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Estimating Medieval Market Integration: Evidence from Exchange Rates

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Estimating Medieval Market Integration: Evidence from Exchange Rates*

Contents

Abstract

In this paper we present a new method for estimating market integration under a commodity money system such as that which existed in Europe until the demise of the gold standard. The approach is based on the analysis of deviations between exchange rates and parity, which under conditions of a perfectly functioning and fully integrated market should not exceed the bullion points. Consequently the time needed for adjustment, following a violation of the bullion points, can be used as an indicator of market imperfections and as a measure of integration. We apply this approach to trade between late medieval Flanders, Lübeck and Prussia, our results showing that Flanders-Lübeck constituted a much better-integrated market than Flanders-Prussia. Moreover, the results indicate that the degree of market integration increased between the early fourteenth and the middle of the fifteenth century.

JEL Classification: F15, F31, N13, N23

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1. Introduction

One of the most famous passages in "The Wealth of Nations" concerns the causal links between productivity, the divison of labour and the extent of the market, and economic growth based on these linkages has justly been called Smithian growth (Smith, 1776/1937, book 1, ch. 1-3; cf. e.g. Mokyr, 1990, p. 5). Modern theories of growth rarely mention this factor. Instead, they stress investment, innovations, and the formation of human capital due to causes such as for example education, rather than to specialisation which takes place because individuals have more chances to engage in exchange. However, while both the performance of the pre-industrial economy and the causes underlying growth and stagnation are still under dispute, the claim that before industrialisation Smithian growth was more important than growth due to capital formation or technological progress has some plausibility. After all, investment levels in industry and agriculture were usually low, and the rate of innovations was, at least compared to modern conditions, unimpressive (Roehl, 1983; Kellenbenz, 1983). If certain periods of pre-industrial economic history were at all characterised by per-capita growth, there is thus a strong likelyhood that a growth of the market, an increasing division of labour and productivity gains due to specialisation played an important role. Measuring market integration is of corresponding importance.

The classic approach to this subject is based on the law of one price, that is, on the notion that in one market there is one price for any one good or type of service. Arbitrage links the segments of the market, while transport and transaction costs separate them (Kindleberger, 1989, pp. 67 ff.). If one wants to determine how large a market was, one consequently needs to compare prices; if one finds that they were identical or moved in step, there is a strong likelihood that the geographic area under investigation formed one market. Braudel and Spooner (1967, p. 468) followed this approach in their analysis of the European grain market of the fifteenth to seventeenth

centuries, finding that fluctuating grain yields in Eastern Europe had repercussions over practically the whole continent, which constituted, therefore, a fairly well-integrated grain market. However, Braudel's and Spooner's findings, impressive as they are, also show the limits of this method: One does not only need a huge amount of data, but the results apply to specific commodities only. Grain is an obvious choice, grain prices being better documented than those of any other good (cf. Persson's analysis, 1999), but how about the markets for e.g. cloth, copper, iron, labour or capital? Analysing the market for one good does not tell us anything about how others fared. Alternative approaches to estimating market integration, such as that based on the city-rank-size rule which de Vries (1981) employed, avoid this shortcoming but suffer from the lack of a well-understood theoretical basis and from the low precision of the results which they yield. They have therefore never been accepted by mainstream research. What is needed is a method which makes economic use of the few available data and whose results are both non-commodity-specific and precise.

In this paper, we present such a method. We base our analysis on exchange rates between medieval currencies and on the bullion-content of the coins which changed hands, that is, on data which are relatively well-documented from a very early period of time onward (cf. Spufford, 1986). Our approach is simple enough. In a world with commodity money and perfect monetary integration, exchange rates between currencies are pinned down by the bullion content of coins, that is, in the case we are analysing below by their content of silver. In the presence of transaction and transport costs, the exchange rate can fluctuate randomly around silver parity up to these costs. That is, just as the "gold points" of the gold standard period, transaction and transport costs define "silver points" above and below parity at which arbitrage starts to pay off (Officer, 1996; Sargent and Velde, 2002; Canjels, Prakash-Canjels and Taylor, 2004). Because we can observe both the silver content of coins and the nominal exchange rates at which

they were traded, we can estimate the silver points on the one hand, and the time it took to adjust following their violation on the other.[1] To assess the degree of market integration between regions, we use both the estimated silver points and the time it took for adjustment: the farther apart the silver points were, and the longer adjustment took, the less well-integrated was the market.

Our approach has a number of advantages over the older methods discussed above. The results which it yields cannot only be achieved on the basis of relatively few data – a circumstance of particular importance in the context of medieval economic history –, but are also precise and, most importantly, not commodity-specific. After all, the demand for a currency mirrored the demand for all the diverse commodities which could be bought with the money. To be sure, currency speculation or political payments may have been an influence (cf. de Roover, 1948, p. 63; Sprandel, 1975, pp. 46 f.), but in our context such factors can be safely neglected. We are primarily interested in the time it took for the exchange rate to adjust following some external shock, rather than in the question of what had caused the shock. We also ignore the supply of the currencies which we are discussing. For one thing, the relevant data are lacking: mint output figures are incomplete and cannot be used as statistical proxies for the supply of money anyway, as the mints were just adding to the existing stock of coins (Munro, 1979, p. 105). What is more, for reasons to be discussed below, we are assuming in our model that what was shipped between localities was not coins, but silver. However, data about the stocks of silver in a given territory of currency area and at a given point in time don't exist, either.

The period we choose for our examination is the fourteenth and fifteenth centuries. Studied under the aspect of economic growth, this period is particularly interesting. On the one hand, the view that during the late Middle Ages Europe as a whole experienced

[1] A similar method is being applied by Canjels et al. (2004) with regard to the late nineteenth- and early

an economic depression is well established. Fourty years ago Lopez and Miskimin (1962) pointed to the retardation or reversal of the growth of many towns, to the fall in the production of cloth in several places and to the decline in trade mirrored in export registers from several Mediterranean and Northern European ports, claiming that these were symptoms of a Europe-wide slump. Miskimin (1964) also detected a fall in the output of the English mints in the late fourteenth and early fifteenth century, which he did not only regard as an indicator of secular contraction, but also as a factor which, if not directly causing the economic problems Europe experienced at that time, at least lengthened and deepened them. Authors such as Day (1980/87; 1981/87) and Munro (e.g. 1983) followed him in this interpretation. Representatives of the "real school", such as Postan (1959), rejected the claim that monetary contraction had a serious impact on the European economy, but were prepared to accept that a depression did indeed exist in the late Middle Ages.[2]

On the other hand, this hypothesis has not gone unchallenged. Textbooks have long regarded the late fourteenth and fifteenth centuries as the golden age of the urban economy (Henning, 1991, pp. 442 ff.). Agricultural prices declined more steeply than those of industrial goods, so that the real income of urban producers grew. As for commerce, Epstein (1994) pointed to the proliferation of regional fairs in the late fourteenth and fifteenth century, which he interpreted as a transaction costs saving device and as evidence of a continuing advance in trade. Finally, counter-examples to the decline in mint outputs found by Miskimin and the other authors quoted above are increasingly discovered (cf. Sussman, 1998, pp. 134 ff.; Volckart, 1996, pp. 60 f.). In view of these findings, the issue of whether the late medieval economy was characterised by an overall depression and a decline in output per head cannot be

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twentieth-century gold standard period.

[2] The debate between "monetarists" and adherents of the "real school" was comprehensively reviewed by Munro (1983, pp. 97 ff.) and, more briefly but more recently, Sussman (1998, pp. 126 f.).

regarded as closed. Estimating the extent and development of market integration helps us to determine whether there was at least some scope for Smithian growth, and if so, how large it was and how it changed over time.

As for the region, we chose the area dominated by the Hanse; specifically, we study monetary integration between Flanders in the west, Lübeck in the centre, and Prussia in the east. The main reason why we chose this region is that here it is relatively easy to collect the data we need. Since the middle of the thirteenth century, the monetary systems of most of Western Europe were based both on both silver and gold, whereas North-eastern Europe continued to be dominated by silver alone (Spufford, 1991, pp. 282 f.). To be sure, gold coins were issued in Flanders (from 1335) as well as in Lübeck (from 1341) and Prussia (between 1396 and 1425) (Spufford, 1991, p. 278; Dittmer, 1860; Volckart, 1996), but they played a relatively small role in Hanseatic trade. It is in principle, of course, possible to examine exchange rates between gold and silver in much the same way as those which developed between currencies based on only one kind of precious metal, but in order to do so, a large amount of additional data needs to be taken into account.[3] In a bimetallic system, determining deviations from parity requires considering changes in the relative prices of silver and gold. The relevant data are not only difficult to come by, but also complicated to interpret, due to the frequency of political interventions into the money market where the exchange of gold for silver was concerned. Most political authorities who issued mixed currencies tried to manipulate the gold-silver-ratio by fixing prices for these metals or exchange rates for coins made of them, depending on which metal they wanted to attract to their mint (Munro, 1972, pp. 29 f.). Where only one kind of specie was used, we can neglect its price as expressed in the other kind of precious metal. Also, political manipulations of exchange rates were much rarer. An additional advantage of examining the Hanseatic

[3] For the problems involved in this approach see Miskimin (1985/89).

area is that it linked a highly developed region, that is Flanders, where Bruges was the most important entrepôt of northern Europe, with the Baltic, which was a rather backward zone (cf. Stromer, 1976). This makes it likely that our findings are more representative for conditions in Europe as a whole than if we had based our analysis on data from well-developed regions such as the Netherlands or Italy alone.

The remainder of the paper is organised as follows: in section 2 we provide some background information about our data and discuss the problems posed by their analysis. Subsequently, in section 3, we introduce our approach to measure monetary integration between these three regions. Section 4 contains the empirical results and our interpretations, while section 5 concludes.

2. Medieval Exchange Rates and Coinage: Data from Flanders, Lübeck and Prussia

2.1. Exchange rates

Below, we discuss three currencies: the Flemish Pound Grote and the Marks of Lübeck and Prussia. The Pound Grote was issued by the counts of Flanders and later by the dukes of Burgundy (Spufford, 1970; Munro, 1972). The Mark of Lübeck was the currency of the Wendish Monetary Union, which apart from Lübeck comprised the cities of Hamburg, Lüneburg, Wismar and briefly some other, less important towns (Jesse, 1928; Stefke, 1995). Late medieval Prussia was governed by the Teutonic Order. Unlike many other feudal authorities who sold or pawned their minting rights to vassals or towns, the Order kept its currency, the Mark of Prussia, under close control (Volckart, 1996). As indicated above, we base our analysis on two types of data: on the exchange rates between these currencies on the one hand, and on the silver content of the coins issued by the authorities mentioned above on the other. Below, we first discuss the exchange rates, the silver content being the subject of the subsequent section.

As a rule, the quality of medieval data leaves much to be desired, and the exchange rates of our currencies, though being better preserved than most other data from this period and region, are no exception. Thus, while Canjels et al. (2004), who are studying the gold-based currencies of the late nineteenth and early twentieth centuries, are able to utilise daily exchange rate data and to construct uninterrupted time series, we need to rely on data which are unevenly distributed over time, some decades being covered densely, while for others data are scarce or entirely lacking. The following table shows this, giving decennial values.

Table 1: The distribution of exchange rate quotations over time

	£ Grote – Mark of Lübeck	£ Grote – Mark of Prussia
1330-1339	4	-
1340-1349	37	1
1350-1359	19	-
1360-1369	16	5
1370-1379	21	-
1380-1389	11	7
1390-1399	6	6
1400-1409	131	30
1410-1419	71	47
1420-1429	11	34
1430-1439	12	28
1440-1449	4	13
1450-1459	1	6
1460-1469	-	1
1470-1479	8	1
1480-1489	1	-
Total:	353	179

However, restricting our attention to periods where data are plentiful – that is, for Flanders-Lübeck to 1340 to 1440, and for Flanders-Prussia to 1380 to 1450 – eliminates much of the problem. For these periods, so many data exist that few interpolations are needed.

