Coinage and Monetary Policies in Burgundian Flanders during the late-medieval 'Bullion Famines', 1384 - 1482

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June 26, 2009
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Working Paper no. 361 (MUNRO: no. 38)

Repec Handle: tecipa-361

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Friday, 26 June 2009

Keywords: coinage debasements, gold, silver, billon, bullion, bullionist policies, mints, mint outputs, seigniorage, brassage, inflation, deflation, ‘bullion famines’ and monetary scarcities, liquidity crises, credit, bills of exchange, usury, warfare, taxation

JEL Classifications: E 31; E41; E42; E51; E52; E62; F33; H11; H27; N13; N23; N43
Abstract:

This paper seeks to answer two questions: were the coinage debasements in Burgundian Flanders (1384-1482) undertaken principally as monetary or fiscal policies; and were they beneficial or harmful? In a recent monograph, Sargent and Velde (Big Problem of Small Change: 2002) contend that monetary objectives governed almost all medieval, early-modern debasements, especially to remedy the chronic shortages of petty coins. Despite overwhelming evidence that Burgundian Flanders, along with most of north-west Europe in the later 14th and 15th centuries, experienced severe monetary scarcities and liquidity crises, especially in the periods ca. 1390 - ca. 1415 and ca. 1440 - ca. 1470, both periods of severe deflations, eras commonly known as ‘bullion famines’, there is no compelling evidence that the Burgundian rulers debased their coinages on the basis of any such monetary policies. My thesis is that the Burgundian rulers of Flanders, in competition with neighboring princes, undertook their debasements primarily as aggressive fiscal policies, specifically to finance warfare. Their goal was to increase their seigniorage revenues, the tax imposed on bullion brought to their mints, by two means: by increasing the tax rate itself, and by enticing an increased influx of bullion into their mints, both by the debasement techniques themselves and by auxiliary bullionist policies. Those policies were successful so long as three conditions were met: (1) that merchants supplying bullion received more coins of the same face value and thus with a greater aggregate money-of-account value than before (or than from other mints); (2) that the public accepted such debased coins at the same face value, by tale; and (3) that the merchants spent their increased supply of coins quickly, before any ensuing inflation eroded those gains. This study further demonstrates that the inflationary consequences of debasements were always less than those predicted by mathematical formulae – possibly because those debasements failed to counteract the prevailing forces of monetary contraction and deflation. Because so many princes pursued similar fiscal policies, many others engaged in debasement for purely defensive reasons: to protect their mints from foreign competition and to protect their domestic money supplies from influxes of debased and also counterfeit imitations: i.e., to counteract Gresham’s Law. If many debasements were retaliatory measures against a neighbour’s bullionist policies, those policies in general, and not just debasements, were also products of late-medieval warfare, which was also the primary culprit responsible for periodic monetary contractions: by impeding coinage circulations and bullion flows, and by provoking increased hoarding. The answer to the final question is that debasements were usually far more harmful than beneficial.

Note that this is an extensively revised and shortened version of an earlier working paper (no. 355), correcting some errors in that paper (concerning Spanish coinage): with the same tables, but with a new set of graphs,

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Introduction: coinage debasements in late-medieval Europe

Monetary policies dedicated to coinage debasements produced one of the most prominent, widespread, and arguably most harmful features of the later-medieval and early modern European economies. Though certainly many rulers in the ancient and early medieval worlds had also practised coinage debasements, King Philip IV of France (r. 1285-1313) was the first to undertake them this era, in 1295.¹ The subsequent Burgundian rulers of the French royal fief of Flanders (1384-1482) were among the most active and avid practitioners of this ‘dark art.’ Debasement was a policy that the eminent French philosopher, Nicolas Oresme, Bishop of Lisieux, chaplain, and counsellor of King Charles V (r. 1364-1380), had thoroughly condemned – unless undertaken with pubic approval – on the very eve of the Burgundian era, in his famous Treatise on Coins (De origine, natura, jure et mutationibus monetarum).² The first duke of Burgundy, Philip the Bold (r. 1384-1404), son of King John II of France, and younger brother of King Charles VI (r. 1380-1422), was certainly well aware of Oresme’s strong views on debasements.

Nevertheless, the rationale, nature, forms, and consequences, economic and social, of medieval and early modern coinage debasements remain very contentious issues, in an ongoing vexatious debate. The central issues to be resolved are two-fold. First, were coinage debasement pursued principally as monetary policies or as fiscal policies? Second, whatever their rationale, were the consequences beneficial or harmful to the economies and societies of this era?

Recently, two very eminent economists, Thomas Sargent and François Velde, in a much praised monograph on The Big Problem of Small Change (2002), have set forth a compelling view, substantially

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² Johnson, Nicholas Oresme. The tract is also known as De Moneta. No original manuscript exists, and its exact date of composition remains unknown. See also, On Oresme, see also Spufford, Money and Its Use, pp. 295-304; and Bridrey, Théorie de la monnaie; and below, p. 14.
different from Oresme’s hostile verdict. ³ They contend that most medieval and early modern coinage debasements were rational and public-spirited monetary policies undertaken to remedy periodic coin shortages, but especially the chronic, pervasive shortage of ‘small change’, or petty coins. Generally fractions of a penny, containing far more copper than silver (except in England), these were the coins that the poor, most of the peasantry and labouring classes, and indeed the substantial majority of the population required to purchase food, drink, and other basic necessities. Many other historians had set forth somewhat similar views contending that such debasements were a necessary remedy for the periodic deflationary ‘bullion famines’ that had afflicted so much of western Europe, especially north-western Europe, during the later fourteenth and through much of the fifteenth centuries.⁴

Medieval coinages, moneys of account, and debasements

Whatever the rationale for late-medieval coinage debasements, any answers to questions about their possible roles as monetary or fiscal policies must begin with an examination of the technology of minting and coinage alterations, which in turn requires a firm understanding of the relationship between coined money and moneys-of-account. The money-of-account system of Burgundian Flanders, the pond groot Flemish, and the prevailing systems used in medieval and early modern western Europe, were all based on one devised by Charlemagne’s government, ca. 790-802: in which one pound weight of fine silver was then valued at one libra or pound of money of account, consisting of 20 shillings, each of which contained 12 pence (d), so that one pound = 240d.⁵ One pence (d) in money-of-account was always equal or tied to the currently circulating

³ Sargent and Velde, Big Problem of Small Change.

⁴ For this debate, see Munro, Bullion Flows; Munro, ‘Wage-Stickiness’, pp. 185 - 297; Miskimin, Early Renaissance Europe, pp. 25-32, 132-50; Miskimin, ‘Money and Money Movements’, pp. 79-96; Day, The Medieval Market Economy; Spufford, Money and Its Use, pp. 339-62; and sources cited in n.1.

⁵ Until 1172, when Genoa struck for the first grossi, the largest coin denomination struck in western Europe was, in fact, the silver penny. The weight of the Carolinian pound was 489.6 grams: according to Fournial, Histoire monétaire, pp. 24-27, whose arguments justifying this weight are quite complex. But this weight has been challenged by other numismatists (by even more complex arguments), who variously offer alternative weights: 408.0 g., 411.36, 459.36, and 483.33. The last is based on the supposition that the Roman pound in fact weighed 322.2, and that the Carolingian pound was 1.5 times heavier. For the other weights,
silver penny, whatever its current fineness and weight.

In the simplest terms, a physical debasement means the reduction of the quantity of precious metal – silver or gold – contained in the currently circulating coins, of a given face value, and thus also in the related unit of money-of-account: e.g., the penny, the shilling, and the pound. Such physical reductions in the precious metal of the coin itself took place by either a reduction in the weight of the coin itself; or by a diminution in its precious metal fineness: i.e., by adding proportionately more base metal — usually copper; or, most commonly, by both methods combined. The consequence was to increase the number of coins with a given face value – e.g., the penny, or the shilling – minted from a pound or marc weight (244.753 g) of commercially fine silver. That meant as well a corresponding increase in the nominal money-of-account value of that pound or marc of silver, known as the traite, as may be seen in Tables 1A and 1B, below.

Another form of coinage debasement, which normally applied only to gold coins and to more full-bodied, high-valued silver coins, was to increase their official exchange rates, or nominal money-of-account values. It must be clearly understood that gold values, and thus exchange rates, were always expressed in

see Blockmans, ‘Le poids des deniers carolingiens’, pp. 179-81. None of these critics, however, explains the origin or evolution of the Parisian pound of 489.506 grams; nor explain why its weight, readily verifiable from the surviving official metallic weights, was virtually identical to that ascribed to the Carolingian pound by Fournial.

In France and the Low Countries, the fineness of silver coins was reckoned, in terms of commercially fine silver, known as argent le roy, which was 23/24 or 95.833% pure, with 4.167% copper alloy. Argent-le-roy was reckoned in terms of 12 deniers, each of which contained 24 grains; and thus 288 grains in total. The fineness of gold coins was reckoned everywhere in terms of carats: so that fine gold coins had 24 carats (which, however, were probably 23.875 carats = 99.479% pure gold, with 0.53% copper: the actual fineness of Florentine florins, Venetian ducats, and English nobles). Gold coins were commonly alloyed with both silver and copper. Thus the Burgundian gold florin, from 1466, contained 19 carats of gold, 4 carats of silver, and only 1 carat of copper.

The mint-weight used in France and the Low Countries was the marc de Troyes = one half of the French pound or livre de Paris = 244.7529 grams (see n. 5 above). The marc contained 8 onces, each of which contained 24 deniers, each of which in turn contained 24 grains, for a total of 4608 grains to the marc. The medieval English mint weight was the Tower Pound, with 12 ounces: each containing 20 dwt (penny-weight), each of which contains 32 grains, for a total of 7680 grains = 5400 Troy grains = 11.25 Troy ounces = 349.9144 grams. In 1525, it was superseded by the Troy pound, also of 12 ounces, with 20 dwt to the ounce and 24 grains to the dwt, for a total of 5760 grains = 373.242 grams. See Munro, ‘Medieval Monetary Metrology’, pp. 173-99; and Munro, ‘Age of Erasmus’, pp. 311-48.
terms of the principality’s silver-based money-of-account. Such increases in official coinage values were necessary to maintain the former value relationships of these high-valued coins, if they were not similarly debased in fineness and/or weight, with the debased silver penny and other fractional coins.

That can be best understood by relating the market values of gold and silver coins, when, in this era, the normal ratio of values was about 11:1 or 12:1. A debasement of just one of the two coinages – say, the silver coinage – would have altered the bimetallic mint ratio to favour silver and thus to ‘disfavour’ gold, simply because that debasement would have increased the relative money-of-account value of the new silver coins. To some extent a small change in the bimetallic ratio may have been undertaken indeed to favour one of the two metals, and thus to encourage a greater influx of that metal into the prince’s mint. But too drastic an alteration of the mint-ratio in favour of one metal (e.g., silver) would have led to the outflow of the other metal (gold). To prevent that exodus, the prince had to raise the official exchange rate or money-of-account value of the gold coins, or to debase the gold coins as well, by the physical means just discussed.8

The reasons why monetary transactions were almost invariably conducted in coin, even debased coin, rather than in bullion (or ingots), is fundamental to comprehending the nature and rational for debasements in medieval and early modern Europe. First, it was almost everywhere illegal to trade, or to make transactions, in bullion. For the law in most medieval principalities stipulated that all precious metals deemed to be bullion (billon) – excluding metals for licenced goldsmiths – had to be surrendered to the prince’s mint for coinage.9 But second, even if it had been legal to make transactions in bullion, doing so would not have been economically feasible, in terms of the required transaction costs: i.e., the cost of weighing the bullion,  

8 The same set of changes were also required for full-bodied, high-value silver coins, if they were left unchanged during a debasement of lower-value coins. See Table 1B.

