekenkamer (Archives Générales du Royaume, Chambre de Comptes), rolrekeningen Nos. 776–787 (Bruges, 1392–1402); Nos. 824–831 (Ghent, 1388–1390, 1410–1419); Nos. 2586–2587 (Valkenberg, 1396–1398); Nos. 2142–2143 and 2145–2146 (Mechelen, 1384–1385, 1390–1392); Registers Nos. 48,876–48,877 (Mechelen, 1390–1392); No. 580 (Ghent, 1419–1420); Nos. 18,195–18,198 (Ghent, 1459–1462, 1466–1467, 1482–1484); Nos. 18,103–18,116 (Bruges, 1455–1482); No. 18,203 (Namur, 1421–1433); Algemeen Rijksarchief, Acquits de Lille, Liasses Nos. 936–937 (Ghent, 1410–1447); No. 1512 (Bruges, 1454–1456, 1466–1467; Mechelen, 1454–1456, 1459–1460); Archives départementales du Nord (Lille), Chambre des Comptes, Série B., Nos. 644/15.939 and 19.960/19.312 (Bruges, 1454–1456); No. 1606 (Ghent, 1441–1442).

(c) Additional mints, in Table 6: ARA, Rekenkamer, Registers Nos. 18,106–18,108 and 18,116–18,118 (Bruges); Nos. 18,196–18,199 (Ghent).

(d) Monetary Ordinances and Statistics: Munro (1981, 1983a, 1984); Spufford (1970); Deschamps de Pas (1861, 1862, 1866, 1869); Rouyer (1847, 1848); Gaillard (1856, Vol. 2); Cockshaw (1971); Bartier and Van Nieuwenhuysen (1965).

Note: in a book review in *Revue du Nord* 69 (1986), 542–543, Alain Derville charged that in my earlier work I had missed mint accounts for Ghent (1422, 1433, 1441–1442), Namur (1432–1433), Valenciennes (1433), and Zevenbergen (1433). He is mistaken: all of these accounts are in fact included in my earlier monetary publications (and those for Ghent and Namur, in this one).

Commodity Prices: Table 2

Verlinden and Scholliers (1965–1969, Vol. 1, pp. 44–45: peas; Vol. 2, pp. 33–35: wheat; pp. 64–66: butter; pp. 67–69: cheese); Van der Wee (1963, Vol. 1, pp. 204–206; eggs; pp. 277–281: herring; pp. 294–298: Rhine wine); and Munro (1984, pp. 62–71, 102–109: Flemish price index).

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