A further problem is presented by the fact that there are several different types of exchange rate quotations which at least ideally should not be confused (cf. Spufford, 1986, pp. l ff.). The most basic kind refers to manual exchange, that is, to the

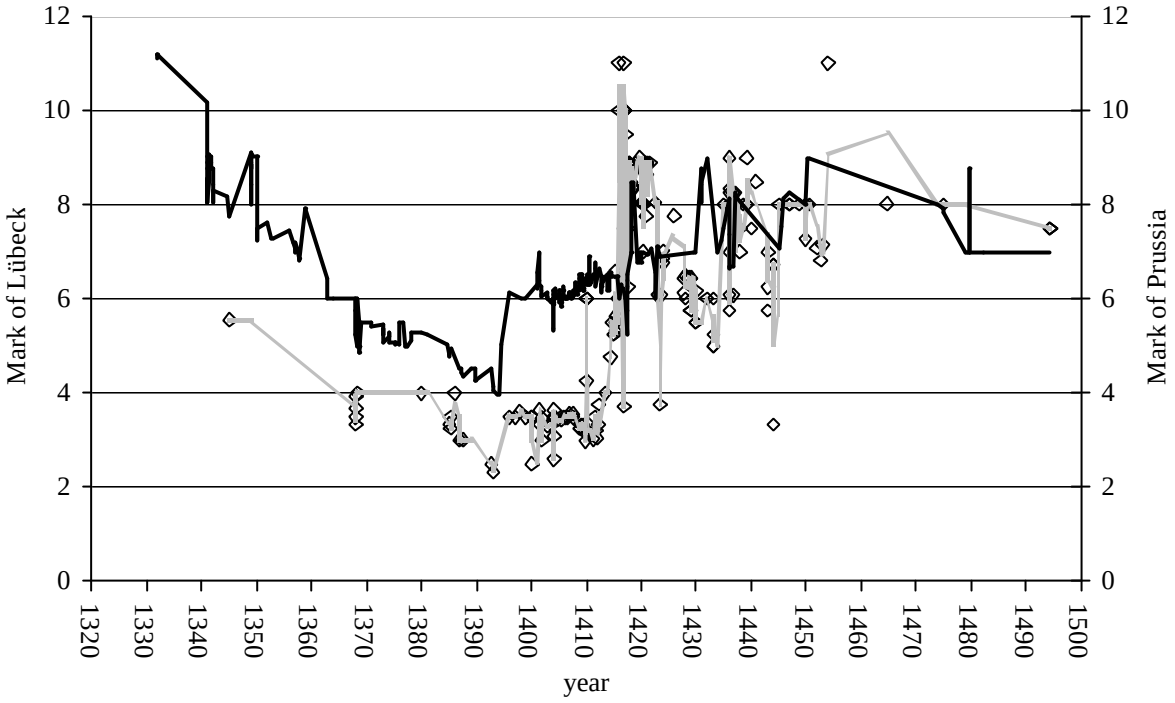
simultaneous and on the spot exchange of coins of one currency for that of another. A more sophisticated kind of exchange made use of bills of exchange, which developed during the high Middle Ages. A large number of quotations are found in the account books of merchants or political authorities. In many cases, the authors simply translated a sum in one currency into another for their own convenience, without giving evidence of how they arrived at the rate. Furthermore, there are quotations in commercial letters and other papers where no hint is given about how the exchange rate developed, either. And finally, as mentioned above, there are official exchange rates which were determined or imposed by political authorities, for example in order to facilitate the payment of dues or to attract one or the other precious metal to their mint.

It is under dispute which kind of exchange was most important in international monetary transfers. The traditional assumption is that Hanseatic merchants made little use of bills of exchange and were hostile to credit in general (Dollinger, 1981, p. 269 ff.). This view has been challenged by Jenks (1982), and our sources show, in fact, that in the early decades of the fifteenth century bills were employed quite frequently in monetary transfers at least between Bruges and Lübeck. Hildebrand Veckinghusen, for example, a merchant from Reval who spent many years in Lübeck and Flanders and who left extensive account books, regularly used the tratte and even the fully developed bill of exchange that involved four parties (cf. Stieda, 1887a; 1894; 1921; Lesnikov, 1973).

In this context two points should be noted. On the one hand, exchange rates found in bills may contain a hidden interest rate; hence, there may be a systematic difference between them and the rates paid in manual exchange (cf. de Roover, 1968, pp. 32 ff.). On the other hand, it has sometimes been claimed that already by the fourteenth and fifteenth centuries, bills and other credit instruments constituted an important part of the

money supply (Henning, 1981). If this was the case, their bare existence would have influenced rates of exchange. Still, as long as bills were not freely negotiable, they were no fully-fledged substitutes for hard money. The question of how far they influenced rates of exchange therefore hinges on when negotiability became common. Despite some early instances (cf. Munro, 1991), on the whole this was a development of the sixteenth and early seventeenth centuries. There is no evidence that the endorsement of bills was practised in any Hanseatic town of the fourteenth or fifteenth century. Even in Flanders, credit instruments made a negligible contribution to monetary circulation (Blockmans, 1990, p. 26), the Middle Ages being predominantly an age of hard money (Spufford, 1986, p. xxxi; Day, 1980/87, p. 2). Hence, most exchange rate quotations found in the sources, even those mentioned in account books and commercial letters, ultimately reflect rates which developed in manual exchange. It therefore does not come as a surprise that we have not been able to discover systematic differences between the various types of rates, which we are consequently using indiscriminately. Still, we are well aware of the possibility that if we had more observations, at least the rates quoted in bills of exchange might deviate from the others. In the appendix, where we present the data in full, we therefore indicate the type of quotation, using the categories developed by Spufford (1986, pp. l ff.) in his “Handbook of Medieval Exchange”. The following graph shows how the nominal exchange rate of the Pound Grote in Mark of Lübeck and Mark of Prussia developed in the period of time we are examining.

Graph 1: Nominal exchange rate of the Pound Grote and the Marks of Lübeck and Prussia, c. 1310-1490



Black: Mark of Lübeck; shaded: Mark of Prussia (2-year moving averages)

2.2. Coinage

Apart from the exchange rates, we base our analysis on the silver equivalents of the Pound Grote and the Marks of Lübeck and Prussia. Here, it is first of all necessary to get rid of a deep-seated misunderstanding, which is due to the fact that units such as the Pound and the Mark never circulated in the form of coins, being used in accounting only. In contrast to what is occasionally assumed even today (Sargent and Velde, 2002, pp. 82 f., 126 f.), such medieval units of accounts were no kind of "imaginary" or "ghost" money whose exchange rates expressed in coins were variable. It was pointed out already by van Werveke (1934/64) and de Roover (1948, pp. 220 f.), and it has since been shown econometrically (Weber, 1996), that medieval units of account were simply multiples of the actually circulating coins, used to make it easier to handle large sums. Thus, the Pound Grote was always and invariably the sum of 20 shillings, and each

shilling was equally invariably the sum of 12 grotes or 288 mites. Grotes and mites were coins, but their relation to the Pound was fixed. Thus, the Pound was no "imaginary" money of account whose exchange rate expressed in coins fluctuated, but simply the term used to express the sum of 240 grotes or 5760 mites. Likewise, the Mark of Lübeck was always the sum of 16 shillings or 192 pennies, just as the Mark of Prussia was always the sum of 24 scots or 720 pennies. In determining the silver equivalents of the Pound Grote and of the Marks of Prussia and Lübeck, we consistently chose the silver content of the largest denominations actually issued by the mints, those being the ones which were most likely employed in long distance trade. Thus, in the Flemish case we used the grote and later the double-grote (patard, stuiver), in the case of the Wendish Union the penny, the witten (a 4-penny-piece), the shilling (a 12-penny-piece) and the double-shilling, and in the case of Prussia the half-scot (a 16-penny-piece) and later the shilling (a 12-penny-piece, just as in Lübeck).

Some further explanations are in order, notably because de Roover (1968, p. 38) was openly sceptical of attempts to link the bullion content of medieval coins with their exchange rate, claiming that monetary ordinances give no idea of the actual state of the currency at a given time. The ordinances are indeed problematic. As a rule, in the Middle Ages moneyers were unable to produce coins exactly to the standard determined there; they were therefore usually granted a so-called remedy, that is, a small deviation from the legal standard for which they would not be punished (Schrötter, 1930, pp. 561 f.). Political authorities used a number of means to make sure that this tolerance was not exceeded. Thus, the Teutonic Order did not only employ assayers, but since 1380 admitted representatives of the Prussian towns – presumably merchants – to the examination of newly minted coins. This was done in conscious imitation of measures taken in the Netherlands (Volckart, 1996, p. 194). The Wendish Union, each of whose members faced incentives to profit from Gresham's Law by producing substandard

coins, employed joint inspectors (Ropp, 1883, p. 209). On the whole we can therefore assume that the money which left the mints corresponded quite closely to the standard set down in the ordinances.[4]

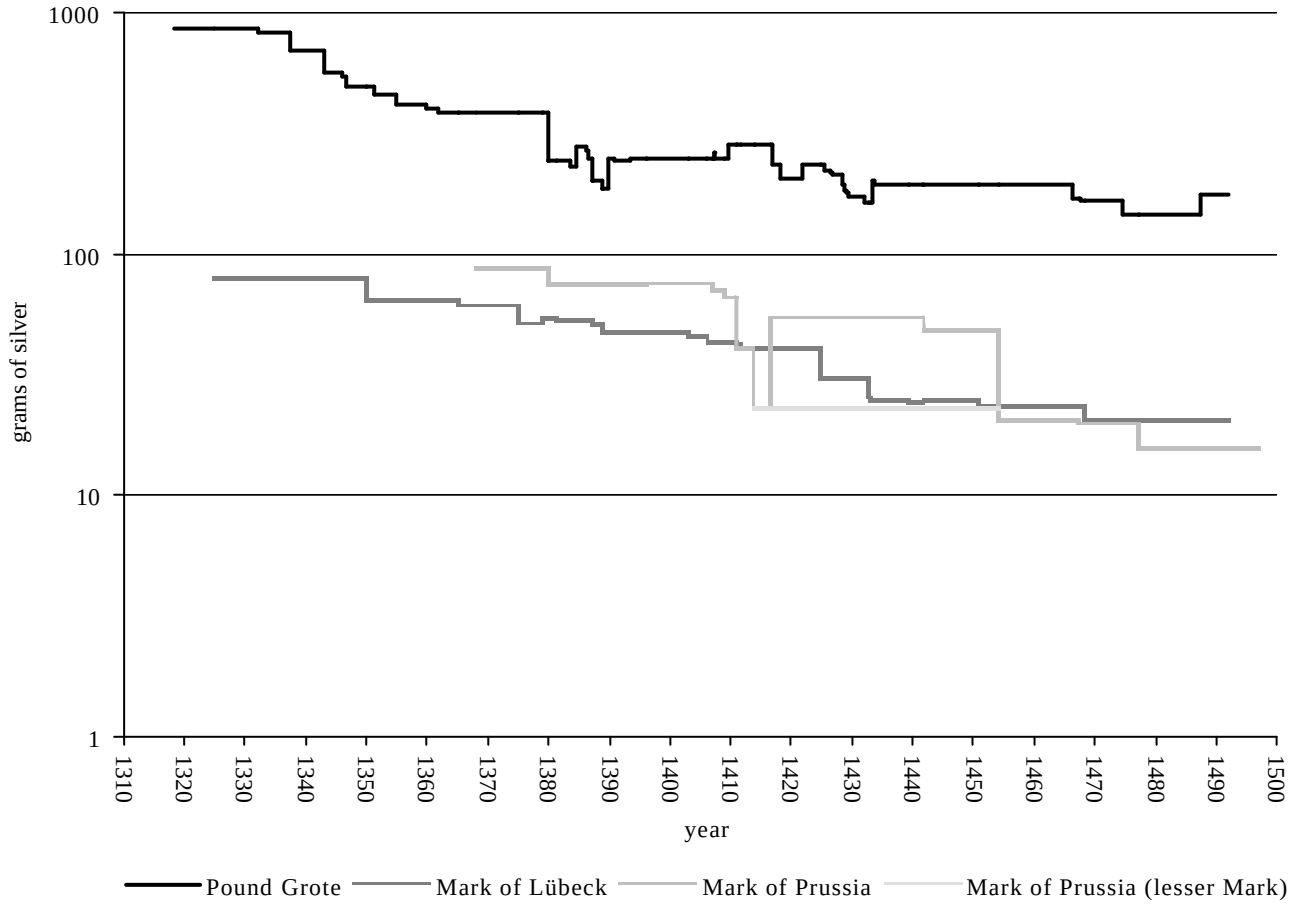
However, over time coins became worn down, loosing some of their weight and precious metal. According to Mayhew (1974, p. 3), per decade pure and simple wear and tear may have accounted for the loss of between 2 and 2.75 % of the metal in circulation. For the coins issued by the Wendish Union during the second half of the fifteenth and in the early sixteenth centuries, North (1990, p. 108) assumed yearly losses of between 0.25 and 0.87 % of their silver content. Still, this problem is not as serious as it seems to be at first glance. Wear and tear may have influenced prices and, by implication, exchange rates in monetary systems based on periodic re-coinages, such as the English system of the high Middle Ages. In Flanders, Prussia and the Wendish Cities, however, new coins were issued more or less continually. Hence, we can assume that the share of defaced coins was relatively small and, more to the point, about equally large in all three currencies which we are examining. In other words: we assume that the effects of wear and tear in Flanders, the Wendish Cities and Prussia cancelled each other out.