9 The modern English term billon is commonly defined as a base or petty coin, one in which silver constitutes less than half of the metallic content, and thus copper (base metal) accounts for over half. The medieval term – billon, billoen, billio – meant instead bullion: any precious metal, including demonetized coinage, domestic and foreign, that was legally required to be surrendered to the prince’s mint for coinage. It excluded precious metals in jewellery, plate, objets d’art, dress, and raw materials legitimately acquired by jewellers and goldsmiths, etc., for their crafts. See Munro, ‘Billon’, pp. 293-305.
and assaying it for fineness, and determining its market or exchange value. Gold and silver coins were generally worth more than their intrinsic bullion costs simply because they were a fully recognized legal tender – with the ruler’s stamp of authorization or approval.

Official, legal tender coins were thus a cost-saving medium of exchange. That savings on transaction costs constituted an agio or premium that legal tender coins thereby commanded over their intrinsic bullion values. Merchants paid for that premium in their mintage fees, which were deducted from the total value of the coins produced from their bullion.\(^\text{10}\) So long as this agio that coins thereby commanded over bullion was at least equal to the sum of the mintage fees, merchants would have continued to deliver bullion to the mints. Conversely, whenever domestic coins lost that agio, merchants would no longer have delivered bullion to the prince’s mint, and would most likely have either hoarded or exported that bullion to some foreign mint.\(^\text{11}\)

Usually those precious metals so exported were sold to some foreign prince’s mint as bullion and converted into his debased coins, provided that the aggregate value of those coins, so converted from the bullion, commanded a higher purchasing power there, than in the country from which the original coins (or bullion) had been exported.

The objectives of any coinage debasement – whether undertaken by fineness, weight, or value, or some combination thereof – were two-fold. The first was to increase the number of coins, of any given coin denomination, struck from a pound weight or marc of fine metal delivered to the mint, and thus to increase the aggregate money-of-account value of the total coinage struck from bullion so delivered (the traite value). Such increases in both the number and the money-of-account values of coins so struck can also be seen in Tables 1A and 1B. The second objective was to induce a much greater influx of precious metals into the prince’s mint, from both domestic and foreign bullion, including demonetized coins (collectively known

\(^\text{10}\) For the economics of these mintage fees – brassage and seigniorage – see below, pp. 23-25.

\(^\text{11}\) For reasons why coins would lose that agio, see below, pp. 12-13.
Burgundian coinage debasements as monetary policies: the debate about the late-medieval ‘bullion famines’, deflation, and their resolution

This analysis of the mechanics and economics of medieval coinage debasements certainly seems to provide good *prima facie* grounds for contending that they were indeed undertaken as monetary policies specifically to remedy period coinage scarcities, during the well known ‘bullion famines’ of late-medieval western Europe. Earlier in my academic career, I had cavalierly dismissed any notions of so-called ‘bullion famines’ or any general problems of monetary scarcities, contending that inadequate supplies of bullion delivered to a prince’s mint constituted a situation very different from any general scarcity of coinage in any regional economy, and had to be explained by deficient mint policies.\(^{13}\)

Since then, however, my subsequent research convinced me that much of western Europe, and most especially the Low Countries and England, had indeed experienced severe monetary scarcities, if not precisely full-fledged ‘bullion famines’, with attendant problems of severe deflation, especially in two periods: from ca. 1375 to ca. 1415; and from ca. 1440 to ca. 1470.\(^{14}\) Furthermore, my research on Burgundian monetary history had also convinced me that there were indeed very good *prima facie* grounds for contending that the late-medieval Low Countries had experienced a chronic shortage of petty coins: for the Burgundian mint accounts show that rarely was more than one per cent of the bullion received minted into these petty coins, known as *monnaies noires*, because they were largely copper.\(^{15}\)

The evidence for and reflection of such monetary scarcities can be found in the drastic declines in

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12 See n. 9 above.

13 For such views, which I no longer endorse, see Munro, *Wool, Cloth and Gold*.


mint outputs – often verging on a complete cessation of new coinages – and of deflations that were clearly products of those coinage scarcities in north-western Europe. Several of my publications since then have been devoted to this theme, in particular to demonstrate the seriously negative economic consequences of deflation: i.e., of a serious, continuous, sustained fall in the price level. I also contended that the late-medieval ‘bullion-famine’ era had come to an end in the 1470s, after low commodity prices (i.e., deflation) had provided the economic motivation or profit incentive – by increasing the purchasing power of silver – for the two technological innovations that resolved this monetary problem. Those innovations, in both civil engineering (water-pumps) and chemical engineering (the Seigerhütten process), made possible the South German silver-copper mining boom, which in turn quintupled Europe’s supply of mined silver, from the 1460s to the 1540s (though much was exported). From the 1540s, Europe began receiving even larger influxes of silver, from the new Spanish American colonies.

Coinage debasements had certainly never played any effective role in combatting late-medieval monetary scarcities and deflation; nor had any reputed advances in late-medieval banking and finance. Nor have I ever been able to find any evidence, in the vast documentation now available for Burgundian Flanders, that its rulers had ever undertaken coinage debasements as monetary policies specifically to pursue any such reflationary objectives, with one minor, indeed trivial exception.

On 31 August 1457, during the worst phase of the mid-century bullion ‘famine’, the Burgundian monetary authorities instructed the Bruges mint-master to strike a greater number of monnaies noires called courtes or double-mites (= 1/12th of a penny groot) from the alloyed marc: 240 per marc instead of the previously stipulated number (or taille), 216. The results were not impressive: in the quinquennium 1456-60, only 51.302 kg of fine silver were minted – compared to 112 times as much in 1426-30: 5,724.645 kg. On

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16 Munro, ‘Central European Mining Boom’, pp. 119 - 83; Munro, ‘Monetary Origins’, pp. 1-34.


the other hand, 11.4 per cent of the fine silver struck the Flemish mints in the later 1450s (none from Oct 1458 to June 1466) was coined into mites – and that percentage may be compared to a typical percentage, as previously noted, of about one per cent, during the rest of the Burgundian era.19

**Late-medieval ‘bullionism’ and defensive motives for coinage debasements**

Although late-medieval mint and monetary policies in north-western Europe were otherwise unrelated to current problems of monetary scarcities and deflation, they must be understood in the context of this era’s bullionist philosophies. The term ‘bullionism’ – providing the medieval roots of early-modern Mercantilism – refers to all those government policies and measures designed to increase the influx of precious metals into the ruler’s lands, and more specifically, into his mints, and also related policies designed to prevent the export of precious metals, except legal-tender coins.20 Late-medieval bullionist policies may be attributed not just to the princes’ mint-profit motives, but also to the strong, almost universal conviction that the wealth, prosperity, and power of a realm fundamentally depended upon its stock of precious metals. Those bullionist policies obviously also became an integral feature of medieval mint policies: especially those designed both to protect the realm against foreign debasements and to permit the prince to engage in defensive coinage debasements. Thus, if the monetary policies practised by so many late-medieval princes may be viewed as aggressive, their victims would have been not only their own subjects but also those in neighbouring principalities. As in any form of warfare, victims of these late-medieval guerres monétaires would have instinctively sought to defend themselves; and if the best defence is offence, then many princes

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19 These courtes had a fineness of 12 grains silver = 4.17% argent le roy. See Deschamps de Pas, ‘Histoire monétaire des comtes de Flandre’, pp. 123-24; and Munro, ‘Petty Coinage’, pp. 387-423: in particular Table 3, p. 396. This exception is nowhere mentioned in Sargent and Velde, *Big Problem of Small Change*.

did so by engaging in retaliatory debasements and related bullionist measures.

In pursuing debasements and related bullionist policies, the Burgundian dukes, along with most medieval princes, banned not only the export of precious metals but also the importation of foreign coins, especially silver coins. Such foreign coins, so demonetized (denied the status of legal tender), were declared or deemed to be bullion (billon) and thus had to be surrendered as such to the prince’s mints. What these rulers clearly perceived, correctly, was the operation of what is called Gresham’s Law: in essence, that cheap money – i.e., debased or counterfeit and thus bad money – drives out dearer coins: i.e., better-quality, higher-silver or higher-gold content coins.

Though without specific references to Gresham’s Law, Peter Spufford has contended that periodic coinage debasements, instead of alleviating coin scarcities, acted only to exacerbate hoarding, with attendant negative consequences for the European medieval economy. Gresham’s Law assumes that the good coin that is driven out by the influx of foreign debased coins or by the circulation of domestic debased coins is either buried, converted into plate, or exported. Indeed, with continuous competitive medieval debasements, much coin and bullion were exported to gain a higher value from foreign mints engaged in aggressive debasements. One can also readily appreciate that virtually all late-medieval bullionist policies must be blamed, along with warfare, and its consequences, for seriously impeding and diminishing the circulation of precious metals in the European economy. As I have contended elsewhere, late-medieval monetary contractions, or the periodic ‘bullion famines’ were more the consequence of reduced monetary flows than

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21 See n. 9, above.

22 See Munro, ‘Gresham’s Law’, pp. 480-81; Munro, Wool, Cloth and Gold, pp. 11-41; and nn. 63, 70 below. This law is attributed to Sir Thomas Gresham (1519-1579), a merchant-banker and royal agent in Antwerp, and financial advisor to Queen Elizabeth I; he was also the founder of the Royal Exchange, in London (1565; on 23 January 1571, Elizabeth bestowed its royal title). But he did not formulate the law as such, and it was well known centuries before.

23 Spufford, Money and Its Use, p. 347: ‘Fear of debasements, and the instability of money, made men happier to keep their silver in the form of plate, in addition to the desire for ostentation.’

24 See n. 22, above.
of reduced monetary stocks – including supposed outflows of bullion in trade with the East.  

Clearly, therefore, a very common motive for late-medieval debasements was purely defensive: to protect a prince’s realm, and his own mints, obviously, from the economic as well as purely monetary damages inflicted by an influx of foreign debased coins. That was all the more serious a problem when those foreign influxes contained fraudulent or counterfeit imitation of that prince’s own coins, and thus containing of course a smaller precious metal content. An allied problem was the circulation of coins, domestic and foreign, that had been fraudulently clipped or otherwise denuded of their precious metal contents.

The same consequences, however, could also have been honestly produced by simple wear and tear of the coins over time, since both silver and gold were very soft metals, even when alloyed with copper (as a necessary hardening agent). When such clipping, wear and tear, or other diminutions in the precious-metal contents of so many coins in current circulation had led to the market’s elimination of the agio or premium that coins commanded over bullion, then, as noted earlier, bullion ceased to flow to the prince’s mints. That would have forced the prince to engage in a debasement that reduced the silver contents of the penny and related coins to the level of the silver found in the currently circulating coinage. Such a debasement would have restored the agio of coinage over bullion, and thereby would also have renewed an influx of bullion into the prince’s mints.

**Burgundian coinage debasements: aggressive motives for fiscal policies to finance warfare.**

Almost all late-medieval mint ordinances – certainly those in France and the Low Countries – include virtual renditions of Gresham Law, and citations of these very adverse circumstances, in order to justify the

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26 See Patterson, ‘Silver Stocks’, pp. 205-35; Mayhew, ‘Numismatic Evidence’, pp. 1-15; Feavearyear, *Pound Sterling*, pp. 1-45. He argues that most English debasements, before those of Henry VIII, were undertaken for such defensive reasons; but medieval England was a monetary anomaly.

27 For the concept of coinage agio, or its premium in value over bullion, see above, pp. 8, 12.

28 On this, see Feavearyear, *Pound Sterling*, pp. 1-45.
prince’s coinage debasements. Obviously it was always better to appear to be the victim than the victimizer. Only in England, however, and there, only in 1351 and 1411, can coinage debasements be judged to have been purely defensive; the next one (also fifty years later), Edward IV’s debasement of 1464, was only partly defensive and certainly much more so aggressive. Virtually all debasements in late-medieval France and the Low Countries – where the evidence can be weighed carefully – even when retaliatory in nature, were essentially aggressive in nature.