Apart from monetary ordinances there are other sources which contain information about the coins' content of specie. Occasionally, contemporary political authorities assayed the money in circulation, and increasingly, medieval coins are being chemically analysed in the context of modern research. Such information is, of course, particularly valuable in cases where monetary ordinances have not been preserved, as for example in Prussia for the years between 1396 and 1416. This is all the more important because the debased coins issued by the Teutonic Order between its defeat at Tannenberg/Grunwald

[4] As for the silver content, the data for Flanders are given in van Werveke (1931/64, p. 244), Munro (1972, p. 211), and F. and W.P. Blockmans (1979, pp. 83, 89). The data for Lübeck are from Jesse (1928, pp. 209 ff.), and those for Prussia from Volckart (1996, p. 435).

in 1410 and the well-documented re-enforcement of the coinage in 1416 dominated in circulation at least until the middle of the fifteenth century, the Prussian administrative apparatus being too cumbersome to withdraw them (Volckart, 1996, p. 91). In this case, an assay taken in 1439 provides the information about the bullion content of the debased pre-re-enforcement money (cf. Ropp, 1878, p. 225). The following graph shows how the silver equivalents of the currencies we are examining developed:

Graph 2: Silver equivalents of the Pound Grote and the Marks of Lübeck and Prussia, c. 1320-1490



The Prussian case gives evidence of another problem, which is posed by changes in the standard of the coinage. After a debasement it was of course in everybody's interest as quickly as possible to take his old coins to the mint in order to exchange them for a larger nominal sum of new ones. Re-enforcements, however, presented the authorities

with the problem of withdrawing the old money, which contained less silver than its new equivalent. This was difficult because in contrast to debasements, people were not interested in taking their old coins to the mint where they would receive not even the silver-equivalent (the costs of re-minting and seigniorage taxes having been deduced), but an even smaller nominal sum. Hence, after a re-enforcement the old coins tended to continue to circulate. Prussia, which between 1416 and 1454 practically had two parallel currencies – the old or "lesser" and the new or "good" mark whose official ratio was 2:1 (Volckart, 1996, pp. 97 f.) – is an extreme case, but we hear of similar problems from Flanders, too. For example, one year after the re-enforcement of the Pound Grote in 1433, merchants were still handling old coins which were valued at a little less than three quarters of their new substitutes (cf. Sattler, 1887, p. 517).

Another factor which should be taken into account is the distance of the exchange transaction to the place of origin of the coins involved. It seems reasonable to assume that abroad, older coins continued to circulate some time after they been replaced by new ones at home. Hence, we need to make a distinction between several factors when we want to determine the delay between the official change in the standard of coinage and the time when the new coins dominated circulation: the direction of the change of standard (debasement or re-enforcement), the administrative abilities of the authority that issued the currency (relatively good in Flanders and in the Wendish cities, bad in Prussia), and whether the coins were exchanged at the place where they had been minted or abroad. In calculating the exchange rate which would have corresponded to silver parity, we consequently need to take a time-lag into account. Here, we make the following assumptions:

Table 2: Time-lags between changes in the standard of a currency and the use of the new coins

	Debasement		Re-enforcement	
Place of exchange:	Home	Abroad	Home	Abroad
Pound Grote	0 years	1 year	1 year	2 years
Mark of Lübeck	0 years	1 year	1 years	2 years
Mark of Prussia	1 year	2 years	2 years	3 years

3. Measuring Monetary Integration

3.1. A basic model of arbitrage

In the following we develop a simplified model of arbitrage in the interregional money market under a commodity money regime, based on the approach of Canjels et al. (2004). First, let us assume that silver is freely convertible at all locations, so that – while being costly – it is always possible to ship it from one place to another and to convert it into currency. Next, unlike e.g. Sussman (1998, p. 129), we dismiss the effects which the hoarding of precious objects – e.g. religious ornaments – and coins had on the money market. After all, money would be hoarded predominantly during times of trouble and war, but these were exactly the times when churches were stripped of their ornaments which were converted into coins (for examples see Hirsch, Töppen and Strehlke, 1866, pp. 348 f.; Ciesielska and Janosz-Biskupowa, 1964, pp. 174 ff.). Conversely, in peaceful times coin-hoards would be brought into circulation, but on the other hand, more bullion would be turned into plate and precious religious objects. Thus, hoarding can be assumed to have had a neutral effect on the quantity of money. Finally, let us assume for simplicity but without loss of generality that traders never ship coins but always ship silver. The justification for this is that the shipment of bullion avoids a loss of the coin premium, which derives from the costs to convert bullion into coins (Kohn, 1999, pp. 32 f.).

We define the exchange rate at time t between the home currency C_L and a foreign currency C_F as $E_t = \frac{kC_L}{C_F}$, where k is the amount of domestic coins that equal one foreign coin. The par ratio between these two currencies is given by $E^{par} = \frac{UC(C_F)}{UC(C_L)}$, where UC is the silver equivalent per unit of account of a given currency. Moreover, let us define a deviation from parity as $X_t = E_t - E_t^{par}$. In the short run, the relative price of a currency will depend on M_t, which stands for the stock of coins at home relative to that abroad as suggested by the quantity theory of money. We assume some functional form of

(1) $$E_t = j + h M_t + u_t ,$$

so that an increase in M_t is ceteris paribus followed by a devaluation of the local currency. The parameter ? should intuitively increase in the velocity of money and decrease in the level of transactions in the economy, each relative to that abroad. Next, assume that the stock of coins is increasing with the stock of silver in an economy S_t, so that changes in the inflow of silver translate into changes in the stock of coins according to some deterministic linear relationship

(2) $$\Delta M_t = x \Delta S_t ,$$

where we assume for the moment that other factors such as different growth rates in mint output at the two locations can be neglected. Note that the parameter ? captures the costs to melt silver and mint coins at home, including possible seigniorage taxes levied at the mint. A lower ? stands for higher costs to transform silver into currency and will affect the behavior of exchange rates.

In the following we need to derive the conditions under which we expect to observe an inflow of silver into the economy, silver flowing out of the economy, or zero flows. A

key element are the costs of of acquiring information about where to ship silver and those involved in transporting the metal. Let us assume that these costs are quadratic, so that there is a marginal cost per unit and an additional cost component that increases in the amount shipped:

(3) $$TC = t\left|\Delta S_t\right| + g\left|(\Delta S_t)^2\right|.$$

Hence, the marginal cost to ship an extra unit of silver depend on the total shipment *z*, and is given by $MC = t + g\,z$. Arbitrageurs move silver up to the point where the marginal revenue equals the marginal costs of shipment. The marginal revenue to import silver is given by $MR = (E_t - E^{par}) = X_t$. So, by equating *MC* and *MR* we get the optimal flows of silver as a function of information costs and deviations from parity.

(4) $$\Delta S_t = \begin{cases} \frac{1}{g}(X_t - t) \text{ when } X_t > t, \\ 0 \text{ when } \left|X_t\right| \le t, \\ -\frac{1}{g}(X_t - t) \text{ when } -X_t > t. \end{cases}$$

Given equations (1-3) we can reformulate this relationship in terms of a time series process of X_t and parameters alone. From (1) and (2) we have

(5) $\Delta X_t = \Delta E_t - \Delta E_t^{par} = hx\Delta S_t - \Delta E_t^{par} + u_t$, where $u_t = \Delta u_t$, which is assumed to be a stationary process. For the case of silver imports we find that

(6) $\Delta X_t = l\,X_t - l\,t - \Delta E_t^{par} + u_t$, where $l = \frac{hx}{g}$ and we assume that ? >1 is always satisfied. After some simple manipulations we find

(7) $$\Delta X_t = a(X_{t-1} - t) - \Delta E_t^{par} + b u_t, \text{ where } a = \frac{l}{1-l} \text{ and } b = \frac{1}{1-l}.$$

We can derive a similar expression for the silver export regime. When arbitrage in the money market is not profitable, the deviation between the observed exchange rate and silver parity behaves like a stationary disturbance term, $?_t$.

(8) $$\Delta X_t = \begin{cases} a(X_{t-1} - t) - \Delta E_t^{par} + b u_t \text{ when } X_{t-1} > t, \\ u_t - \Delta E_t^{par} \text{ when } |X_{t-1}| \le -t, \\ -a(X_{t-1} - t) - \Delta E_t^{par} + b u_t \text{ when } -X_{t-1} > t. \end{cases}$$

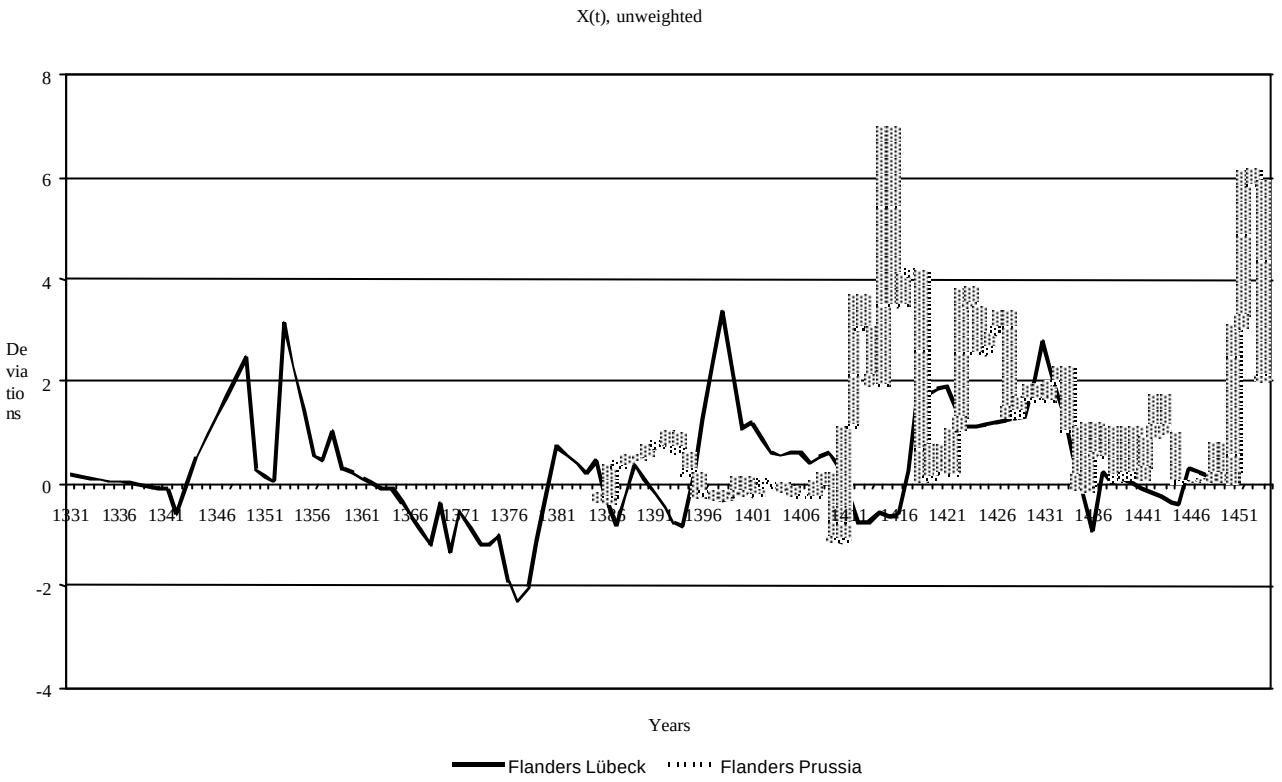
Our basic model gives us a formulation for the dynamics of "silver points" in the form of a threshold autoregressive (TAR) model with three different regimes: silver exports, silver imports, and random fluctuations within the limits set by transport and information costs. The key prediction of the model is that if the exchange rate exceeds silver parity by more than the limit set by transport and information costs t, the exchange rate will revert within those limits. Intuitively, an increase in the linear part of transport and information costs will increase the spread – or band of no-arbitrage – given by t. The speed of that adjustment process is estimated by the coefficient a, which depends on the structure of the economy (?, ?), and the quadratic part of transport and information costs (?). The model says that an increase in the velocity at which money circulates increases the speed of adjustment, while an increase in the costs to transform silver into coins, for example due to higher seigniorage taxes, slows down the adjustment process. Finally, an increase in the nonlinear part of the transport and information costs will also decrease the speed of adjustment.

3.2. Estimation strategy

Since our task to estimate a nonlinear TAR model is rather demanding in terms of the quality of the data, we will focus on the periods where the data are most complete: the years between 1341 and 1450 in the case of Flanders and Lübeck, and the years between 1385 and 1454 in the case of Flanders and Prussia. As a general rule, we always converted our observations into a series of annual data points where we used simple averages for years with more than one observation and interpolation techniques to deal with missing data. In order to account for the fact that we have more information for some years than for others, we always weight the resulting annual time series by the number of observations for each year.

Before we proceed to the estimation of our model, we will first check whether X_t, the unweighted annual series of exchange rate deviations from par, is a stationary process, or whether it contains a unit root. With a unit root, we would expect to see some trending behaviour over the whole period, which would be incompatible with the basic implication of our model that large deviations from par should trigger an adjustment process due to arbitrage trade in silver. Graph 1 plots X_t over time.

Graph 3: Unweighted series of annual deviations from par, Flanders-Lübeck, 1341-1450 and Flanders – Prussia, 1385-1454.



The graph does not suggest any unit roots. In both cases there were several large deviations from par, but reverse adjustment always took place. Over the whole period, both series seem to behave like stationary processes, which is in line with our model. Both an Augmented Dickey-Fuller and a Phillips-Perron test clearly reject the null-hypothesis of a unit root at a 1% level of significance.[5] However, over part of the time and within certain limits, both series do seem to follow a random walk, up to certain points where reversal takes place. This is again in line with the model's prediction that adjustment takes place only if the deviations exceed the silver points and optimal arbitrage starts to pay off.

[5] Test statistics are as following: for Flanders-Lübeck: ADF statistic: - 3.21, McKinnon value (1%): -2.58, PP statistic: -3.21, McKinnon critical value (1%): -2.58. For Flanders-Prussia: ADF statistic: -2.82, McKinnon value (1%): -2.60, PP statistic: -2.76, McKinnon critical value (1%): -2.60.

Given these characteristics of our data, we can proceed to estimate the econometric TAR-model implied by our economic model. We do this in a two-step procedure, using Conditional Least Squares (CLS) as in Canjels et al. (2004). In a first step we estimate the points of regime switch. In a second step, we estimate the parameters in the non-random walk regimes with OLS, given the points of regime switch. According to our model, and as usual in TAR-Models, the points of regime switch are identified by the fact that within these points the series should behave like a (non-stationary) random walk (see Balke and Fomby, 1997; Lo and Zivot, 2001). Hence, in a first step, we represent the weighted series as a random walk and estimate deviations from random walk behavior in the form $X_t = X_{t-1} - \Delta E_t^{par} + e_t$. The estimated series of errors from that series can be used to create an indicator variable for regime switch: large[6] (positive or negative) deviations indicate that the series cannot be represented any more by a random walk regime, suggesting that one of the other two regimes applies. Accordingly, we create an indicator series *indicator*, which takes on the value of 1 if we are outside the intermediate random-walk regime, and has no value otherwise.

In a second step, we use that indicator variable to estimate our model outside the random walk regime. Again, we do this based on the weighted series using simple OLS. The regime of positive deviations is separated from the regime of negative deviations using two dummy variables $neg = 1 \; if \; X_t < 0$, $pos = 1 - neg$. That is, we use OLS to estimate a specification of the form

$$\Delta X_t * indicator = Pos * (C_1 X_{t-1} + C_2) - Neg * (C_1 X_{t-1} + C_2) - \Delta E_t^{par} + u_t , \quad (9)$$

where we restrict the coefficients in the silver import and the silver export regimes to be the same, due to the shortness of our time series. We expect to find $C_1 = -1 < a < 0$, and $C_2 > 0$, that is we expect to find some positive threshold level and a change in

[6] Here we define an error that is in absolute terms larger than the median of absolute errors as large. We

deviations $?X_t$ that is declining in previous deviations X_{t-1}. The next section contains the results of that exercise and our interpretation.

3.3. Empirical Results and Interpretation

To start with, table 3 compares the average deviation X_t under the three regimes and the numbers of observation under each of the three regimes.

Table 3: Average deviations and number of observations in each of the three regimes

		Random Walk	Silver Export	Silver Import
Average abs(X_t)	Flanders-Lübeck	0.11 [47]	0.55 [25]	0.80 [38]
[No. of obs.]	Flanders-Prussia	0.19 [37]	1.11 [3]	1.10 [31]

Hence, in both cases about half of all observations are estimated to be outside the random-walk regime. As expected, we see that the average of absolute deviations under a random walk regime is much lower than under the other two regimes. Given this, we estimate our model as described in (9).

experimented with several other specifications with only very small effects on our results.

Table 4: Estimation of thresholds and adjustment parameters

	Flanders-Lübeck 1341-1450			Flanders-Prussia 1385-1454		
	Coefficient	t-stat	Prob.	Coefficient	t-stat	Prob.
C(1)	-0.197	-1.262	0.212	-0.367	-2.306	0.028
C(2)	0.176	1.23	0.225	1.199	3.323	0.002
R-squared	0.05			0.236		
Adjusted R-squared	0.04			0.212		
S.E. of regression	0.854			1.408		
Sum squared resid	44.52			63.47		
	Flanders-Lübeck, 1385-1450			Flanders-Prussia 1385-1450		
	Coefficient	t-stat	Prob.	Coefficient	t-stat	Prob.
C(1)	-0.596	-3.274	0.002	-0.373	-2.321	0.028
C(2)	0.327	2.382	0.023	1.172	3.311	0.003
R-squared	0.412			0.381		
Adjusted R-squared	0.394			0.359		
S.E. of regression	0.624			1.210		
Sum squared resid	12.44			41.02		

Most of the estimated coefficients are significant at a 5% significance level, and, as predicted, we always find a negative adjustment parameter C_1 and a positive threshold C_2, which seems of reasonable magnitude given the average deviations under the random walk regimes in both of our cases.

How shall we interpret these findings? The estimates for Flanders-Lübeck are only significant for the later part of the sample, but the results for the speed of adjustment C_1 and the spread C_2 suggest that the market increasingly integrated over time. However, it seems more revealing to restrict attention to the period 1385-1450, where we have data for both Flanders-Lübeck and Flanders-Prussia, and to compare them. As expected, the money market between Flanders and Lübeck was much better integrated than the market between Flanders and the remote Prussia. The estimate C_2 for transport and information costs (t in the model) is much higher for the latter case. And the estimates

C_1 indicate a significantly higher speed of adjustment between Flanders and Lübeck than between Flanders and Prussia. In order to interpret the estimated adjustment parameters, it is useful to express them in terms of a half-life time. To see that we can do this, we rearrange (7) to get

(10) $$X_t = rX_{t-1} - a\,t + b\,u_t \text{, where } r = 1 + a \text{ .}$$

Consequently, the implied half-life can be calculated as $Time_{T/2} = \frac{\ln(0.5)}{\ln(r)}$. Hence, our estimates imply that between 1385 and 1450, it took on average about 9 months until arbitrage in silver reduced a deviation outside the threshold bands between Lübeck and Flanders by 50%. During the same period it took on average about 18 months to reduce a deviation between Prussia and Flanders.

Moreover, we can compare our findings to those of Canjels et al. (2004) for the Gold Standard regime. All our estimates C_2 of the silver points (the t in the model) are in an order of magnitude above those estimated by Canjels et al. (2004). While we cannot compare our findings with direct evidence of the costs of shipping silver, we think that this result is rather intuitive. Finally, our estimated half-lifes of between 9 and 18 months can be compared with those implied by Canjels et al.'s (2004) estimation for the Gold Standard period (1879 to 1913). Given their estimate of the adjustment parameter, it took only about 6 days to reduce a deviation between New York and London. Adjustment in the Silver market was massively slower during the late Middle Ages than adjustment in the Gold market in the late nineteenth century.

4. Conclusion

Our method yields plausible results for medieval market integration. During the late Middle Ages, markets between Flanders and Lübeck apparently worked much better than markets between Flanders and Prussia, and we found evidence that integration improved over time. We found that during the fourteenth and fifteenth century it took

about 9 months until the market adjusted for deviations above the silver points in the case of Flanders and Lübeck. In the case of Flanders and Prussia it took roughly twice as long, namely about 18 months. To compare, transatlantic Gold trade in the nineteenth century needed just 6 days to wipe out deviations from the Gold points (see Canjels et al. 2004). Moreover, our estimates of medieval Silver Points are an order of magnitude above the nineteenth-century Gold points, suggesting much higher costs of transportation and information. Compared with the traditional approaches to estimating market integration, our method has a number of distinct advantages: It requires relatively few data and is still able to yield precise and non-commodity specific results.

Our analysis explicitly concerned two components which are neglected in the models hitherto used in the medieval context: transport costs and transaction costs. Despite transport costs being obviously much higher in the Middle Ages than in the nineteenth and twentieth centuries, our overall impression is that in our context transaction costs were more important. Bullion had a more favourable weight-value ratio than any other good. This is why in the Dark Ages and the high Middle Ages most long distance trade concerned precious objects. By the fourteenth and fifteenth centuries this had begun to change, but despite the high risk of shipping specie, the costs of transporting it remained comparatively small (Watson, 1967, p. 22). The level of transaction costs, on the other hand – that is, of the costs of finding a partner and of negotiating and enforcing an agreement (cf. Coase, 1960, p. 16) – did not depend how valuable a good was in relation to its weight or bulkiness. Here, information costs were crucial because they co-determined not only how long it took for partners to meet, but also how much time was spent on negotiations and whether defection was detected. To find anecdotal evidence of very high information costs in the late Middle Ages is easy enough. News travelled slowly, that is, at best with the maximal speed a ship or a horse could reach. Thus, letters from Venice to Bruges took between 20 and 44 days, from Riga to Bruges,

between 39 and 73 days, from Danzig between 10 and 37 days, and from Lübeck between 3 and 48 days (Stieda, 1894, p. 65; 1921, p. xviii). Recent studies claim that on average, Hanseatic messengers achieved a speed of c. 16 miles per day when travelling overland, and of c. 30 miles per day when travelling at sea (Samsonowicz, 1999, p. 213). Given conditions such as these, it is no wonder that merchants took pride in being better-informed than their competitors. In 1410 Sievert Veckinghusen from Lübeck did not only point out to his brother Hildebrand, then in Bruges, that "great profit" could be made by keeping their agent in Venice abreast of events in Flanders, but also that it would be "a great honour" for him "always to receive letters with all runners, like other people do" (Stieda, 1921, p. 37). Late medieval merchants had to make decisions on the basis of information which was much less up to date and reliable than that used by their counterparts in the late nineteenth century. Hence, transaction costs seem to have been the really decisive factor which accounts for the comparative lack of integration of medieval financial markets. Our study transcends anecdotal evidence such as that presented above, giving a first glimpse at how detrimental transaction costs actually were for market integration, and allowing comparisons with other periods and regions.

Furthermore, our results contribute to the long-standing debate on the so-called "medieval bullion famine" in the context of the economic depression during the late Middle Ages. As mentioned in the introduction, authors such as Day (1980/87; 1981/87) and, with some qualifications, Miskimin (1969, pp. 138 ff.) and Munro (1979; 1983), argue that a shortage of money triggered or at least deepened and lengthened an economic contraction in Europe during the late Middle Ages. Their argument is that the exhaustion of the deposits of silver and gold in the late fourteenth century, coupled with western Europe's long-standing balance of payments deficit with the East, resulted in a severe reduction of the European stock of bullion. The ensuing lack of coins, specifically of smaller denominations needed for everyday transactions, is supposed to

have paralysed economic activity on a low level, causing an increase in the rates of interest that stifled investment on the higher levels of the economy, too (Spufford, 1991, p. 361; Nightingale, 1997). However, it is hard to imagine how a drain of specie such as that suggested by the proponents of the bullion famine hypothesis could persist for prolonged periods. This is a point raised by Sussman (1998), who adapted the Monetary Approach to the Balance of Payments (MABP) to the late Middle Ages in order to demonstrate that the bullion famine argument was theoretically flawed. Sussman developed a model based on the assumption that when individuals experience a shortage of money, they attempt to acquire it by selling commodities; hence, in the aggregate a country that experiences a money supply below its money demand tends to export more, and not less commodities (Sussman, 1998, pp. 128 f.). In his own words: "either western Europe suffered from a shortage of precious metals and a balance-of-payments surplus or it suffered from a balance-of-payments deficit and enjoyed a surplus of precious metals" (Sussman, 1998, p. 151). Suffering from a shortage of money and from an adverse balance of payments at the same time is impossible. However, note that none of these authors hitherto considered the issue of market integration.