In brief, the fundamental aggressive motive to explain so many late-medieval coinage debasements was a lust for mint profits. That concept may be difficult to understand in today’s world; but, in medieval and early-modern Europe, mints were indeed operated with a goal of producing profits. Even so, in today’s world, the term seigniorage is still used for the same purpose: to indicate a source of government revenue from printing money. In medieval and early-modern Europe, those profits came from the revenues that almost (if not all) governments of this era earned by virtue – so to speak – of their rigid monopoly on coinage in their own principalities.

If, however, the primary motive for most aggressive debasements was such profit-seeking, we may ask what lay behind that princely demand for seigniorage revenues? In my view, the rationale for such debasements, and from the prince’s point of view, the real justification, was the need for readily available and elastic revenues to finance both warfare and defence. One must understand that medieval princes were rarely able to increase their feudal taxes in the short run; and that securing additional incomes from taxes, aides, loans, or grants from town assemblies, estates, or other legislative assemblies was difficult and usually

29 See Munro, *Wool, Cloth and Gold*, pp. 28, 33, 35 n. 24, 40, 44 n. 6, 49, 58 n. 54, 60, 74 n. 33, 87 n. 58, 101 n. 20, 150 n. 76, 161 n. 19, 169.


31 From *Investopedia*, via Answers.com: ‘Seigniorage may be counted as revenue for a government when the money that is created is worth more than it costs to produce it. This revenue is often used by governments to finance a portion of their expenditures without having to collect taxes. If, for example, it costs the U.S. government $0.05 to produce a $1 bill, the seigniorage is $0.95, or the difference between the two amounts.’
involved unwelcome concessions.

The mint and the coinage, however, were the prince’s exclusive prerogative, though even that prerogative was sometimes challenged. Often late-medieval mints did produce very large seigniorage revenues, as Hans Van Werveke has demonstrated, for example, for the reign of Flanders’ Count Louis de Male (r. 1346-84). Few would doubt that such fiscal motives had a strong priority in the coinage debasements of Philip IV and all of his royal successors in fourteenth- and fifteenth-century France. Certainly the aforementioned French philosopher and royal advisor Nicholas Oresme had no such doubts, in stating in his treatise *De Moneta*, ca. 1355, that:

I am of the opinion that the main and final cause why the prince pretends to the power of altering the coinage is the profit or gain that he can get from it; [for] it would otherwise be vain to make so many and so great changes.

The mechanics and economics of profit-seeking coinage debasements

Both the mechanics and economics of debasement as a fiscal policy to earn seigniorage revenues can be seen clearly in Table 5. It compares the coinage of the Flemish double *groot* coin, as struck from June 1418 to October 1428, with the new, debased coinage of November 1428. The official exchange value of this coin remained 2d *groot*, but its pure silver content had been reduced from 1.725 grams to 1.522 grams, for a loss of 0.203 g. or 11.768 per cent of its former (1418) fine silver contents. That diminution in silver contents had been achieved by reducing both the fineness and the weight of the double *groot*:

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34 Johnson, *Nicholas Oresme*, p. 24: ‘Videtur michi quod principalis et finalis causa propter quam princeps sibi vult assumere potestatem mutandi monetas, est emolumentum vel lucrum quod inde potest habere; aliter enim frustra faceret tot mutanciones et tantas.’
from 47.92 per cent purity (6 deniers argent le roy) to 42.59 per cent purity (5 deniers 8 grains); the latter, from a weight of 1.800 grams (68 cut to the marc de Troyes) to 1.588 gr (68.5 to the marc). The number of double groot coins cut from a marc de Troyes of commercially fine silver (argent-le-roy) rose from 136 double groot coins to 154.125 coins; and thus the change in traite or money-of-account value of that marc rose from 22s 8d (i.e., 136 x 2d) to 25s 8d 6 mites. The reduction in the coin’s silver content, by 11.77 per cent, resulted in a 13.33 per cent increase in the value of the traite per marc de Troyes of commercially fine silver. The results can be seen in Table 6.

The merchants’ gains from late-medieval coinage debasements

For any debasement to succeed, and to induce a much larger influx of bullion into the prince’s mints, the mint had to offer merchants who delivered bullion a real gain, or a better price than that offered by any competing mints, for their bullion (including previous and demonetized domestic coin issues). The merchants’ actual gains depended on the fulfillment of three conditions. The first was that the merchants had to receive a greater number of coins, with the same face value, than they had previously received, and a higher value, in terms of goods and gold, than they would have received from any other mint. The second was that the public, including other merchants, had to accept the newly debased coins at the same nominal or face value, by tale (discussed below). The third condition was that these new coins had to retain their purchasing power, at least in terms of good and services within the domestic economy, within the ‘short run’ – in time for the merchants to spend their new coins.

In Table 5, compare the number and the money-of-account values of the double groot coins that

35 For definitions of the monetary terms, see nn. 5-6, above. Note that the number of double groot coins struck from that marc in November 1428, namely 154.125, is 13.33 per cent greater than the 136 double groot coins struck from the same marc from June 1418 to October 1428: i.e., a difference of 18.125 double groot coins = 36.25d or 3s 0d 6 mites. Note also that this difference in the total number of coins struck from the fine silver marc exactly equals the difference between the two traite values for the marc: 25s 8d 6 mites by the November 1428 mint indenture, compared to a sum of 22s 8d, for the previous coinage, of June 1418. This relationship between debasement and the increase in traite values is in accordance with the \( \Delta T (\text{traite}) = \frac{1}{1-x} - 1 \), relating changes involving reciprocals. Its importance is discussed below, on pp. 19-20.
merchants received for their bullion in June 1418 with those received after the debasement of November 1428. We thus find that merchants received, per marc of commercially fine silver, the following: in June 1418, 127 double groot coins worth 21s 2d groot (93.38 per cent of the bullion delivered); and in November 1428, 144 double groot coins, now worth 24s 0d groot (93.43 per cent of the bullion delivered). Their purely nominal gain of the extra 17 coins or (34d: or 2s 10d groot) was 13.38 per cent. Thus the mint ordinance fulfilled the first of our conditions.

The second condition is the most complex of the three: why would the public have accepted these newly debased coins at face value, when they contained less fine silver than before? This is a very important question because several economists have recently put forward two contrary propositions, to prove, in effect, that medieval debasements could not have worked – despite the evidence that debasements were so commonly practised, and for several centuries. The critics’s first argument is that the general populace would not have accepted such newly debased coins at face value, but only at a proportionally lesser or discounted value: i.e., discounted from the amount of silver contained in the immediately preceding coin issue. Such discounting would have thus denied those merchants who converted bullion into debased coins any real gains. In effect, these critics are contending that Gresham’s Law did not apply to medieval coinages, and it is therefore a modern fallacy. In part that view can be rejected on the various grounds cited earlier to explain why domestic commerce was always transacted in legal tender coins rather than in bullion.

**Medieval hammered coinages: problems of detecting changes in weight and fineness**

But an even more compelling argument to explain the general acceptance of even debased legal

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37 See above, pp. 8-9.
tender coins, at face value, can be found in the technology of medieval mints: for what is known as ‘hammered’ coinages. In striking silver coins, from thin alloyed sheets of metal, with the required proportions of silver and copper, the mint-master’s employees first cut out circular disks, known as blanks. The mint-master himself (or his trained deputy) then placed each of these blanks on the anvil-like lower coin dye. He then used a hammer to strike the upper coin-dye placed above the blank, thereby implanting the obverse and reverse stamps, with appropriate symbols or emblems of the prince, on each side of the coin. The employees then used shears to trim the disks, which had been flattened and extended by this hammering, into approximately round disks. As a consequence, coins so struck were never exactly the same in size, shape, and weight. Indeed coin weights were never specified by any measure other than the taille: i.e., the number cut from the alloyed marc, with a tolerance or remède of the number of coins (plus or minus), permitted to be struck from each marc.

Thus most individuals handling separate and individual coins were never able to tell whether not any differences between the weights of coins of a given denomination were purely the accidental results of these techniques or the result of fraud, including counterfeiting. Note, from a comparison of the two mint indentures, that the very minute changes in weight would have been very difficult to detect, even for those very few money specialists, usually just money-changers and bankers, who were equipped with accurate scales. They in turn might have required sets of perhaps fifty or one hundred coins to detect differences on these scales. Needless to say, most retail merchants, let alone individual customers, would not have been so equipped to undertake such tests.

Detecting changes in the coin’s fineness was even more difficult, especially when the changes were as small as those indicated in Table 5, for the November 1428 Flemish debasement. Again, only money-changers and bankers would likely have been equipped with the required device for such testing, known as touchstones: instruments on which coins were rubbed to produce colour comparisons, as a gauge of the fineness, or the mixture of silver and copper alloy. Under the best of circumstances, they were very crude
measuring devices that were rarely accurate within five or even ten per cent. 38 The only certain way to have detected and measure changes in silver contents after a debasement was by melting the coins, in order to separate the silver from the copper. No merchant, of course, could have afforded to take such drastic measures, though mint officials sometimes did so. Even differences in the stamp on the obverse and reverse sides, if observed, would not have been an indication of the actual changes in value, since such changes took place with changes in princes and mint-masters, without debasements.

Indeed, contrary to some erroneous views in the economic history literature, most people – whether merchants, tradesmen, artisans, labourers, peasants, etc. – usually always accepted coins by tale – i.e., by number, at face-value, without ever weighing, assaying, or otherwise testing them. 39 Indeed, as contended earlier, coins, with the prince’s official stamp, certifying its value, circulated with a premium value or agio over the comparable value of the bullion contents precisely because their ability to do so provided significant savings on transactions costs, vital for all trades. To be sure, in foreign trade transactions, some wealthy merchants – Italian or Hanseatic in particular – might have tested gold coins in large-value transactions, because the relative savings on transaction costs were lower and the costs of fraud were higher. But very few, if any, would have done so for low value silver coins circulating in domestic trade.

Even if some persons had done so, and discovered deficiencies in the silver content, how and when would they have discounted the value of, say, a penny coin? Consider the fact that, in 1300, the Flemish silver penny groot, then 11 deniers 12 grains argent-le-roy (95.667 per cent commercially fine), contained 3.794 grams pure silver; but in 1384, when the Burgundian era commenced, it was 6 deniers argent-le-roy (50.00 per cent fine = 47.917 per cent pure), with only 1.173 grams pure silver (Table 1A). Over those years,
would its value have been discounted to just one-third of a penny *groot* (by relative silver values: actually 30.91 per cent)? Of course not: the 1384 *groot* still circulated at the same nominal value of 1d, just as it had done in 1300.  

Nevertheless, if confidence in the coinage in general did wane, especially with increased supplies of counterfeit coins, merchants and tradesmen would have finally resorted to discounting the entire coinage: by raising their prices, and thus eliminating, as suggested earlier, the *agio* on coinage. Since the prince’s mints would no longer have received much bullion, that situation might then have induced yet another round of debasements.

**Did inflation eliminate the potential gains from debasements?**

The second and seemingly compelling objection or counter-argument from the critics is that the consequent and quickly ensuing inflation would have eliminated any possible gains from the debasement. Let us first consider the statistical evidence on coinage debasements, mint outputs, and prices trends in Burgundian Flanders, presented in Tables 1 - 4, and Figures 1 - 5. That evidence provides convincing proof that these periodic coinage debasements did indeed increase the Flemish coined money supply, and also that such increases did lead to some periodic inflations. The silver content of the Flemish penny *groot* fell from 1.173 grams in 1384 to one of just 0.522 grams in 1482: a loss of 0.651 grams = 55.49 per cent of its 1384 contents. During this same era, the Flemish Consumer Price Index (base 1451-75 = 100) rose from 122.185 to 193.932: i.e. an increase of  71.747  = 58.72 per cent.  