Our study suggests that neglecting transaction costs as done by Sussman (1998) and others may not be appropriate, but that these costs were certainly not high enough to allow for bullion shortages in any sense of the word that justifies the use of the term "famine". To be sure, shortages of even some years duration may well have existed, and this may help to explain the many contemporary complaints about a lack of bullion (cf. Miskimin, 1969, p. 142 f.). However, it cannot be emphasised strongly enough that such shortages, despite being possibly more frequent in the late fourteenth and early fourteenth century than before or after, must have been localised phenomena which can hardly have persisted for more than about half a decade. Bullion famines such as those postulated by Day and Munro supposedly existed for at least two or three decades. They

would have required a level of transport and transaction costs massively higher than that which actually seems to have existed in the late Middle Ages. Moreover, in a world of weakly integrated money markets such as that of the fourteenth and fifteenth centuries, shortages of silver in some places implied that the metal must have been abundant in others. This is indeed what mint output data seem to indicate: At exactly the time when the Flemish and English mints reduced their output, others, such as those examined by Sussman (1998, pp. 134 ff.), but those of Prussia, too (Volckart, 1996, pp. 60 f.), experienced periods of intensive activity. Thus, bullion shortages, even if they were alleviated only after several years, remained local phenomena whose impact cannot have been serious enough to trigger a continent-wide economic depression. In this context, our analysis allows a final conclusion: If the European economy did indeed slip into such a depression in the decades following the Black Death, the chances to overcome adverse conditions improved markedly over time. Our data suggest that markets became increasingly better-integrated in the course of the fourteenth and fifteenth centuries. Consequently, there must have been more opportunities to engage in mutually beneficial exchange, so that allocative efficiency improved and specialisation and productivity advanced. The chances to achieve Smithian growth continued to grow over time.

5. Appendix: The Data

Quotation types: A = account book, B = bill of exchange, C = commercial rate (vaguely defined), H = historian (no primary source given, information about the type of quotation), L = loan, M = manual exchange, O = ordinance (cf. Spufford, 1986, pp. l f.).

1 Pound Grote = 20 shillings = 120 stuivers = 240 grotes = 5760 mites

1 Mark of Lübeck = 16 shillings = 48 wittens = 192 pennies[7]

1 Mark of Prussia = 4 ferdings = 24 scots = 60 shillings = 720 pennies

£ = Pound, m. = mark, ferd. = ferding, sc. = scot, s. = shilling, d. = penny

5.1. Pound Grote in Mark of Lübeck

yyyy-mm-dd	original1	Original2		E_t	Place	type	Source
1331-12-25	£10 grote	109m. 11s. lüb.	£1 grote =	10,9688 m. lüb.	Lübeck	C	(Rörig, 1928, p. 201)
1331-12-25	12s. grote	6m. 12s. lüb.	£1 grote =	11,2500 m. lüb.	Lübeck	C	(Rörig, 1928, p. 201)
1331-12-25	23s. grote	12m. 13s. lüb.	£1 grote =	11,1413 m. lüb.	Lübeck	C	(Rörig, 1928, p. 201)
1331-12-25	5s. grote	2m. 13s. lüb.	£1 grote =	11,2500 m. lüb.	Lübeck	C	(Rörig, 1928, p. 201)
1341-00-00	£1 grote	9m. 1s. lüb.	£1 grote =	9,0625 m. lüb.	Lübeck	C	(Dittmer, 1860, p. 53)
1341-00-00	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	Lübeck	C	(Verein für Lübeckische Geschichte und Alterthumskunde, 1858, p. 1007)
1341-00-00	£1 grote	8m. 12s. lüb.	£1 grote =	8,7500 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1341-00-00	£1 grote	8m. 12s. lüb.	£1 grote =	8,7500 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1341-00-00	£1 grote	8m. 2s. lüb.	£1 grote =	8,1250 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1341-00-00	£1 grote	8m. lüb.	£1 grote =	8,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1341-00-00	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1341-01-09	£1 grote	8m. 2s. lüb.	£1 grote =	8,1250 m. lüb.	Lübeck	B	(Dittmer, 1860, p. 61)
1341-01-09	£1 grote	8m. lüb.	£1 grote =	8,0000 m. lüb.	Lübeck	B	(Dittmer, 1860, p. 61)
1341-04-05	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	Lübeck	C	(Verein für Lübeckische Geschichte und Alterthumskunde, 1858, p. 1003)
1341-04-05	£1 grote	9m. 12d. lüb.	£1 grote =	9,0625 m. lüb.	Bruges	B	(Verein für Lübeckische Geschichte und Alterthumskunde, 1873, p. 136)

[7] In sources from Hamburg the Pound occurs quite frequently. 1 Pound of Lübeck = 20 shillings.

1341-04-05	£1 grote	9m. 18d. lüb.	£1 grote =	9,0938 m. lüb.	Bruges	B	(Verein für Lübeckische Geschichte und Alterthumskunde, 1873, p. 136)
1341-04-05	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	Bruges	B	(Verein für Lübeckische Geschichte und Alterthumskunde, 1873, p. 136)
1341-04-05	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	Bruges	B	(Pauli, 1872, p. 123)
1341-04-25	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	Lübeck	C	(Verein für Lübeckische Geschichte und Alterthumskunde, 1858, p. 1003)
1341-05-11	£1 grote	9m. 12d. lüb.	£1 grote =	9,0625 m. lüb.	Bruges	B	(Verein für Lübeckische Geschichte und Alterthumskunde, 1873, p. 137)
1341-09-29	£100 grote	900m. lüb.	£1 grote =	9,0000 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 60)
1341-09-29	£16 grote	140m. lüb.	£1 grote =	8,7500 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 60)
1341-09-29	£1 grote	8m. 12s. lüb.	£1 grote =	8,7500 m. lüb.	Lübeck	B	(Dittmer, 1860, p. 60)
1341-09-29	£1 grote	9m. – 4s. lüb.	£1 grote =	8,7500 m. lüb.	Lübeck	B	(Dittmer, 1860, p. 61)
1342-00-00	£1 grote	8m. 12s. lüb.	£1 grote =	8,7500 m. lüb.	Lübeck	B	(Dittmer, 1860, p. 32)
1342-00-00	£1 grote	8m. 2s. lüb.	£1 grote =	8,1250 m. lüb.	Lübeck	C	(Dittmer, 1860, p. 32)
1342-00-00	£1 grote	8m. lüb.	£1 grote =	8,0000 m. lüb.	?	H	(Jesse, 1928, p. 220)
1342-01-06	£1 grote	8m. 10s. lüb.	£1 grote =	8,6250 m. lüb.	Bruges	B	(Dittmer, 1860, p. 32)
1344-10-14	£1 grote	8m. – 4s. lüb.	£1 grote =	7,7500 m. lüb.	Rostock	C	(Verein für meklenburgische Geschichte und Alterthumskunde, 1877, p. 603)
1349-00-00	£1 grote	8m. 18s. lüb.	£1 grote =	9,1250 m. lüb.	?	H	(Jesse, 1928, p. 220)
1349-00-00	£1 grote	8m. 13s. lüb.	£1 grote =	8,8125 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1349-00-00	£1 grote	8m. 14s. lüb.	£1 grote =	8,8750 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1349-00-00	£1 grote	8m. lüb.	£1 grote =	8,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1349-03-22	£1 grote	8m. lüb.	£1 grote =	8,0000 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 67)
1349-03-22	£1 grote	8m. 14s. lüb.	£1 grote =	8,8750 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 67)
1349-03-22	£1 grote	9m. – 3s. lüb.	£1 grote =	8,8125 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 67)
1349-03-22	£1 grote	9m. – 4s. lüb.	£1 grote =	8,7500 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 67)
1349-03-22	£1 grote	9m. 12d. lüb.	£1 grote =	9,0625 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 68)
1349-03-22	£1 grote	9m. 18d. lüb.	£1 grote =	9,0938 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 68)
1349-03-22	£1 grote	9m. 1s. lüb.	£1 grote =	9,0625 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 68)
1349-03-22	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	Lübeck	A	(Dittmer, 1860, p. 68)
1350-00-00	£1 grote	9m. 1s. lüb.	£1 grote =	9,0625 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1350-00-00	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1350-00-00	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	Stralsund	B	(Neumann, 1863, p. 120)
1350-03-20	£1 grote	7½m. lüb.	£1 grote =	7,5000 m. lüb.	?	B	(Verein für Lübeckische Geschichte und Alterthumskunde, 1858, p. 890)
1350-03-20	£1 grote	7½m. lüb.	£1 grote =	7,5000 m. lüb.	Lübeck	B	(Pauli, 1872, p. 127)
1352-00-00	£1 grote	8m. – 4s. lüb.	£1 grote =	7,7500 m. lüb.	Lübeck	M	(Mollwo, 1901, p. 22)
1352-08-09	£1 grote	7m. – 3s. lüb.	£1 grote =	6,8125 m. lüb.	Wismar	C	(Verein für meklenburgische Geschichte und Alterthumskunde, 1884, p. 201)
1353-00-00	£1 grote	7m. 12s. lüb.	£1 grote =	7,7500 m. lüb.	Riga	H	(Jesse, 1928, p. 220)
1356-00-00	£1 grote	7m. 2s. lüb.	£1 grote =	7,1250 m. lüb.	Lübeck	B	(Mollwo, 1901, p. 28)
1356-09-29	£1 grote	7m. 4s. lüb.	£1 grote =	7,2500 m. lüb.	Lübeck	B	(Mollwo, 1901, p. 33)
1356-12-08	£1 grote	7m. – 2s. lüb.	£1 grote =	6,8750 m. lüb.	Lübeck	B	(Mollwo, 1901, p. 33)
1357-00-00	£1 grote	7m. 2s. lüb.	£1 grote =	7,1250 m. lüb.	?	H	(Jesse, 1928, p. 220)

1357-00-00	£1 grote	7m. 4s. lüb.	£1 grote =	7,2500 m. lüb.	?	H	(Jesse, 1928, p. 220)
1357-04-09	£1 grote	7m. – 2s. lüb.	£1 grote =	6,8750 m. lüb.	Lübeck	B	(Mollwo, 1901, p. 30)
1357-07-25	£1 grote	7m. – 2½s. lüb.	£1 grote =	6,8438 m. lüb.	Lübeck	B	(Mollwo, 1901, p. 37)
1357-07-25	£1 grote	7m. – 3s. lüb.	£1 grote =	6,8125 m. lüb.	Lübeck	B	(Mollwo, 1901, p. 37)
1358-00-00	£1 grote	7m. – 3s. lüb.	£1 grote =	6,8125 m. lüb.	England	C	(Mollwo, 1901, p. 46)
1358-11-00	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	Lübeck	C	(Mollwo, 1901, p. 45)
1359-00-00	£1 grote	7m. – 3s. lüb.	£1 grote =	6,8125 m. lüb.	England	C	(Mollwo, 1901, p. 46)
1363-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	H	(Spufford, 1986, p. 227)
1363-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1364-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	H	(Jesse, 1928, p. 220)
1368-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	H	(Spufford, 1986, p. 227)
1368-00-00	£1 grote	5 bis. 6m. lüb.	£1 grote =	5,5000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1368-00-00	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1368-06-24	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Lübeck	O	(Verein für Lübeckische Geschichte und Alterthumskunde, 1871, p. 705)
1368-10-06	£6 – 16d. grote	29½m. lüb.	£1 grote =	4,9719 m. lüb.	Stralsund	A	(Hanserecesse, 1870, p. 440)
1368-10-06	£89 grote	445m. lüb.	£1 grote =	5,0000 m. lüb.	Stralsund	A	(Hanserecesse, 1870, p. 440)
1368-10-06	£4 16s. grote	24m. lüb.	£1 grote =	5,0000 m. lüb.	Stralsund	A	(Hanserecesse, 1870, p. 440)
1368-10-06	£19 3s. 1d. grote	96m. lüb.	£1 grote =	5,0087 m. lüb.	Stralsund	A	(Hanserecesse, 1870, p. 440)
1368-10-06	£15 4s. 8 grote	76m. lüb.	£1 grote =	4,9891 m. lüb.	Stralsund	A	(Hanserecesse, 1870, p. 440)
1368-10-06	£15 – 4d. grote	74m. lüb.	£1 grote =	4,9388 m. lüb.	Stralsund	A	(Hanserecesse, 1870, p. 440)
1368-10-06	£16 4s. 8 grote	77m. lüb.	£1 grote =	4,7433 m. lüb.	Stralsund	A	(Hanserecesse, 1870, p. 440)
1368-10-06	£39 3s. grote	196m. lüb.	£1 grote =	5,0064 m. lüb.	Stralsund	A	(Hanserecesse, 1870, p. 440)
1369-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1370-10-27	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	Hamburg	B	(Nirrnheim, 1895, p. 112)
1371-00-00	£1 grote	5m. 13s. 4d. lüb.	£1 grote =	5,8333 m. lüb.	?	H	(Jesse, 1928, p. 220)
1373-00-00	£1 grote	5m. 1s. lüb.	£1 grote =	5,0625 m. lüb.	?	H	(Jesse, 1928, p. 220)
1373-00-00	£21 grote	£90 6s. lüb.	£1 grote =	5,3750 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 184)
1373-00-00	£20 grote	£85½ lüb.	£1 grote =	5,3438 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 184)
1373-00-00	£15 grote	£61½ 7½s. lüb.	£1 grote =	5,1563 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 184)
1373-00-00	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1374-00-00	£16 grote	£69 4s. lüb.	£1 grote =	5,4063 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 194)
1374-00-00	£25 grote	£103 2½s. lüb.	£1 grote =	5,1563 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 204)
1374-00-00	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	Flanders	C	(Nirrnheim, 1895, p. 53)
1375-00-00	£8 2s. grote	£33 4s. 4d. lüb.	£1 grote =	5,1260 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 224)
1375-00-00	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1375-03-07	£1 grote	5m. 1s. lüb.	£1 grote =	5,0625 m. lüb.	Hamburg	M	(Nirrnheim, 1895, p. 106)
1375-03-11	£5 grote	25m. 7½s. lüb.	£1 grote =	5,0938 m. lüb.	Hamburg	M	(Nirrnheim, 1895, p. 109)
1376-00-00	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)

1376-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1376-06-24	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	Stralsund	O	(Hanserecesse, 1872, p. 132)
1377-06-24	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	Lübeck	O	(Hanserecesse, 1872, p. 160)
1377-10-01	£1 grote	5m. lüb.	£1 grote =	5,0000 m. lüb.	Marienburg	O	(Hanserecesse, 1872, p. 153)
1378-00-00	£10 grote	£42 lüb.	£1 grote =	5,2500 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 260)
1378-00-00	£20 grote	£84 13s. 4d. lüb.	£1 grote =	5,2917 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 275)
1381-00-00	£20 grote	£84 lüb.	£1 grote =	5,2500 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 328)
1384-09-08	£1 grote	5m. – 3s. lüb.	£1 grote =	4,8125 m. lüb.	Hamburg	L	(Nirrnheim, 1895, p. 97)
1385-00-00	£1 grote	4m. 12s. lüb.	£1 grote =	4,7500 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1385-03-12	£1 grote	5m. – 4s. lüb.	£1 grote =	4,9333 m. lüb.	Lübeck	C	(Hanserecesse, 1872, p. 356)
1387-00-00	£1 grote	4m. 8s. lüb.	£1 grote =	4,5000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1387-04-07	£1 grote	4½m. lüb.	£1 grote =	4,5000 m. lüb.	Hamburg	C	(Nirrnheim, 1895, p. 99)
1387-04-07	£1 grote	4m. 6s. lüb.	£1 grote =	4,3750 m. lüb.	Hamburg	C	(Nirrnheim, 1895, p. 99)
1389-00-00	£1 grote	4m. 8s. lüb.	£1 grote =	4,5000 m. lüb.	?	H	(Stieda, 1887b, p. XI)
1389-09-29	£1 grote	4½m. lüb.	£1 grote =	4,5000 m. lüb.	Lübeck	A	(Hanserecesse, 1875, p. 467)
1389-09-29	£1 grote	4m. lüb.	£1 grote =	4,0000 m. lüb.	Lübeck	A	(Hanserecesse, 1875, p. 467)
1389-09-29	£1 grote	4½m. lüb.	£1 grote =	4,5000 m. lüb.	?	C	(Hanserecesse, 1875, p. 468)
1393-00-00	£1 grote	4m. 2s. lüb.	£1 grote =	4,1250 m. lüb.	Hamburg	A	(Koppmann, 1869, p. 478)
1393-03-17	£1824 grote	7200m. lüb.	£1 grote =	3,9474 m. lüb.	Reval	C	(Bunge, 1857/1970, p. 722)
1394-00-00	£1 grote	4m. lüb.	£1 grote =	4,0000 m. lüb.	?	H	(Spufford, 1986, p. 227)
1394-03-30	£1824 grote	7200m. lüb.	£1 grote =	3,9474 m. lüb.	Lübeck	C	(Hanserecesse, 1877, p. 579)
1394-06-21	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Wismar	C	(Verein für mecklenburgische Geschichte und Altertumskunde, 1907, p. 405)
1398-04-12	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Lübeck	O	(Hanserecesse, 1877, p. 421)
1400-11-11	£1 grote	6m. 5s. lüb.	£1 grote =	6,3125 m. lüb.	Lübeck	M	(Lesnikov, 1973, p. 12)
1401-00-00 (c.)	£2 4 grote	12m. 4s. lüb.	£1 grote =	6,0996 m. lüb.	?	C	(Lesnikov, 1973, p. 8)
1401-03-00 (spring)	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	Lübeck	C	(Lesnikov, 1973, p. 13)
1401-08-15	£4 grote	25m. 8s. lüb.	£1 grote =	6,3750 m. lüb.	Lübeck	B	(Lesnikov, 1973, p. 14)
1401-09-01	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Flanders	C	(Lesnikov, 1973, p. 14)
1402-00-00 (c.)	£1 grote	6m. 2½s. lüb.	£1 grote =	6,1563 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 27)
1402-00-00 (c.)	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 27)
1402-00-00 (c.)	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	?	C	(Lesnikov, 1973, p. 33)
1403-00-00	£793 9s. 5 grote	£3811 lüb.	£1 grote =	6,0037 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 5)
1403-00-00	£6 6s. grote	£30 17s. lüb.	£1 grote =	6,1210 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 5)
1403-00-00	£1 grote	5m. 15s. lüb.	£1 grote =	5,9375 m. lüb.	?	H	(Jesse, 1928, p. 220)
1403-12-00	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 39)
1403-12-02	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 43)
1403-12-20	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 39)

1404-00-00	£1 grote	5m. 15s. lüb.	£1 grote =	5,9375 m. lüb.	?	H	(Jesse, 1928, p. 220)
1404-00-00	£1 grote	4m. 12s. 10d. lüb.	£1 grote =	4,8021 m. lüb.	?	H	(Jesse, 1928, p. 220)
1404-00-00	£92 grote	£428 lüb.	£1 grote =	5,8152 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 6)
1404-00-00	£50 grote	£240 lüb.	£1 grote =	6,0000 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 6)
1404-00-00	£1 grote	6m. – 1s. lüb.	£1 grote =	5,9375 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 7)
1404-00-00	£92 grote	£428 lüb.	£1 grote =	5,8152 m. lüb.	Hamburg	A	(Kunze, 1899, p. 309)
1404-00-00	£50 grote	£240 lüb.	£1 grote =	6,0000 m. lüb.	Hamburg	A	(Kunze, 1899, p. 309)
1404-00-00	£1 grote	6m. – 1s. lüb.	£1 grote =	5,9375 m. lüb.	Hamburg	A	(Kunze, 1899, p. 309)
1404-00-00	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 39)
1404-00-00	£3 grote	17½m. lüb.	£1 grote =	5,8333 m. lüb.	Bruges	A	(Lesnikov, 1973, p. 62)
1404-01-04	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 39)
1404-01-06	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 39)
1404-02-07	£1 grote	6m. 2½s. lüb.	£1 grote =	6,1563 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 71)
1404-02-15	£1 grote	6m. 2½s. lüb.	£1 grote =	6,1563 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 71)
1404-02-15	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 71)
1404-02-24	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 73)
1404-03-09	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 53)
1404-05-08	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 57)
1404-05-17	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 57)
1404-06-00	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 57)
1404-06-29	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 60)
1404-07-25	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 57)
1404-12-08	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 38)
1404-12-31	£1 grote	6m. 2s. 9d. lüb.	£1 grote =	6,1719 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 75)
1405-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	B	(Lesnikov, 1973, p. 131)
1405-00-00	£3 12s. 1 grote	21m. lüb.	£1 grote =	5,8266 m. lüb.	Bruges	A	(Lesnikov, 1973, p. 78)
1405-01-00	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 85)
1405-01-22	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 78)
1405-02-02	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	M	(Lesnikov, 1973, p. 74)
1405-02-14	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 88)
1405-02-24	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 88)
1405-03-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 91)
1405-03-10	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 171)
1405-03-29	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 93)
1405-04-01	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 92)
1405-04-23	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 92)
1405-05-11	£1 grote	6m. – 6d. lüb.	£1 grote =	5,9688 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 93)
1405-05-14	£1 grote	6m. – 2s. lüb.	£1 grote =	5,8750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 106)

1405-05-16	£1 grote	5m. 14s. lüb.	£1 grote =	5,8750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 107)
1405-05-24	£3 10s. grote	20m. 4s. 5d. lüb.	£1 grote =	5,7932 m. lüb.	Bruges	A	(Lesnikov, 1973, p. 134)
1405-05-25	30s. 8 grote	9m. lüb.	£1 grote =	5,8696 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 109)
1405-06-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 115)
1405-06-00	£1 grote	6m. – 2s. lüb.	£1 grote =	5,8750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 116)
1405-11-01	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 142)
1405-11-04	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 142)
1405-12-02	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Lübeck	C	(Lesnikov, 1973, p. 128)
1406-01-15	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 152)
1406-01-30	10s. grote	3m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 156)
1406-03-21	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 160)
1406-03-27	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 160)
1406-04-20	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 161)
1406-06-15	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 160)
1406-11-09	£2 grote	12m. 4s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 161)
1406-11-09	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 161)
1406-12-29	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, pp. 188 f.)
1407-00-00	£11 15s. grote	£56 8s. lüb.	£1 grote =	6,0000 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 9)
1407-03-13	£1 grote	6m. 2d. lüb.	£1 grote =	6,0104 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 188)
1407-05-15	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	Lübeck	O	(Hanserecesse, 1880, p. 294)
1407-05-26	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 208)
1407-06-05	£1 grote	6m. 1s. lüb.	£1 grote =	6,0625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 208)
1407-06-05	£1 grote	6m. 6d. lüb.	£1 grote =	6,0313 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 208)
1407-07-09	£1 grote	6m. 18d. lüb.	£1 grote =	6,0938 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 215)
1407-07-31	£1 grote	6m. 18d. lüb.	£1 grote =	6,0938 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 215)
1407-07-31	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 215)
1407-08-00	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 226)
1407-09-07	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 216)
1407-10-08	£1 grote	6m. 18d. lüb.	£1 grote =	6,0938 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 216)
1407-11-00	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 230)
1407-12-03	£1 grote	6m. 2s. lüb.	£1 grote =	6,1250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 230)
1407-12-31	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 243)
1408-00-00	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 257)
1408-01-00	£1 grote	6m. 3½s. lüb.	£1 grote =	6,2188 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 239)
1408-01-04	£1 grote	6m. 8s. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 257)
1408-01-05	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 243)
1408-01-26	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 243)
1408-02-03	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 244)

1408-03-05	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 236)
1408-03-05	£1 grote	6m. 3½s. lüb.	£1 grote =	6,2188 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 240)
1408-03-25	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 248)
1408-03-26	£1 grote	6m. 3½s. lüb.	£1 grote =	6,2188 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 248)
1408-03-26	£1 grote	6m. 45d. lüb.	£1 grote =	6,2344 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 248)
1408-03-26	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 248)
1408-03-27	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 247)
1408-04-11	£5 10s. grote	32m. 13s. lüb.	£1 grote =	5,9659 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 242)
1408-05-00	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 256)
1408-07-06	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 257)
1408-07-18	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 258)
1408-07-25	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 257)
1408-08-03	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 258)
1408-08-15	£1 grote	6m. 3s. 6d. lüb.	£1 grote =	6,2188 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 258)
1408-08-28	£1 grote	6m. 4½s. lüb.	£1 grote =	6,2813 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 259)
1408-09-00	£1 grote	6m. 4s. 3d. lüb.	£1 grote =	6,2656 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 275)
1408-09-22	£1 grote	6m. 4s. 3d. lüb.	£1 grote =	6,2656 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 273)
1408-09-27	£1 grote	6m. 4s. 3d. lüb.	£1 grote =	6,2656 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 259)
1408-10-13	£1 grote	6m. 7s. lüb.	£1 grote =	6,4375 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 259)
1408-10-15	£1 grote	6m. 8s. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 260)
1408-12-14	£1 grote	6m. 8s. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 280)
1409-00-00	£6 18s. grote	44m. 14s. lüb.	£1 grote =	6,5036 m. lüb.	Lübeck	M	(Lesnikov, 1973, p. 292)
1409-00-00	£142 16s. 6 grote	928m. 6s. lüb.	£1 grote =	6,5001 m. lüb.	Lübeck	A	(Stieda, 1894, p. 166)
1409-00-00	£408 17s. 10 grote	2657m. lüb.	£1 grote =	6,4981 m. lüb.	Lübeck	A	(Stieda, 1894, p. 167)
1409-00-00	£1 grote	6½m. lüb.	£1 grote =	6,5000 m. lüb.	Lübeck	A	(Stieda, 1894, p. 168)
1409-00-00	£484 grote	3040m. lüb.	£1 grote =	6,2810 m. lüb.	Lübeck	C	(Stieda, 1894, p. 169)
1409-01-09	£1 grote	6½m. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 281)
1409-03-02	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 289)
1409-04-24	£1 grote	6m. 32d. lüb.	£1 grote =	6,1667 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 289)
1409-04-26	£1 grote	6m. 3s. 4d. lüb.	£1 grote =	6,2083 m. lüb.	Bruges	B	(Lesnikov, 1973, pp. 290, 295)
1409-04-26	£1 grote	6m. 3s. 4d. lüb.	£1 grote =	6,2083 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 297)
1409-05-06	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 289)
1409-05-11	£1 grote	6m. 3s. lüb.	£1 grote =	6,1875 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 290)
1409-05-24	£1 grote	6m. 3s. 4d. lüb.	£1 grote =	6,2083 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 295)
1409-05-26	£1 grote	6m. 3s. 4d. lüb.	£1 grote =	6,2083 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 295)
1409-07-13	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 295)
1409-07-20	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 296)
1409-07-22	£1 grote	6m. 6½s. lüb.	£1 grote =	6,4063 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 296)