But these statistics are misleading in several ways. In the first place, a comparison of diminutions in metal contents with rises in prices, in this fashion, is statistically false, since we are dealing with reciprocals. The following is the formula needed to compare the consequence of a reduction of the coin’s

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40 If the debasement reduced the silver contents by exactly ten per cent, then by the formula given in note 34 for changes in the *traite* values -- $\Delta T \text{ (traite)} = \frac{1}{1-x} - 1$ -- the requisite ‘discount’, by this approach, would have been 11.11%. How would such a discount have been achieved?

41 For the construction of the Flemish Consumer Price Index, see Munro, ‘Wage-Stickiness’, Table 1, p. 231; and Munro, ‘Builders’ Wages’, pp. 1018-28, and Table 1, pp. 1048-49. See also Tables 1 and 3, in the Appendix.
silver contents with the expected rise in the money-of-account value of a marc weight of commercially fine silver (244.753 g): i.e., its traite value.

$$\Delta T \ (\text{traite}) = \left[ \frac{1}{1 - x} \right] - 1$$

in which \(x\) represents the percentage reduction of the fine silver content of the penny and the corresponding pence in money of account; and \(\Delta T\) represents the consequent change in the money-of-account value of a marc of fine silver after the coinage debasement. By this formula, a 10-per cent reduction in the fine silver contents of the penny would have produced a 11.11 per cent rise in the nominal value of the new coined marc of silver, i.e., a potential increase of 11.11 per cent in the coined money supply.

By the crude, simplistic Quantity of Theory of Money, that should also have been the rate of inflation. For Flanders, over the century 1384 - 1482, the expected rate of inflation, resulting from a 55.47 per cent reduction in the penny’s silver content, should have been 124.57 per cent – instead of the far more modest 58.72 per cent rise in prices that did occur, as just noted. While this snapshot is useful for purely heuristic purposes, the real statistical tests would have to be measured in year to year changes in the domestic price index, following each coinage debasement.

The historical lesson is clearly demonstrated in Table 4. Coinage debasements, and consequent increases in money supplies, never produced correspondingly proportional inflations. There are five possible reasons why inflations were never directly and predictably related to coinage debasements. First, coinage debasements rarely succeeded in reminting the entire domestic coined money supply, even if the financial terms seemed compelling for merchants to surrender their own current coins to the mint. For many others would have chosen to retain them, knowing that their higher bullion contents would later fetch a higher

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42 For definitions of fineness and weight, in terms of the marc de Troyes, see nn. 5-6, 12-13 above. The computation of the traite or money-of-account value of a marc of commercially fine silver simply involves the calculation of the number of coins, of a given denomination, struck from the alloyed marc (i.e., with the copper added) – a number known as the taille per marc – and then a multiplication of that number by the official value of the coin itself. Thus \(T = (\text{taille} \times \text{face value})/\text{percentage fineness}\).

43 See Table 1A, and n. 35 above.
market value. Second, even if a silver debasement was also designed to attract other sources of bullion, as well, especially from neighbouring lands, the expected cost or monetary loss would have been some outflow of the other metal, gold, for reasons noted earlier. Third, coins did not account for the entire money supply; and, therefore, we must also take account of credit changes. I have dealt with this subject at length, in other publications, in which I contended that credit instruments never fully remedied any shortages in the medieval supplies of coined money, and did not effectively combat deflation.44

Fourth, consider the logic of the modernized Quantity Theory of Money, whose basic formula is M.V = P.y. Any inflationary consequences – i.e., a rise in P (Consumer Price Index) – from an increase in the money supply (M) may have been offset by a decrease in the income velocity of money (V) and/or by increases in net national product (NNP) and income (i.e., y). The more useful version of the quantity theory is the Cambridge Cash Balances equation: M = k.P.y, in which k is the reciprocal of V, i.e., k = 1/V and V = 1/k. The symbol or variable k represents that percentage share of net national income that the public chooses to hold in cash balances: i.e., rather than profitably investing those funds. The reasons for holding cash balances are known collectively as liquidity preference: involving a mix of transaction, precautionary, and speculative motives. According to Keynesian economics, an increase in the money supply, without any changes in liquidity preference, would have led to a fall in interest rates, which in turn would have led to an increase in k (cash balances held). That is the equivalent to a reduction in V, i.e. the income velocity of money.

Fifth, perhaps the most important factor was simply the failure of coinage debasements to counter-act or fully offset the prevailing deflationary consequences of long-term, widespread monetary scarcities – i.e., the prevalent ‘bullion famines.’ Indeed, one obvious reason why they failed to do so is that coinage debasements were almost always periodic or episodic and thus relatively short-term, as well as being merely regional in their impacts. Furthermore, in Burgundian Flanders, three episodes of coinage debasement were

44 See p. 8 and n. 18 above.
followed by the exact monetary opposite: a coinage renforcement or a restoration (usually only partial) and strengthening of the coinage, adding more silver: in 1384, in 1389-90, and in 1433-35. By necessarily contracting the money supply – i.e., in reminting debased coins into necessarily fewer but stronger coins, these renforcements had severely deflationary consequences, readily apparent in Table 3.45

We may offer three more specific observations about the inflationary consequences of coinage debasements. First, when price changes did take place following debasements, they did not do so immediately, but relatively slowly, since some time would have been necessary for the increased quantity of coins to enter and become part of the coinage circulation. That observation applies also to the previously enunciated proposition: that wholesalers and retailers would have ultimately reacted to a debasement only by raising their prices. Their success in doing so, however, still depended upon the increased circulation of the new coins.

Second, the extent of any subsequent rise in prices was far from being uniform. The price changes for individual commodities depended on both their supply and demand elasticities; and the latter must also be seen in terms of both the price- and income-elasticities of demand.46 Provided, therefore, that the merchants had spent those double groot coins quickly enough, after receiving their newly debased coins, and spent them on the right selection of goods and services, they would certainly have profited – i.e., realized a genuine net real gain.

Third, we may further observe that money-changers and merchants who gained from delivering bullion to the mints and quickly spending their increased number of coins benefited from what is now known in economics as asymmetric information: i.e., that they were privy to the knowledge of the mint changes that

45 See Tables 1A and 1B.

46 See above, pp. 30-31; and Table 4. See also, in support of these views, Munro, ‘Monetary Contraction and Industrial Change’, pp. 95 - 162; Munro, ‘Mint Outputs, Money, and Prices’, pp. 31-122; Munro, ‘Petty Coinage’, pp. 387-423; Munro, ‘Wage-Stickiness’, pp. 185 - 297; Munro, ‘Profit Inflation’, pp. 13-71; Munro, ‘Monetary Origins of the Price Revolution’, pp. 1-34; Munro, ‘Black Death’, pp. 335-364.
remained unknown, for some time, to the general public. But inevitably such information would have been finally disseminated to the general public. That information, combined with the increased number of coins in circulation, would have led to some inflation, and thus to some loss, though rarely a total loss, of the net gains from a debasement.

The mintage fees: brassage and seigniorage

As noted earlier, the mint retained from the bullion supplied a small proportion – usually under ten per cent (Table 1B) – for the stipulated mintage fees, which comprised two items: the brassage, for the mint-master; and the seigniorage, for the prince. The brassage fee can be readily understood: that it cost money to make money. Obviously, the mint-master had to be compensated for his production costs: the copper alloy added, the labour costs of production, the capital costs of his tools (hammers, dyes, furnaces, forges, melting pots, shears, etc.), and the administrative costs of operating the mint. Those costs were normally modest, except for the petty coinage, the monnaies noires, with high copper contents. In accordance with the Flemish mint indenture of June 1418, the mint-master retained 7 of the 136 double groot coins struck. That amounted to 1s 2d groot or 5.15 per cent of the bullion delivered. But, in accordance with the next mint indenture, for the debasement of November 1428, the mint master received only a minuscule increase of just 1/8 double groot = a quarter-groot, or just 6 mites. In fact, his share of the total bullion received fell from 5.15 per cent to 4.62 per cent – an amount that likely was insufficient to cover his increased costs for labour and copper alloy. So much for the view that mint-masters had instigated debasements for their own profit.

The other mintage fee was seigniorage: the tax that the prince imposed on minting coins, i.e., as a fixed percentage of the bullion delivered to his mint, by virtue, as noted earlier, of his official monopoly on coinage within his realm. Counterfeiting was, of course, a very serious violation of the prince’s monopoly

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48 Since the mint was the property of the prince, the prince was responsible for the capital and maintenance costs of the mint buildings, but not of the mint-master’s equipment.
on coinage, and indeed of his sovereignty; and it was usually treated, therefore, as a capital crime. 49

Clearly, at least in proportional terms, the agent who realized the greatest gain was the prince; i.e., here, Duke Philip the Good. In his 1428 Flemish debasement, his seigniorage tax was increased from 2 double groot coins (4d) to 3 such coins (6d), a 50-per cent increase, increasing his share of the bullion delivered to the mint from 1.47 per cent to 1.95 per cent.

Indeed, the single best test for whether or not a coinage debasement was aggressive and motivated by profit-seeking is whether or not the prince increased his seigniorage rates in implementing that debasement. 50 If the debasement had been purely defensive in nature, and in particular designed to remedy deficiencies in the coinage supply, why would the prince have raised his seigniorage rate? Consider, also, and in particular, the fact that the higher the seigniorage rate, the lower would have been the mint price for merchants, thus reducing their incentive to bring bullion to that particular prince’s mint, in competition with other mints. Calculating the most effective increase in rates was a skilled art.

The prince’s increased mint profits were based on two factors: the increase in the seigniorage rate itself, and the success of the debasement in increasing the Flemish mint output, subject to the constraints on total mintage fees just noted. As Table 6 demonstrates, Duke Philip’s 1428 debasement was very successful indeed: from 1428 to 1429, it increased the quantity of silver bullion struck by 1475.68 per cent (from 1,078.65 kg to 16,996.01 kg); the current value coinage output, in pounds groot Flemish, by 1666.02 per cent (from £5,267.28 to £93,021.38 groot); and the seigniorage revenues, by 1554.47 per cent (from £123 to £2,035 groot Flemish). As this table also indicates, coinage debasements were subject to rapidly diminishing returns, a condition that often forced prince, as just noted, to engage in subsequent debasements. In this case, however, Duke Philip the Good instead chose – if in response to pressure from the Flemish towns – to


50 See Table 1 B: with data on all the silver coinage changes from 1384 to 1482. Note the increase in the seigniorage rates with all the major debasements, and their reductions with a return to stronger and stable coinages.
reform the Flemish coinage and impose a monetary unification on his recently acquired Burgundian Low Countries, in 1433-5.\textsuperscript{51}

**Debasements and warfare in the Burgundian Low Countries**

Of course, it would now be an enormous and ultimately also a tedious task to demonstrate that each and every one of the numerous Flemish coinage debasements had been undertaken primarily for such fiscal motives: specifically to finance warfare and defence. Only the major wars need to be cited here.\textsuperscript{52} First, under Duke Philip the Bold (r. 1384-1404): the Second Artevelde or Ghent rebellion (aided by English intervention), from 1382-85; and the Guelders war of 1388. Under Duke John the Fearless (r. 1404-1419): the Burgundian-Armagnac civil wars, 1411-19, culminating in Duke John’s murder at Montereau. His son and successor Philip the Good (r. 1419-67) immediately defied the French Dauphin Charles (later Charles VII), by contracting a military alliance with England, whose king, Henry V, had achieved such a major victory over the French at Agincourt (1415). During his wars with Charles, Philip also became involved in the civil war in Holland-Zeeland (Hoeks vs. Kabiljauws), which also embroiled him in conflict with England, in 1424-28, ending with Burgundian acquisition of these Imperial counties. Duke Philip subsequently complained to his subjects how costly were these wars:\textsuperscript{53}

> You also well know how, during a lull in the war in France, I had to wage a burdensome and murderous war against the English [Humphrey, Duke of Gloucester] in my lands of Holland, Zeeland and Friesland in order to protect Flanders ... This war...had cost me, besides all the heavy expenses that I incurred throughout this period in the French war, over a million gold saluts, which at first I was extremely ill-prepared to find.