1409-07-24	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 296)
1409-07-28	£1 grote	6m. 7s. lüb.	£1 grote =	6,4375 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 296)
1409-09-11	£1 grote	6m. 5s. lüb.	£1 grote =	6,3125 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 300)
1410-01-00	£1 grote	6m. 8s. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 347)
1410-02-16	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 319)
1410-03-04	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 320)
1410-03-28	£1 grote	6m. 5s. lüb.	£1 grote =	6,3125 m. lüb.	Bruges	B	(Lesnikov, 1973, pp. 320, 324)
1410-04-04	£1 grote	6m. 5s. lüb.	£1 grote =	6,3125 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 327)
1410-05-09	£1 grote	6m. 5s. lüb.	£1 grote =	6,3125 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 328)
1410-06-24	£1 grote	6m. 5s. lüb.	£1 grote =	6,3125 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 320)
1410-06-28	£1 grote	6m. 5s. lüb.	£1 grote =	6,3125 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 337)
1410-07-08	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 337)
1410-07-18	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 337)
1410-07-25	£10 4s. 3 grote	65m. lüb.	£1 grote =	6,3647 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 348)
1410-07-27	£1 grote	6m. 5s. lüb.	£1 grote =	6,3125 m. lüb.	Bruges	C	(Stieda, 1921, p. 40)
1410-07-27	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	C	(Stieda, 1921, p. 40)
1410-08-01	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, pp. 333, 342)
1410-08-01	£30 grote	223m. 3½s. lüb.	£1 grote =	7,4406 m. lüb.	Cologne	B	(Stieda, 1921, p. 43)
1410-08-03	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 342)
1410-08-09	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	A	(Lesnikov, 1973, p. 319)
1410-08-13	£1 grote	6½m. – 8d. lüb.	£1 grote =	6,4583 m. lüb.	?	A	(Stieda, 1921, p. 45)
1410-08-19	£1 grote	6½m. lüb.	£1 grote =	6,5000 m. lüb.	Cologne	C	(Stieda, 1921, p. 47)
1410-08-19	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Cologne	C	(Stieda, 1921, p. 47)
1410-11-12	£12 10s. grote	80m. lüb.	£1 grote =	6,4000 m. lüb.	Bruges	A	(Lesnikov, 1973, p. 355)
1410-12-28	£1 grote	6m. 8s. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 359)
1411-00-00	£8 – 7s. grote	47m. 11½s. lüb.	£1 grote =	6,2377 m. lüb.	Bruges	A	(Lesnikov, 1973, p. 354)
1411-01-04	£1 grote	6m. 6s. 8d. lüb.	£1 grote =	6,4167 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 359)
1411-01-15	£10 grote	65m. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 347)
1411-03-00	£85 – 10 grote	552m. 4s. lüb.	£1 grote =	6,5002 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 360)
1411-06-14	£1 grote	6m. 7s. lüb.	£1 grote =	6,4375 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 369)
1411-07-05	£1 grote	6m. 8s. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 376)
1411-07-30	£1 grote	6m. 8s. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 362)
1411-08-10	£30 grote	210½m. 4s. lüb.	£1 grote =	7,0250 m. lüb.	Cologne	C	(Stieda, 1921, p. 73)
1411-08-10	£8 grote	50m. lüb.	£1 grote =	6,2500 m. lüb.	Cologne	C	(Stieda, 1921, p. 73)
1412-06-14	£1 grote	6m. 10s. lüb.	£1 grote =	6,6250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 402)
1412-09-08	£6 grote	38m. 4s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 393)
1412-09-08	£1 grote	6m. 10s. lüb.	£1 grote =	6,6250 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 393)
1412-09-08	£2 grote	12m. 12s. lüb.	£1 grote =	6,3750 m. lüb.	Bruges	M	(Lesnikov, 1973, p. 393)

1412-09-18	£20 grote	125m. lüb.	£1 grote =	6,2500 m. lüb.	Bruges	C	(Stieda, 1921, p. 96)
1412-09-18	£10 grote	63m. 3s. lüb.	£1 grote =	6,3188 m. lüb.	Bruges	C	(Stieda, 1921, p. 96)
1412-09-18	£1 grote	6m. 6d. lüb.	£1 grote =	6,0313 m. lüb.	Bruges	B	(Stieda, 1921, p. 96)
1412-09-18	£1 grote	6m. 3½s. lüb.	£1 grote =	6,2188 m. lüb.	?	C	(Stieda, 1921, p. 97)
1412-09-18	£1 grote	6m. 45d. lüb.	£1 grote =	6,2344 m. lüb.	?	C	(Stieda, 1921, p. 97)
1412-09-18	£1 grote	6m. 4s. 3d. lüb.	£1 grote =	6,2656 m. lüb.	?	C	(Stieda, 1921, p. 97)
1412-09-18	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	?	C	(Stieda, 1921, p. 97)
1412-09-18	£1 grote	6m. 4s. lüb.	£1 grote =	6,2500 m. lüb.	?	C	(Stieda, 1921, p. 97)
1412-09-18	£1 grote	6m. 6s. lüb.	£1 grote =	6,3750 m. lüb.	Lübeck	B	(Stieda, 1921, p. 98)
1413-05-02	£1 grote	6½m. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 419)
1413-05-20	£1 grote	6½m. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 420)
1413-08-12	£1 grote	6½m. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 424)
1413-08-17	£1 grote	6m. 9s. lüb.	£1 grote =	6,5625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 424)
1413-09-24	£1 – 6 grote	5m. 10s. lüb.	£1 grote =	5,7692 m. lüb.	Bruges	C	(Lesnikov, 1973, p. 353)
1414-01-12	£1 grote	6m. 9s. lüb.	£1 grote =	6,5625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 425)
1414-02-06	£1 grote	6m. 9s. lüb.	£1 grote =	6,5625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 425)
1414-03-13	£1 grote	6m. 9s. lüb.	£1 grote =	6,5625 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 433)
1414-05-06	£1 grote	6½m. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 434)
1415-07-04	£1 grote	6m. 7½s. lüb.	£1 grote =	6,4688 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 457)
1415-07-20	£1 grote	6m. 7½s. lüb.	£1 grote =	6,4688 m. lüb.	Lübeck	C	(Stieda, 1921, p. 130)
1416-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	H	(Spufford, 1986, p. 227)
1416-05-25	£1 grote	6½m. lüb.	£1 grote =	6,5000 m. lüb.	Bruges	B	(Lesnikov, 1973, p. 475)
1416-06-02	£30 grote	183m. 3½s. lüb.	£1 grote =	6,1073 m. lüb.	Cologne	A	(Stieda, 1921, p. 142)
1416-07-12	£29½ grote	183m. 3½s. lüb.	£1 grote =	6,2108 m. lüb.	?	A	(Stieda, 1921, p. 145)
1417-00-00	£1 grote	6m. lüb.	£1 grote =	6,0000 m. lüb.	?	H	(Spufford, 1986, p. 227)
1417-06-17	£29 10s. grote	154m. 8s. lüb.	£1 grote =	5,2373 m. lüb.	Bruges	A	(Stieda, 1921, p. 179)
1417-06-17	£9 10s. grote	59½m. lüb.	£1 grote =	6,2632 m. lüb.	Bruges	A	(Stieda, 1921, p. 180)
1417-06-17	£9 10s. grote	59½m. lüb.	£1 grote =	6,2632 m. lüb.	Bruges	A	(Stieda, 1921, p. 181)
1417-06-17	£85 grote	522m. 9s. 3d. lüb.	£1 grote =	6,5009 m. lüb.	Bruges	A	(Stieda, 1921, p. 181)
1418-00-00	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	Hamburg	A	(Sprandel, 1972, p. 4)
1418-04-17	£50 grote	425m. lüb.	£1 grote =	8,5000 m. lüb.	Bruges	C	(Stieda, 1921, pp. 205 f.)
1419-05-20	£1 grote	7m. – 4s. lüb.	£1 grote =	6,7500 m. lüb.	Lübeck	B	(Stieda, 1921, p. 233)
1419-08-14	£30 grote	203m. lüb.	£1 grote =	6,7667 m. lüb.	Bruges	A	(Stieda, 1921, p. 241)
1419-09-09	£8 11s. 3 grote	60m. – 8d. lüb.	£1 grote =	7,0024 m. lüb.	Lübeck	C	(Stieda, 1921, p. 243)
1419-09-29	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	Bruges	B	(Stieda, 1921, p. 244)
1419-11-24	£1 grote	7m. – 4s. lüb.	£1 grote =	6,7500 m. lüb.	Lübeck	C	(Stieda, 1921, p. 247)
1420-00-00	£1 grote	6m. 15s. 2d. lüb.	£1 grote =	6,9479 m. lüb.	?	H	(Spufford, 1986, p. 227)
1420-03-21	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	Bruges	C	(Stieda, 1921, p. 260)

1421-00-00	£1 grote	6m. 15s. 2d. lüb.	£1 grote =	6,9479 m. lüb.	?	H	(Spufford, 1986, p. 227)
1421-06-25	£50 grote	350m. lüb.	£1 grote =	7,0000 m. lüb.	Lübeck	C	(Stieda, 1921, p. 300)
1421-12-12	£2 grote	14m. 4s. lüb.	£1 grote =	7,1250 m. lüb.	Lübeck	C	(Stieda, 1921, p. 326)
1422-05-31	£1 grote	6m. 4d. lüb.	£1 grote =	6,0208 m. lüb.	Lübeck	O	(Hanserecesse, 1893, p. 297)
1422-09-21	£2 grote	14m. 4s. lüb.	£1 grote =	7,1250 m. lüb.	?	B	(Stieda, 1921, p. 352)
1423-06-19	£1 grote	7m. – 1s. lüb.	£1 grote =	6,9375 m. lüb.	Bruges	A	(Stieda, 1921, p. 374)
1423-06-19	£1 grote	7m. – 2s. lüb.	£1 grote =	6,8750 m. lüb.	Bruges	A	(Stieda, 1921, p. 374)
1423-06-19	£1 grote	7m. – 2s. lüb.	£1 grote =	6,8750 m. lüb.	Bruges	A	(Stieda, 1921, p. 375)
1429-08-10	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	?	C	(Hanserecesse, 1897, p. 422)
1431-00-00	£1 grote	8m. 12s. lüb.	£1 grote =	8,7500 m. lüb.	?	H	(Spufford, 1986, p. 227)
1431-00-00	£1 grote	8m. 2s. lüb.	£1 grote =	8,1250 m. lüb.	?	H	(Spufford, 1986, p. 227)
1431-00-00	£1 grote	8m. lüb.	£1 grote =	8,0000 m. lüb.	?	H	(Spufford, 1986, p. 227)
1431-00-00	£1 grote	9m. lüb.	£1 grote =	9,0000 m. lüb.	?	H	(Spufford, 1986, p. 227)
1434-00-00	£1 grote	6m. 15s. 7d. lüb.	£1 grote =	6,9740 m. lüb.	?	H	(Spufford, 1986, p. 227)
1434-06-05	£1 grote	7½m. lüb.	£1 grote =	7,5000 m. lüb.	Lübeck	O	(Ropp, 1876, p. 209)
1436-00-00	£1 grote	8m. 2s. lüb.	£1 grote =	8,1250 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 61)
1436-00-00	£1 grote	6m. 10s. lüb.	£1 grote =	6,6250 m. lüb.	?	H	(Spufford, 1986, p. 227)
1436-01-01	£60 grote	400m. lüb.	£1 grote =	6,6667 m. lüb.	Lübeck	C	(Verein für Lübeckische Geschichte und Alterthumskunde, 1885, p. 648)
1436-01-01	£60 grote	400m. lüb.	£1 grote =	6,6667 m. lüb.	Lübeck	C	(Rundstedt, 1939, p. 80)
1437-00-00	£1 grote	8m. 4s. lüb.	£1 grote =	8,2500 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 62)
1437-00-00	£1 grote	8m. 2s. lüb.	£1 grote =	8,1250 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 62)
1445-00-00	£1 grote	£5 13s. lüb.	£1 grote =	7,0625 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 77)
1445-06-05	£6 grote	48m. lüb.	£1 grote =	8,0000 m. lüb.	Lübeck	L	(Verein für Lübeckische Geschichte und Alterthumskunde, 1889, p. 349)
1446-00-00	£194 grote	£1280 8s. lüb.	£1 grote =	8,2500 m. lüb.	Hamburg	A	(Koppmann, 1873, p. 77)
1449-11-11	£1 grote	8m. lüb.	£1 grote =	8,0000 m. lüb.	?	A	(Stein, 1899, p. 164)
1450-05-24	£54 grote	486m. lüb.	£1 grote =	9,0000 m. lüb.	?	A	(Stein, 1899, pp. 164 f.)
1474-00-00	£71 11s. 10d. grote	£458 4s. lüb.	£1 grote =	8,0002 m. lüb.	Hamburg	A	(Koppmann, 1878, p. 134)
1475-00-00	36 florenis, pro quolibet floreno 20 stuvers	£37 10s. lüb.	£1 grote =	7,8125 m. lüb.	Hamburg	A	(Koppmann, 1878, p. 176)
1479-02-05	£7 grote	49m. lüb.	£1 grote =	7,0000 m. lüb.	Bruges	C	(Mantels, 1866, p. 13)
1479-05-30	12s. grote	4m. 3s. lüb.	£1 grote =	6,9792 m. lüb.	Bruges	C	(Mantels, 1866, p. 13)
1479-07-21	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	Lübeck	C	(Mantels, 1866, p. 14)
1479-07-25	£15 17s. grote	166m. 14s. lüb.	£1 grote =	10,5284 m. lüb.	Lübeck	L	(Mantels, 1866, p. 14)
1479-08-24	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	Lübeck	B	(Mantels, 1866, p. 14)
1479-09-29	£1 grote	7m. lüb.	£1 grote =	7,0000 m. lüb.	Bruges	C	(Mantels, 1866, p. 14)
1482-05-16	£5 12s. grote	39m. 3s. lüb.	£1 grote =	6,9978 m. lüb.	Antwerp	C	(Mantels, 1866, p. 12)