The troubled Anglo-Burgundian military alliance finally ended, in 1435, with Duke Philip’s volte-face, in making peace with Charles VII, by the Treaty of Arras, which then led to the Anglo-Burgundian war

\textsuperscript{51} See p. 27 and nn. 57-58, below.


\textsuperscript{53} In a speech before the deans of Ghent’s craft guilds, in January 1447. Cited (and translated) by Vaughan, *Philip the Good*, pp. 307-08, quoting from the Flemish texts in Fris, *Dagboek van Gent*, vol. I, pp. 57-68.
of 1436-1439, complicated by the Dutch-Wendish wars of 1438-1441.\textsuperscript{54} Then, relative peace — and an absence from coinage debasements — ensued over the next two decades, until Philip’s son Charles the Rash (r. 1467-1477) renewed the Burgundian conflicts with Louis XI’s France. That conflict began with the rebel League of the Common Weal, 1465-66 (i.e., before Charles became duke). That in turn led to Charles’ suppression of the French-sponsored revolt of Liège, in 1468; his abortive invasion of Normandy, in 1471; and then his wars with Imperial Alsace, Lorraine, and the Swiss, all allies of Louis XI, culminating in the Burgundian defeat and Charles’ death, at the hands of the Swiss, at Nancy (Lorraine), in 1477. In that year, his daughter Marie married the Habsburg Archduke Maximilian (d. 1519). Her accidental death in March 1482 led to a disputed regency (their son Philip vs Maximilian) and protracted civil wars in Flanders, and to even more horrendous coinage debasements, ending only in the 1490s, which events are all beyond the scope of this study.\textsuperscript{55}

\textbf{Some brief conclusions: debasements were generally more harmful than beneficial}

We may conclude that late-medieval coinage debasements, at least those examined in Burgundian Flanders, were generally more harmful than beneficial. They failed to provide any long-term remedy for the combined problems of chronic monetary scarcity and deflation. Indeed, as noted earlier, the Burgundian rulers generally ended their rounds of debasements with severely deflationary reinforcements. Second, as observed earlier, the combination of coinage debasements and related bullionist measures generally served only to aggravate monetary scarcities by impeding both bullion flows and coinage circulations, and also by encouraging hoarding. Third, to the extent that debasements did lead to some degree of inflation, that inflation reduced real incomes – since wages normally lagged behind prices – and thus provided an additional


\textsuperscript{55} Duchess Marie, unlike her father Charles, but following her grandfather’s admonition to maintain ‘la bonne monnoie’, had opposed further debasements. The debasement of 18 July 1482 was thus undertaken by widower husband Maximilian (Table 1A). See Spufford, \textit{Money}, p. 313. See also n. 61 below.
tax burden on the entire population. Fourth, debasements injured creditors, by reducing the real values of their investment returns and repayments; and in that respect, they damaged Flemish international commercial relations.

Finally, coinage alterations sometimes caused social unrest: understandably so, when, as just emphasized, money wages usually lagged behind debasement-induced rises in consumer prices. But, somewhat paradoxically, the opposite monetary policy, a coinage reinforcement (strengthening), was the more likely cause of unrest, especially industrial strikes, when Burgundian or civic leaders imposed sudden wage cuts – reductions in nominal money wages – as a necessary component of monetary reform. Yet such unrest, the product of ‘money illusions’, usually proved to be socially unjustified, because those reforms usually led to a deflation in which the fall in consumer prices proved to be greater than the nominal wage cuts, so that real wages actually rose (as they did in the 1390s and 1440s).

Finally, the view that coinage debasements had been undertaken to remedy severe coin shortages, and thus to benefit the public, is contradicted Flemish public demands, as put forth by their Estates or Town Assemblies, which evidently regarded debasements as a cure worse than the disease. After two of Philip the Good’s debasements, the assembly of Flemish towns (the Estates) forced the duke not to undertake any further coinage alterations for specified periods: in 1418-19, for fifteen years; and in 1433, for twenty years.

56 See Munro, ‘Urban Public Finances in Late-Medieval Flanders’, pp. 973-1026; Munro, ‘Wage-Stickiness’, pp. 185-297.

57 See Munro, ‘Gold, Guilds, and Government’, pp. 153 - 205; Munro, Wage-Stickiness, pp. 185 - 297; Munro, ‘Builders’ Wages’, pp. 1018-28; and publications by Van Werveke in n. 33 above.

58 See Munro, Wool, Cloth and Gold, pp. 74-76, and n. 34 in particular. The most important study on this issue is Spufford, ‘Coinage, Taxation, and the Estates General’, pp. 63-88. In March 1418, the Flemish towns or the Four Members (vier leden) had in fact requested no changes for the next 40 years: that ‘dese munte sal ghedeurch zijn zonder angheven ofte veranderen xl jaer’; but that period was reduced to 15 years in the final ordinance, in: ARA, Rekenkamer, reg. no. 1158, fo. 7vo. When Philip became count in his own name, in 1419, after his father’s murder, the Four Members required him to repeat this promise. Gilliodts-van Severen, Estaple de Bruges, vol. I, no. 630, p. 526. See above, n. 51.
years. Philip, however, broke his first promise, chiefly by engaging in debasements in his recently acquired
and neighbouring provinces of Namur, Holland-Zealand, and Brabant, but also once, within Flanders itself,
at Ghent, in November 1428. Yet he did indeed keep his second promise (at least for silver), and for more
than thirty years, up to the final year of his reign, in 1466-67. In that year, Philip resumed his long-dormant
practice of debasements, of both coinages, partly in reaction to the debasements of King Edward IV of
England, in 1464-65, during the Wars of the Roses. But Duke Philip’s debasements were mild compared
to those of his successors: Duke Charles the Bold and Archduke Maximilian, from 1467 to the early 1490s:
especially in the 1480s, years of costly, destructive foreign and civil wars (which again lie beyond the scope
of this study).

In viewing the monetary history of late-medieval western Europe, no one would contend that
Burgundian Low Countries were unique: for certainly most, if not all, countries and principalities then
practised very similar monetary policies, with the same observable links between warfare, coinage
debasements, and seigniorage profits. What does makes this study unique for this era is the documentation
for those policies and their economic consequences: the fact that only the Burgundian Low Countries provide
such complete archival evidence, especially in the exceptionally detailed mint accounts— with details for each

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60 Edward IV reduced the silver contents of the sterling penny by 20.00% and the gold contents of
the English noble by 25.93%, thus altering the mint-ratio in favour of gold. Duke Philip (d. 15 June 1467)
reduced the silver content of the penny groot by 13.57% in May 1466 and his son Duke Charles did so by
another 3.77% in October 1467. The value of gold coins and the gold traite rose from £15 0s 0d in 1454 to
£15 18s 4d in October 1467, with an overall change in the mint ratio favouring silver. See the details in
Munro, *Wool, Cloth, and Gold*, pp. 160-77, Appendices B - K, pp. 190-211; and nn. 26, 30, and 32 above.

61 See p. 24, and n. 55, above.

62 See note 1. For the principal offenders, see Spufford, *Money and Its Use*, chapter 13, ‘The Scourge of Debasement’, pp. 289-318, especially Table 5, p. 295, and graph III (for 12 currencies, 1252-1500), pp. 296-299. The two principal exceptions were: England before Henry VIII’s ‘Great Debasement’, of 1542-52; and Spain (Castile), from 1497 to 1686. See also the next note.
See the tables and their sources; and the list of my publications in the List of References. While similar documentation and archival sources can also be found for late-medieval England, there are some significant differences: in particular, the Tower Mint accounts do not provide as detailed evidence on coin denominations, brassage, and seigniorage. The more important difference is that, apart from Edward IV’s monetary changes of 1464-65, which came after a half-century of monetary stability, England was one of the few exceptions in not otherwise pursuing these monetary polices, as indicated in the previous note.
**APPENDIX:**

**Two Late-Medieval Monetary Exceptions: Spain and England**

Certainly historical studies of many principalities in late-medieval, and early-modern western Europe provide equally strong links between warfare, coinage debasements, and seigniorage profits, i.e., similar to those examined in the monetary history of Flanders during the Burgundian era (1384-1482). Nevertheless, those links were not universal in late-medieval and early-modern Europe. Notable exceptions were late-medieval England, before the reign of Edward IV – or really, before the ‘Great Debasement’ of Henry VIII and his successor (1542-1552); and early modern Spain, with virtually no debasements at all from 1497 to 1686, certainly none that affected the traditional gold and silver coinages.

There are two possible explanations for this surprising monetary anomaly: i.e., that Spain, and to a lesser extent, England had in effect abjured coinage debasements. The first is a seductive financial explanation. Neither country had evidently required seigniorage profits to finance warfare as much as had, say, France and the Low Countries, because of alternative, lucrative sources of royal tax revenues: for England, the export taxes on wool; and for Spain, the import taxes – the *quinto* or ‘royal fifth’ – on imports of American silver (from Bolivia-Peru and Mexico).

For Spain, however, two important historical circumstances undermine or vitiate this financial theory.

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65 Castile (Spain) struck silver *reals* at 93.06 per cent fineness, at 67 per *marc* (230.0465 grams) during those years, except for one temporary exception in 1642 – at 83.75 per *marc*; and in 1643, the original 1497 coinage was fully restored. The gold coins were struck at 22 carats = 91.67 per cent fine. See Ulloa, ‘Castilian Seignorage,’ pp. 459-79; Motomura, ‘The Best and Worst of Currencies,’ pp. 104 - 27; Motomura, ‘New Data on Minting’, pp. 331-67; and Hamilton, *Price Revolution*, pp. 46-103.

66 Bowden, *Wool Trade*, pp. 1-76.

67 On American silver imports and government revenues, see Hamilton, *Price Revolution*, pp. 12-45; Cross, ‘South American Bullion,’ pp. 397-423; TePaske, ‘New World World Silver,’ pp. 425-45; Munro, ‘Monetary Origins,’ pp. 1-34, especially Table 1.2, pp. 4-5.
The first is that the commitment to abjure debasements of the gold and silver coinages dates from at least 1497, and possibly from 1471 – and thus long before any substantial amounts of ‘treasure’ – first gold, and then enormous amounts of silver – were imported from the Americas (Bolivia-Peru and Mexico). Those imports had begun, in very small amounts from the early sixteenth century; but imports of silver in particular did not surpass 10,000 kg a year until the later 1530s, and the very major imports did not really begin until the 1560s.68

The second ‘inconvenient fact’ is the well-known fiscal crises that Philip II and Castile underwent, especially in the 1550s. In 1557, Philip II supposedly declared ‘bankruptcy’; but in fact, his government, having found itself currently unable to pay the annual interest on short-term loans called asientos, resolved that problem by converting them into five-percent perpetual but redeemable juros al quitter, equivalent to what were commonly known elsewhere as rentes: i.e., annuities. That pattern was repeated in 1575 and 1596. During the sixteenth century, the Spanish funded public long-term debt, in the form of these juros, ballooned from 2.996 million ducats (escudos of 375 maravedís) in 1504 to 80.040 million ducats in 1598 (on the death of Philip II).69 Given indeed the continuously parlous, precarious state of Habsburg Spain’s public finances, despite the revenues derived from the Spanish American silver trade, at least in the second half of the sixteenth century, one may well wonder why Philip II did not resort to the well established European fiscal custom of coinage debasements.

The answer may instead lie more in the political and constitutional realm, rather than the financial. In 1471, and thus before the Spanish unification, King Henry IV of Castile issued an ordinance known as the Pragmatica, which renounced the regal right to debase the gold and silver coinages, and to alter the seigniorage rates. That renunciation was deemed to be a necessary component of the crown’s monetary reform policy to suppress all competing baronial mints (about 150) in Castile. It is certainly worth noting

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68 See sources in note 65; and Munro, ‘Monetary Origins’, Table 1.2, pp. 4-5.

that, before this agreement, the kings of Castile had been amongst the worst offenders, later-medieval Europe, in debasing their coinages: as much as 95 percent, from ca. 1300. But this reformed coinage policy may not have been fully implemented until 1474, when Ferdinand of Aragon and his wife Isabella confirmed this Pragmatica, as joint rulers of Castile, with the parliamentary Cortes; and the right to debase the coinage and to augment the seigniorage rates was again formally revoked with their new coinage of 1497. From 1497 to 1686, the Spanish crown consistently minted (with one exceptional, minor deviation in 1642-43) two silver coins at 93.06 percent fineness, that is, without any debasements or any other coinage alterations – an experience unique in early-modern European monetary history. All of the available evidence does indeed indicate that from 1497 to 1686 the Spanish monarchs did consistently refuse to accept the repeated advice to debase the coinages.

The Spanish crown’s commitment to abjure, forswear debasements and restrict seigniorage on its gold and silver coinages did not apply, however, to its petty vellon coinages, which underwent severe debasements from 1599 (becoming pure copper coins) with greatly augmented seigniorage fees to the mid-seventeenth

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70 Spufford, *Money and Its Use*, Table 5, p. 295, and graph III, pp. 296-99. See also p. 314: ‘The very worst sequence of debasements in the whole of fourteenth- and fifteenth-century Europe can be seen in Castile. By 1480, the unchanging Florentine florin was exchanged for around 375 Castilian maravedis, whereas 130 years earlier it had been exchanged for 20 maravedis. In other words, the Castilian money-of-account had lost around 95% of its value, a greater long-term fall in value than that of any other European money.’

71 In his *Price Revolution*, Hamilton erred, however (p. 52), in stating that ‘the Crown exacted no seigniorage’ on gold and silver coinages, but only brassage fees; and that error was repeated in Boyer-Xambeu, Deleplace, and Gillard, *Private Money and Public Currencies*, p. 110 (but without citation). In fact, the Crown exacted seigniorages on both coinages (except for those issued on behalf of the king himself): for gold, 1 escudo (= 400 maravedis) per marc (230.0465 g); and for silver, 50 maravedis per marc. Since 67 silver reals were struck from a marc of silver, at a value of 34 maravedis each, that seigniorage amounted to 1.4706 reals = 2.195% of the fine silver bullion coined, a higher rate than that normally exacted at the Flemish and English mints (See Table 1B). The brassage fees, in addition to the seigniorage, on the Castilian coinages were normally 34 maravedis (= 1 real) per marc of fine silver and 125 maravedis per marc of fine gold. During this period (1497-1686) the mint fees remained unchanged. See sources cited in n. 62 above.

72 See n. 65 above.
century: at the very time of increased warfare and sharply declining imports of Spanish American silver.\textsuperscript{73}

In the case of medieval England, for reasons noted earlier in this paper, the crown’s reluctance or inability to imposed coinage debasements was also probably more political and constitutional, at its root, than financial. Before England, under Edward III, finally adopted an effective gold coinage (1343-51), its sterling silver coins, 92.5 percent pure silver, had served as an international medium of exchange in northern Europe – a fact that had led to various continental imitations, especially in the early fourteenth century\textsuperscript{74}. Evidently the commercial benefits as well as the national prestige from having such a universally admired currency were factors that had inhibited English coinage debasements. Shortly after the Black Death (1348), which unleashed a combination of real and monetary forces that led to severe inflation, Edward III chose to implement what must be regarded as a very minor and purely defensive debasement of silver, following a prolonged ‘bullion famine’, marked by very low mint outputs and severe deflation.\textsuperscript{75} Parliament’s immediate response to that ensuing inflation was to blame the debasement, and not the effects of the Black Death. In 1352, by its Statute of Purveyors, Parliament thus decreed that the coinage ‘shall never be worsened, neither in weight nor in fineness (aloi)’, without its consent. Not until 1411-12 did the crown again implement

\textsuperscript{73} Before the reign of Philip III (1598-1621), the Spanish government had issued only small amounts of these petty coins, known as vellon coinage. From at least 1471, the Castilian and then Spanish kings had issued a largely copper fractional coinage called blancas, with a nominal money-of-account value of 0.5 maravedi (compared to a value of 34 maravedís for the silver real): but with a very small amount of silver 10 grains = 3.47 percent), to convince the public that it was indeed precious-metal ‘money’. In 1497, that fineness was reduced to 2.43 percent (7 grains); in 1552, to 1.909 percent (5.5 grains); in 1566, to 1.39 percent (4 grains); in 1583, to a fineness of just 1.39 percent (containing only 0.0146 g silver), and a nominal value of 0.5 maravedís. Subsequently, in 1597, Philip II (r.1556-1598) agreed to the issue of a coin worth exactly one maravedí, with a fineness of only 0.34 percent (just 1 grain of silver); but whether any were actually issued is not clear. Finally, in 1599, Philip III issued vellon coins that contained only copper. So large were these vellon issues in the first half of the seventeenth century that they became the single most powerful factor in the inflation that Spain endured during this final era of the Price Revolution. See sources cited in note 65, and also Hamilton, Price Revolution, pp. 73-103; Hamilton, War and Prices in Spain, pp. 9-35.

\textsuperscript{74} Mayhew, ‘Sterlings’, pp. 54-68.

\textsuperscript{75} Munro,’Black Death’, pp. 335-64; Munro, ‘Wage-Stickiness’, pp. 207-16; Mayhew, ‘Numismatic Evidence’, 1-15.
another debasement, another purely defensive debasement, and it did so with an Act of Parliament.\textsuperscript{76} The crown in fact did observe that parliamentary statute for over a century – until Edward IV’s debasement of 1464.\textsuperscript{77} Edward’s debasement, it must be noted, again occurred after a half century of monetary stability; and had the debasement (20 percent for silver) and the seigniorage rate been more modest, it may well also have been deemed defensive.\textsuperscript{78} We have also noted how, though with much less success, the parliamentary Estates in Burgundian Flanders had also sought the Duke of Burgundy’s agreements to maintain stable coinage, without debasements.\textsuperscript{79}

Nevertheless, one cannot disregard the fiscal-financial aspects of the English crown’s reluctance to pursue the continental monetary policies of coinage debasements; for not for another sixty years, not until 1526, did the crown, under Henry VIII (1509-1547), again implement a debasement, and one that was also purely defensive. This was therefore, long before and distinctly different from Henry’s later ‘Great Debasement’ (1542-1547). There can be no doubt that the crown’s principal source of revenues came from the taxation of trade, most especially from the export taxes levied on both raw wool and woollen textiles, especially after the large increases in the wool export-tax rates from the 1330s, on the eve of the Hundred Years’ War. Subsequently, despite the long-term decline of the English wool trade from the 1420s – in part because of both export taxes and bullionist impositions on the wool trade, those export tax revenues still remained substantial up until the end of the fifteenth century. But not long before Henry VIII’s Great Debasement, the wool export tax revenues had virtually disappeared. By the 1520s, the cloth export trade


\textsuperscript{78} Munro, \textit{Wool, Cloth, and Gold}, pp. 168-71; Mayhew, ‘Yorkist Recoinage’, pp. 62-73. See also n. 60, above.

\textsuperscript{79} See nn. 58-59 above.
had almost totally displaced the wool trade, but cloth exports still remained very lightly taxed before 1558.\textsuperscript{80} Possibly that major increase in the cloth export taxes trade was a factor in permitting Elizabeth I to restore the English coinage, or partly restore it, in 1561 and allowed subsequent English rulers thereafter to eschew coinage debasements, apart from one minor weight reduction, in 1601, until 1817.\textsuperscript{81}

If the Henrician Great Debasement seems to be an anomaly in English monetary history, we may also contend that the monetary histories of medieval England and of early-modern Spain are themselves anomalies in European history, and that the debasement-ridden monetary histories of Flanders and the Low Countries, France, Italy, Germany, etc., represent the historic norm. Certainly, the Burgundian rulers of the Low Countries and the French kings had enjoyed no such alternative sources of commercial revenues – non akin to English wool exports or Spanish silver imports – to permit them to forgo the seigniorage revenues from coinage debasements. At the same time, they also were not encumbered with constitutional institutions that were as relatively effective in curbing debasements as were those of late-medieval England and early-modern Spain.

\textsuperscript{80} See Munro, \textit{Wool, Cloth, and Gold}; Munro, ‘Medieval Woollens’, pp. 278-98.

\textsuperscript{81} In 1601, the number of pence cut to the Troy pound was changed from 720d to 744d, reducing the penny’s weight from 0.5184 g to 0.5017 grams. Otherwise, from the Elizabethan recoinage of 1560 to 1817, the English silver coinage retained its traditional sterling fineness: 11 oz 2 dwt silver and 18 dwt copper = 92.50 percent pure silver. Feavearyear, \textit{Pound Sterling}, Appendix I, p. 435; Appendix III.ii, p. 439.
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[See also: sources for the tables, in the Appendix]

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Van Dusye, Prudent; and Edmond De Busscher, eds. *Inventaire analytique des chartes et documents appartenant aux archives de la ville de Gand.* Ghent: Annoot-Braeckman, 1867.


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<th>Fineness as a Percentage</th>
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<th>Grams Pure Silver in the Groot 1 d groot</th>
<th>Traite of Marc de Troyes in Shillings 1 d groot</th>
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### Table 1 B.

**Alterations of the Flemish Silver Coinages: 1384 - 1482**

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<th>Weight Taille</th>
<th>Weight in Grams</th>
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<th>Grams Traite of AR</th>
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1384 - 07 - 16

| Double Groot | 2.000 | 50.00% | 0.4792 | 57.00 | 4.2939 | 2.0575 | 0.9500 | 0.8833 | 0.01042 | 0.05625  |
| Groot        | 1.000 | 44.44% | 0.4259 | 102.00| 2.3995 | 1.0220 | 0.9563 | 0.8833 | 0.01667 | 0.05625  |

1386-10-29

| Double Groot | 2.000 | 43.06% | 0.4126 | 59.50 | 4.1135 | 1.6973 | 1.1517 | 1.0375 | 0.03507 | 0.07917  |
| Groot        | 1.000 | 43.06% | 0.4126 | 119.00| 2.0567 | 0.8486 | 1.1517 | 1.0375 | 0.03507 | 0.07917  |

1387-04-03

| Double Groot | 2.000 | 40.28% | 0.3860 | 60.50 | 4.0455 | 1.5615 | 1.2566 | 1.1000 | 0.03333 | 0.12326  |
| Groot        | 1.000 | 40.28% | 0.3860 | 121.00| 2.0228 | 0.7808 | 1.2566 | 1.1000 | 0.03333 | 0.12326  |

1388-10-01

| Double Groot | 2.000 | 50.00% | 0.4792 | 57.00 | 4.2939 | 2.0575 | 0.9500 | 0.8500 | 0.01667 | 0.08333  |
| Groot        | 1.000 | 41.67% | 0.3993 | 96.00 | 2.5495 | 1.0180 | 0.9600 | 0.8500 | 0.01667 | 0.09332  |

1389 - 12 - 20

| Double Groot | 2.000 | 50.00% | 0.4792 | 57.00 | 4.2939 | 2.0575 | 0.9500 | 0.8500 | 0.01667 | 0.08333  |
| Groot        | 1.000 | 41.67% | 0.3993 | 96.00 | 2.5495 | 1.0180 | 0.9600 | 0.8500 | 0.01667 | 0.09332  |

1391 - 01 - 24
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<th>Percent Purity</th>
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<th>Weight in Grams</th>
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<th>Grams Traite of AR</th>
<th>Bullion Price £ gr</th>
<th>Seigniorage £ gr</th>
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<td>Bullion Price as % of Traite</td>
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<td>Seigniorage as % of Traite</td>
<td>Brassage as % of Traite</td>
<td>Bullion Price as % of Traite</td>
<td>Percent Change in Silver Content</td>
<td>Percent Change in the Traite</td>
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<tr>
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<td>Percent Change in Silver Content</td>
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<td>GOLD Flanders kg</td>
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Table 2. Outputs of the Mints in Flanders and the Burgundian Low Countries

in Kilograms of Fine Metal, Silver and Gold, and in Flemish Pounds Groot

in quinquennial means, 1351-55 to 1496-1500
<table>
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<th>SILVER Flanders £ groot</th>
<th>SILVER Total LC kg</th>
<th>SILVER Total LC £ groot</th>
<th>GOLD Flanders kg</th>
<th>GOLD Flanders £ groot</th>
<th>GOLD Total LC kg</th>
<th>GOLD Total LC £ groot</th>
<th>Low Countries Cent</th>
<th>Per Cent silver</th>
<th>Per Cent gold</th>
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<td>23,495.926</td>
<td>6,609.816</td>
<td>34,252.100</td>
<td>313.963</td>
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<td>77.11%</td>
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<td>3,505.132</td>
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<td>511.935</td>
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<td>40.786</td>
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<td>322.409</td>
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<td>336.654</td>
<td>64.066</td>
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<td>160.791</td>
<td>9,854.308</td>
<td>253.139</td>
<td>15,513.918</td>
<td>15,922.228</td>
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<td>97.44%</td>
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<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>6.596</td>
<td>404.224</td>
<td>6.596</td>
<td>404.224</td>
<td>404.224</td>
<td>0.00%</td>
<td>100.00%</td>
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<td>12,116.676</td>
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<td>7,313.984</td>
<td>45,191.724</td>
<td>140.215</td>
<td>10,042.534</td>
<td>261.202</td>
<td>18,927.514</td>
<td>64,119.238</td>
<td>70.48%</td>
<td>29.52%</td>
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<td>28,866.250</td>
<td>9,341.495</td>
<td>67,636.248</td>
<td>186.598</td>
<td>14,335.372</td>
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<td>29,208.498</td>
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<td>2,470.546</td>
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<td>0.000</td>
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<td>23.56%</td>
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<td>1,336.340</td>
<td>20,857.438</td>
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<td>SILVER Flanders £ groot</td>
<td>SILVER Total LC kg</td>
<td>SILVER Total LC £ groot</td>
<td>GOLD Flanders kg</td>
<td>GOLD Flanders £ groot</td>
<td>GOLD Total LC kg</td>
<td>GOLD Total LC £ groot</td>
<td>Low Countries £ groot</td>
<td>Per Cent silver</td>
<td>Per Cent gold</td>
</tr>
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<td>-------------------</td>
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<td>------------------------</td>
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<td>-------------------</td>
<td>------------------------</td>
<td>----------------------</td>
<td>----------------</td>
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</tr>
<tr>
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<td>27,548.326</td>
<td>474.633</td>
<td>44,464.280</td>
<td>89,229.185</td>
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<td>49.83%</td>
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</table>
Table 3  
Basket of Consumables Price Index for Flanders (Bruges and Ghent)  
In quinquennial means: 1351-55 to 1496-1500

Mean of 1451-75 = 100 = 126.295 d groot Flemish values in d. groot Flemish

<table>
<thead>
<tr>
<th>Year</th>
<th>Basket Consumables Total Value in d groot Flemish</th>
<th>Commodity Group Basket Index</th>
<th>Grains Group Index 1451-75= 100</th>
<th>Dairy Group Index 1451-75= 100</th>
<th>Textiles Group Index 1451-75= 100</th>
<th>Grains as per cent of total basket by value</th>
<th>Dairy as per cent of total basket by value</th>
<th>Textiles as per cent of total basket by value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1351-55</td>
<td>76.593</td>
<td>60.646</td>
<td>68.466</td>
<td>63.048</td>
<td>38.968</td>
<td>50.37%</td>
<td>36.77%</td>
<td>12.86%</td>
</tr>
<tr>
<td>1356-60</td>
<td>110.558</td>
<td>87.540</td>
<td>102.100</td>
<td>93.151</td>
<td>45.160</td>
<td>52.04%</td>
<td>37.63%</td>
<td>10.32%</td>
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<td>119.255</td>
<td>94.425</td>
<td>108.636</td>
<td>98.228</td>
<td>56.023</td>
<td>51.34%</td>
<td>36.79%</td>
<td>11.87%</td>
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<td>135.641</td>
<td>107.401</td>
<td>126.994</td>
<td>101.825</td>
<td>73.568</td>
<td>52.76%</td>
<td>33.53%</td>
<td>13.71%</td>
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<tr>
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<td>145.519</td>
<td>115.222</td>
<td>121.901</td>
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<td>47.21%</td>
<td>34.49%</td>
<td>18.31%</td>
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<td>105.597</td>
<td>121.366</td>
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<td>38.44%</td>
<td>19.36%</td>
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<td>119.193</td>
<td>110.799</td>
<td>135.714</td>
<td>108.711</td>
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<td>40.27%</td>
<td>18.25%</td>
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<td>132.745</td>
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<td>47.49%</td>
<td>34.78%</td>
<td>17.73%</td>
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<td>88.510</td>
<td>82.803</td>
<td>99.235</td>
<td>82.282</td>
<td>41.74%</td>
<td>39.65%</td>
<td>18.60%</td>
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<td>89.796</td>
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<td>92.132</td>
<td>79.118</td>
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<td>36.29%</td>
<td>17.63%</td>
</tr>
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<td>88.531</td>
<td>95.190</td>
<td>80.675</td>
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<td>32.23%</td>
<td>19.79%</td>
</tr>
<tr>
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<td>Basket Consumables Total Value in d</td>
<td>Commodity Basket Index 1451-75(=100)</td>
<td>Grains Group Index 1451-75(=100)</td>
<td>Dairy Group Index 1451-75(=100)</td>
<td>Textiles Group Index 1451-75(=100)</td>
<td>Grains as per cent of total basket by value</td>
<td>Dairy as per cent of total basket by value</td>
<td>Textiles as per cent of total basket by value</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------</td>
<td>----------------------------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1406-10</td>
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<td>49.04%</td>
<td>30.59%</td>
<td>20.37%</td>
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<td>104.114 gr Flemish</td>
<td>43.84%</td>
<td>34.29%</td>
<td>21.86%</td>
</tr>
<tr>
<td>1416-20</td>
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<td>107.381 gr Flemish</td>
<td>110.755 gr Flemish</td>
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<td>34.48%</td>
<td>19.50%</td>
</tr>
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<td>112.756 gr Flemish</td>
<td>114.392 gr Flemish</td>
<td>106.998 gr Flemish</td>
<td>44.85%</td>
<td>36.06%</td>
<td>19.09%</td>
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<tr>
<td>1426-30</td>
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<td>117.773 gr Flemish</td>
<td>122.830 gr Flemish</td>
<td>114.511 gr Flemish</td>
<td>112.262 gr Flemish</td>
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<td>34.39%</td>
<td>19.08%</td>
</tr>
<tr>
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<td>123.512 gr Flemish</td>
<td>132.917 gr Flemish</td>
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<td>48.02%</td>
<td>32.97%</td>
<td>19.02%</td>
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<td>43.72%</td>
<td>35.23%</td>
<td>21.05%</td>
</tr>
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<td>35.39%</td>
<td>20.92%</td>
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<td>17.88%</td>
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<td>36.18%</td>
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<td>37.08%</td>
<td>19.76%</td>
</tr>
<tr>
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<td>36.14%</td>
<td>19.05%</td>
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</tr>
<tr>
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<td>Grains Group</td>
<td>Index 1451-75</td>
<td>Dairy Group</td>
<td>Index 1451-75</td>
<td>Textiles Group</td>
</tr>
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<td>--------</td>
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<td>---------------</td>
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<td>29.75%</td>
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<tr>
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<td>190.773</td>
<td>187.098</td>
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<td>35.86%</td>
<td>18.00%</td>
</tr>
<tr>
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<td>30.54%</td>
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**BASKET OF CONSUMABLES COMMODITY PRICE INDEXES**

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<tr>
<td>Wheat</td>
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<tr>
<td>Rye</td>
<td>36.369</td>
<td>l.</td>
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<td>5.59%</td>
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<tr>
<td>Barley</td>
<td>18.184</td>
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<td>2.867</td>
<td>2.27%</td>
</tr>
<tr>
<td>Peas</td>
<td>24.243</td>
<td>l.</td>
<td>7.341</td>
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<td>Amount</td>
<td>Unit</td>
<td>Value in</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------</td>
<td>--------</td>
<td>------</td>
<td>----------</td>
</tr>
<tr>
<td>Farinaceous</td>
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<td></td>
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</tr>
<tr>
<td>Drink</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>barley (or malt)</td>
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<td>25.276</td>
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<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>126.295</td>
<td></td>
<td>100.00%</td>
</tr>
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</table>
Table 4  
Flemish Silver Coinage Changes and Price Changes, 1380-1482

Relationship between coinage debasement and the money of account value of a kilogram of pure silver, in coin

\[ \Delta T \text{ (traite)} = \left[ \frac{1}{1 - x} \right] - 1 \quad x = \text{percentage change in silver contents of 1d groot} \]

**Flemish Price Index:** Mean of 1451-1475 = 100 = 126.295 d groot Flemish

<table>
<thead>
<tr>
<th>Date of coinage change</th>
<th>Year</th>
<th>Silver grams in 1d groot</th>
<th>% change in silver</th>
<th>Traite of Silver Marc AR in shillings groot</th>
<th>Value of 1 kg Pure Silver in £ groot</th>
<th>% change in value</th>
<th>Value of Flemish Basket in d groot</th>
<th>Flemish Price Index from 1350</th>
<th>% change</th>
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<td>Value of Flemish Basket in d groot</td>
<td>Flemish Price Index from 1350</td>
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<td>0.8144</td>
<td>0.00%</td>
<td>24.000</td>
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<td>0.00%</td>
<td>146.317</td>
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<td>24.000</td>
<td>5.116</td>
<td>0.00%</td>
<td>136.240</td>
<td>107.875</td>
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<tr>
<td>1443</td>
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<td>24.000</td>
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<td>0.00%</td>
<td>234.974</td>
<td>186.052</td>
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<tr>
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<td>178.214</td>
<td>141.090</td>
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<tr>
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<td>24.000</td>
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<td>0.00%</td>
<td>126.467</td>
<td>100.136</td>
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<td>94.850</td>
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<td>24.000</td>
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<td>160.241</td>
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<tr>
<td>Date of coinage change</td>
<td>Year</td>
<td>Silver grams in 1d groot</td>
<td>% change in silver</td>
<td>Traite of Silver Marc AR in shillings groot</td>
<td>Value of 1 kg Pure Silver in £ groot</td>
<td>% change in value</td>
<td>Value of Flemish Basket in d groot</td>
<td>Flemish Price Index from 1350</td>
<td>% change</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------</td>
<td>--------------------------</td>
<td>--------------------</td>
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<td>-----------------------------------</td>
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<td>5.116</td>
<td>121.500</td>
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<td>5.116</td>
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<td>12.06%</td>
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<tr>
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<td>5.116</td>
<td>133.161</td>
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<td></td>
</tr>
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<td>5.926</td>
<td>117.793</td>
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<td>0.7031</td>
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<td>5.926</td>
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<td>32.750</td>
<td>6.158</td>
<td>129.006</td>
<td>102.146</td>
<td>6.48%</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>37.429</td>
<td>6.158</td>
<td>121.436</td>
<td>96.153</td>
<td>-5.87%</td>
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<td>0.6766</td>
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<td>121.243</td>
<td>96.000</td>
<td>-0.16%</td>
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<td>1470</td>
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<td>6.158</td>
<td>116.661</td>
<td>92.372</td>
<td>-3.78%</td>
<td></td>
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<td>37.429</td>
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<td>125.794</td>
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<td>120.760</td>
<td>95.617</td>
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<td>82.957</td>
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<td>136.661</td>
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<td>1474-12-10</td>
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<td>6.981</td>
<td>118.337</td>
<td>93.699</td>
<td>-13.41%</td>
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<td>0.5968</td>
<td>32.750</td>
<td>6.981</td>
<td>116.659</td>
<td>92.370</td>
<td>-1.42%</td>
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<tr>
<td>1477</td>
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<td>7.979</td>
<td>124.747</td>
<td>98.775</td>
<td>6.93%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1478</td>
<td>0.5222</td>
<td>37.429</td>
<td>7.979</td>
<td>164.072</td>
<td>129.911</td>
<td>31.52%</td>
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</tr>
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<td>0.5222</td>
<td>37.429</td>
<td>7.979</td>
<td>188.593</td>
<td>149.327</td>
<td>14.95%</td>
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<td></td>
</tr>
<tr>
<td>1480</td>
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<td>7.979</td>
<td>146.097</td>
<td>115.679</td>
<td>-22.53%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date of coinage change</td>
<td>Year</td>
<td>Silver grams in 1d groot</td>
<td>% change in silver</td>
<td>Traite of Silver Marc AR in shillings groot</td>
<td>Value of 1 kg Pure Silver in £ groot</td>
<td>% change in value</td>
<td>Value of Flemish Basket in d groot</td>
<td>Flemish Price Index from 1350</td>
<td>% change</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------</td>
<td>-------------------------</td>
<td>-------------------</td>
<td>---------------------------------------------</td>
<td>-------------------------------------</td>
<td>------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>1481</td>
<td>1481</td>
<td>0.5222</td>
<td>0.00%</td>
<td>37.429</td>
<td>7.979</td>
<td>0.00%</td>
<td>174.173</td>
<td>137.910</td>
<td>19.22%</td>
</tr>
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<td>1482</td>
<td>0.4663</td>
<td>-10.71%</td>
<td>41.920</td>
<td>8.936</td>
<td>12.00%</td>
<td>244.926</td>
<td>193.932</td>
<td>40.62%</td>
</tr>
</tbody>
</table>
Table 5. Flemish Coinage Debasement: The Flemish Mint Ordinances of June 1418 and November 1428

<table>
<thead>
<tr>
<th>Double Groot (Gros)</th>
<th>June 1418</th>
<th>November 1428</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value in money-of-account</td>
<td>2d <em>groot</em> [or <em>gros</em> Flemish]</td>
<td>2d <em>groot</em> [or <em>gros</em> Flemish]</td>
</tr>
<tr>
<td>Fineness</td>
<td>6 <em>deniers</em> AR = 50.0% fine</td>
<td>5 <em>deniers</em> 8 <em>grains</em> AR = 44.44% fine</td>
</tr>
<tr>
<td>in <em>argent-le-roy</em> (AR)</td>
<td>= 47.92% pure</td>
<td>= 42.59% pure</td>
</tr>
<tr>
<td>Weight (Taille)</td>
<td>68 cut to the marc</td>
<td>68.5 cut to the marc</td>
</tr>
<tr>
<td>in <em>argent-le-roy</em> (AR)</td>
<td>3.599 grams</td>
<td>3.573 grams</td>
</tr>
<tr>
<td>Fine silver content in g.</td>
<td>1.800 g.</td>
<td>1.588 g.</td>
</tr>
<tr>
<td>Pure silver content in g.</td>
<td>1.725 g.</td>
<td>1.522 g.</td>
</tr>
<tr>
<td>Traite per marc</td>
<td>68.0 x 2d. = 136d</td>
<td>68.5 x 2d. = 137d</td>
</tr>
<tr>
<td>in <em>argent-le-roy</em></td>
<td>= 22s 8d</td>
<td>= 25s 8d 6 mites</td>
</tr>
<tr>
<td>Division of the Traite Value per marc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value in <em>groot</em> Flemish</td>
<td>22s 8d</td>
<td>25s 8d 6m</td>
</tr>
<tr>
<td>Number of coins</td>
<td>136</td>
<td>154 1/8</td>
</tr>
<tr>
<td>Percentage of the traite</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

| Brassage | 1s 2d | 7 | 5.15% | 1s 2d 6m | 7 1/8 | 4.62% |
| Seigniorage | 4d | 2 | 1.47% | 6d 0m | 3 | 1.95% |
| Total Mint Charges (of the above) | 1s 6d | 9 | 6.62% | 1s 8d 6m | 10 1/8 | 6.57% |
| Mint Price: for merchants’ bullion | 21s 2d | 127 | 93.38% | 24s 0d 0m | 144 | 93.43% |

---

**Notes:**

- **Values in money-of-account:**
  1 penny or 1d *groot* = 24 *mites* = 12d or 1s *parisis*  
  12d *groot* = 1s (sou, sol, schelling); 1 livre or pond (£1 pound) = 20 *shillings* = 240d (pence)

- **Finness:**
  reckoned out of 12 *deniers* *argent-le-roy*, with 24 *grains* per *denier*: 23/24 or 95.833% pure

- **Weight:**
  reckoned in terms of the *taille* or number cut from the *marc de Troyes* of 8 *onces*: 244.753 g.

- **Traite per marc:**
  official value of coinage struck per *marc argent le roy*: $T = \text{taille} \times \frac{\text{face value}}{\text{fineness}}$
  fineness: (Fineness/12 deniers Argent-le-Roy)
Table 6. The Flemish Silver Coinage Debasement of Nov 1428 and its Aftermath

<table>
<thead>
<tr>
<th>Year</th>
<th>Mint Outputs in Marc argent le roy *</th>
<th>Mint Outputs Kilograms of pure silver</th>
<th>Percentage Change</th>
<th>Output in £ groot Flemish</th>
<th>Percentage Change</th>
<th>Seigniorage in £ groot Flemish</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1428</td>
<td>4,598.700</td>
<td>1,078.647</td>
<td></td>
<td>5,267.280</td>
<td></td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>1429</td>
<td>72,460.700</td>
<td>16,996.010</td>
<td>1475.68%</td>
<td>93,021.380</td>
<td>1666.02%</td>
<td>2,035</td>
<td>1554.47%</td>
</tr>
<tr>
<td>1430</td>
<td>34,992.400</td>
<td>8,207.638</td>
<td>-51.71%</td>
<td>45,065.400</td>
<td>-51.55%</td>
<td>1,316</td>
<td>-35.33%</td>
</tr>
<tr>
<td>1431</td>
<td>5,595.200</td>
<td>1,312.381</td>
<td>-84.01%</td>
<td>7,240.240</td>
<td>-83.93%</td>
<td>283</td>
<td>-78.50%</td>
</tr>
<tr>
<td>1432</td>
<td>104.300</td>
<td>24.464</td>
<td>-98.14%</td>
<td>135.140</td>
<td>-98.13%</td>
<td>55</td>
<td>-80.57%</td>
</tr>
</tbody>
</table>

* Marc argent-le-roy = 244.7529 grams commercially fine silver, at 23/24 or 95.833% purity, with 4.167% copper.
Sources for the Tables and Figures:

A. Mint Accounts and monetary ordinances: 1350 - 1500: Archival sources

I: County of FLANDERS

a) Ghent:

Algemeen Rijksarchief (België), Rolrekeningen (Comptes en Rouleaux), nos. 580, 788, 790 - 831, 2138-39, 2877-880.


Algemeen Rijksarchief (België), Rekenkamer (Chambre de Comptes), registers nos. 18,195 - 200

Archives Départementales du Nord (at Lille), Chambre de Comptes: Série B. 612/7751, 7796, 7822, 7834, 20932; Série B. 613/8736, 8806, 8862, 8964, 18366-70; Série B. 621/18968; B. 1606; B. 6121.

b) Bruges:

Algemeen Rijksarchief (België), Rolrekeningen (Comptes en Rouleaux), nos. 771-787, 794.

Algemeen Rijksarchief (België), Rekenkamer (Chambre de Comptes), registers nos. 18, 103 - 18,123.

Archives Départementales du Nord (at Lille), Chambre de Comptes: Série B. 612/775, B. 644/15, B. 19,960.

c) Mechelen (Malines):

Algemeen Rijksarchief (België), Rolrekeningen (Comptes en Rouleaux), nos. 803, 2135-41, 2143, 2145-46.

Algemeen Rijksarchief (België), Acquits de Lille, Liasses nos. 1512: 2, 3, 5.

Algemeen Rijksarchief (België), Rekenkamer (Chambre de Comptes), register no. 18,242: 1 - 3.

d) Valkenberg (Fauquemont):

Algemeen Rijksarchief (België), Rolrekeningen (Comptes en Rouleaux), no. 2586 (1396-98 only: for the Count of Flanders)
II: Duchy of BRABANT

a) Brussels
Algemeen Rijksarchief (België), Rekenkamer (Chambre de Comptes), register no. 17,985 - 989

b) Leuven (Louvain)
Algemeen Rijksarchief (België), Rolrekeningen (Comptes en Rouleaux), nos. 2588 - 2592.
Algemeen Rijksarchief (België), Rekenkamer (Chambre de Comptes), register nos. 18,064 - 072

c) Vilvoorde
Algemeen Rijksarchief (België), Rolrekeningen (Comptes en Rouleaux), nos. 2590, 2592
Algemeen Rijksarchief (België), Rekenkamer (Chambre de Comptes), register no. 18,094; no. 48,967

d) Antwerp
Algemeen Rijksarchief (België), Rolrekeningen (Comptes en Rouleaux), no. 2504.
Algemeen Rijksarchief (België), Rekenkamer (Chambre de Comptes), register nos. 17,880 - 882

e) Maastricht
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B. Mint Accounts and Monetary Ordinances: published documents in:


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C. Prices and the Flemish Price Index (Table 3.

Stadsarchief Gent, Stadsrekeningen, 1350-51 to 1499-1500: cloth prices from the Ghent town accounts.


**D. Prices and the English Price Index** (graphs)

Figure 1:

The outputs of gold and silver coinages (combined), in current moneys-of-account, in England and the Low Countries, from 1291-95 to 1516-20, in five-year means.

England: in current pounds sterling

The Low Countries: in current Flemish pounds groot
Figure 2:

The outputs of gold and silver coinages (combined) for England and the Low Countries, in five-year means, from 1346-50 to 1496-1550: expressed in constant pounds sterling of England, as a measure of real outputs.

Values of a kilogram of English fine gold and of English fine silver: unchanged from 1351 to 1411.
Figure 3:

The values of the gold and silver coinage outputs of Flanders and of the other Burgundian Low Countries, in five-year means, from 1336-40 to 1496-1500: in current pounds groot Flemish

Other Burgundian Low Countries: from 1420 only
Figure 4:

The values of the gold and silver coinage outputs of Flanders and the other Burgundian Low Countries, compared with the Flemish Composite Price Index, in five-year means, from 1346-50 to 1496-1500.

Flemish composite price index: 100 = mean values of 1451-75.
Figure 5:

Flemish commodity prices and the Flemish composite price index, from 1346-50 to 1496-1500, in five year-means

100 = means values of 1451-75

Farinaceous price index: composite of wheat, rye, oats, barley, and malt prices

Dairy products index: composite of butter and cheese prices

Industrial: composite of wool-based textile prices