5.2. Pound Grote in Mark of Prussia

yyyy-mm-dd	original1	original2		E_t	place	type	source
1345-01-30	£141 15s. grote	787½m. pr.	£1 grote =	5,5556 m. pr.	Königsberg	C	(Höhlbaum, 1882-86, p. 462)
1368-00-00	£6 grote	22m. pr.	£1 grote =	3,6667 m. pr.	Thorn	C	(Koczy, 1933-34, p. 303)
1368-00-00	£1 grote	3½m. pr.	£1 grote =	3,5000 m. pr.	Thorn	C	(Koczy, 1933-34, p. 305)
1368-00-00	£3 grote	10m. pr.	£1 grote =	3,3333 m. pr.	Thorn	C	(Koczy, 1933-34, p. 308)
1368-00-00	22s. grote	4m. 8sc. pr.	£1 grote =	3,9394 m. pr.	Thorn	C	(Koczy, 1933-34, p. 316)
1368-06-24	£1 grote	4m. pr.	£1 grote =	4,0000 m. pr.	Lübeck	O	(Verein für Lübeckische Geschichte und Alterthumskunde, 1871, p. 705)
1380-00-00	£1 grote	4m. pr.	£1 grote =	4,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1385-00-00	£230 grote	771m. 1 ferd. pr.	£1 grote =	3,3533 m. pr.	Danzig	A	(Hanserecesse, 1875, p. 186)
1385-05-17	£38 4 grote	124m. pr.	£1 grote =	3,2461 m. pr.	Danzig	A	(Hanserecesse, 1875, p. 193)
1385-05-17	£127 grote	444m. pr.	£1 grote =	3,4961 m. pr.	Danzig	A	(Hanserecesse, 1875, p. 195)
1386-00-00	£10078 grote	40312m. pr.	£1 grote =	4,0000 m. pr.	?	C	(Hanserecesse, 1877, p. 124)
1387-00-00	£1 grote	3m. pr.	£1 grote =	3,0000 m. pr.	Dordrecht	H	(Hirsch, 1858, p. 243)
1387-05-18	£1 grote	3m. pr.	£1 grote =	3,0000 m. pr.	Dordrecht	B	(Hanserecesse, 1875, p. 209)
1392-08-15	£1 grote	2½m. pr.	£1 grote =	2,5000 m. pr.	Bruges	B	(Sattler, 1887, p. 329)
1393-03-09	£1 grote	2m. 8sc. pr.	£1 grote =	2,3333 m. pr.	Marienburg	O	(Hanserecesse, 1877, p. 114)
1396-00-00	£1 grote	3½m. pr.	£1 grote =	3,5000 m. pr.	Königsberg	A	(Sattler, 1887, p. 268)
1397-00-00	£1 grote	3m. 12sc. pr.	£1 grote =	3,5000 m. pr.	?	H	(Waschinski, 1952, p. 245)
1398-00-00	£1 grote	3m. 14sc. pr.	£1 grote =	3,5833 m. pr.	Bruges	B	(Sattler, 1887, p. 445)
1399-00-00	£47 9s. grote	166m. pr.	£1 grote =	3,4984 m. pr.	Königsberg	A	(Sattler, 1887, p. 155)
1400-00-00	£1 grote	3½m. pr.	£1 grote =	3,5000 m. pr.	Königsberg	L	(Sattler, 1887, p. 102)
1400-00-00	£1 grote	3½m. pr.	£1 grote =	3,5000 m. pr.	Königsberg	L	(Sattler, 1887, p. 110)
1400-00-00	£1 grote	2½m. pr.	£1 grote =	2,5000 m. pr.	Königsberg	A	(Sattler, 1887, p. 268)
1401-05-22	£215 grote	716½m. 4sc. pr.	£1 grote =	3,3333 m. pr.	Danzig	B	(Pelech, 1987a, p. 173)
1401-06-15	£22½ grote	81½m. 1 lot pr.	£1 grote =	3,6250 m. pr.	Danzig	B	(Pelech, 1987a, p. 176)
1400-00-00 (c.)	£1 grote	12 ferd. Pr.	£1 grote =	3,0000 m. pr.	?	C	(Kunze, 1899, p. 237)
1402-00-00	3 £grote 9s	12m. pr.	£1 grote =	3,4783 m. pr.	Bruges	C	(Lesnikov, 1973, p. 7)
1403-00-00	£1 grote	3m. 7sc. pr.	£1 grote =	3,2917 m. pr.	Königsberg	C	(Sattler, 1887, p. 259)
1403-10-00	£60 grote	200m. pr.	£1 grote =	3,3333 m. pr.	Danzig	B	(Pelech, 1987a, p. 181)
1404-00-00	£33 grote	85m. 14sc. pr.	£1 grote =	2,5934 m. pr.	Marienburg	C	(Sattler, 1887, p. 16)
1404-00-00	£1150 grote	4000m. pr.	£1 grote =	3,4783 m. pr.	Marienburg	A	(Sattler, 1887, p. 19)
1404-00-00	£1 grote	3½m. pr.	£1 grote =	3,5000 m. pr.	Marienburg	B	(Sattler, 1887, p. 19)
1404-00-00	£800 grote	2900m. pr.	£1 grote =	3,6250 m. pr.	Marienburg	A	(Sattler, 1887, p. 20)
1404-00-00	£32½ grote	100m. pr.	£1 grote =	3,0769 m. pr.	Königsberg	B	(Sattler, 1887, p. 203)
1404-03-30	£1 grote	3m. 11½sc. pr.	£1 grote =	3,4792 m. pr.	Königsberg	C	(Sattler, 1887, p. 260)

1404-09-24	£1 grote	3m. 10sc. pr.	£1 grote =	3,4167 m. pr.	Königsberg	B	(Sattler, 1887, p. 260)
1405-05-08	£1 grote	3m. 10sc. pr.	£1 grote =	3,4167 m. pr.	Prussia?	B	(Lesnikov, 1973, p. 130)
1406-00-00	£1 grote	3½m. pr.	£1 grote =	3,5000 m. pr.	Königsberg	A	(Sattler, 1887, p. 281)
1406-04-16	£20 grote	70m. pr.	£1 grote =	3,5000 m. pr.	Marienburg	C	(Hanserecesse, 1880, p. 233)
1406-10-02	£1 grote	3½m. pr.	£1 grote =	3,5000 m. pr.	Bruges	B	(Lesnikov, 1973, p. 184)
1406-12-00	£1 grote	3m. 13sc. pr.	£1 grote =	3,5417 m. pr.	Marienburg	A	(Joachim, 1896, p. 409)
1407-07-15	£1 grote	3½m. pr.	£1 grote =	3,5000 m. pr.	Bruges	B	(Lesnikov, 1973, p. 179)
1407-07-15	£1 grote	3m. 13sc. pr.	£1 grote =	3,5417 m. pr.	Bruges	B	(Lesnikov, 1973, p. 179)
1408-10-15	£1 grote	3m. 6sc. pr.	£1 grote =	3,2500 m. pr.	Bruges	B	(Lesnikov, 1973, p. 260)
1408-10-29	£1 grote	3m. 6sc. pr.	£1 grote =	3,2500 m. pr.	Bruges	B	(Lesnikov, 1973, p. 276)
1409-00-00	£896 2s. 3 grote	2987m. 1sc. pr.	£1 grote =	3,3333 m. pr.	Königsberg	C	(Sattler, 1887, p. 285)
1409-04-21	£6 grote	20m. pr.	£1 grote =	3,3333 m. pr.	Thorn	O	(Töppen, 1878, pp. 112 f.)
1409-08-04	£1 grote	3m. 4sc. pr.	£1 grote =	3,1667 m. pr.	Bruges	B	(Lesnikov, 1973, p. 296)
1409-08-27	£1 grote	3m. 5sc. pr.	£1 grote =	3,2083 m. pr.	Bruges	B	(Lesnikov, 1973, p. 300)
1409-10-16	£6 16s. 3 grote	20m. 9sc. – 8d. pr.	£1 grote =	2,9892 m. pr.	Bruges	C	(Lesnikov, 1973, p. 345)
1410-00-00	2s. grote	14sc. 1s. pr.	£1 grote =	6,0000 m. pr.	Marienburg	C	(Sattler, 1887, p. 50)
1410-00-00	£1 grote	6m. pr.	£1 grote =	6,0000 m. pr.	?	H	(Waschinski, 1952, p. 245)
1410-01-18	£1 grote	4m. 6sc. pr.	£1 grote =	4,2500 m. pr.	Bruges	B	(Lesnikov, 1973, p. 315)
1410-06-00	£1 grote	3m. 5sc. pr.	£1 grote =	3,2083 m. pr.	Bruges	B	(Lesnikov, 1973, p. 333)
1411-03-02	£1 grote	3m. 1s. pr.	£1 grote =	3,0167 m. pr.	Danzig	C	(Kunze, 1899, p. 516)
1411-07-30	£131 11s. 7 grote – 6 mytes	460½m. pr.	£1 grote =	3,4998 m. pr.	Marienburg	C	(Sattler, 1887, p. 54)
1411-09-29	£1 grote	3m. 5sc. pr.	£1 grote =	3,2083 m. pr.	?	C	(Kunze, 1899, p. 538)
1412-00-00	£4 16 grote	14m. 14sc. 14½d. pr.	£1 grote =	3,0424 m. pr.	Bruges	C	(Lesnikov, 1973, p. 401)
1412-03-26	£1 grote	3m. 18sc. pr.	£1 grote =	3,7500 m. pr.	Bruges	C	(Lesnikov, 1973, p. 407)
1412-04-03	£1 grote	3m. 8sc. pr.	£1 grote =	3,3333 m. pr.	Königsberg	A	(Sattler, 1887, p. 288)
1413-07-07	£15 grote	60m. pr.	£1 grote =	4,0000 m. pr.	Danzig	M	(Lesnikov, 1973, p. 424)
1414-05-04	£1 grote	4m. 18sc. pr.	£1 grote =	4,7500 m. pr.	Bruges	B	(Lesnikov, 1973, p. 434)
1414-07-00	£1 grote	5½m. pr.	£1 grote =	5,5000 m. pr.	Bruges	A	(Lesnikov, 1973, p. 439)
1415-02-01	£1 grote	5m. 1 ferd. pr.	£1 grote =	5,2500 m. pr.	Bruges	B	(Lesnikov, 1973, p. 449)
1415-02-01	£1 grote	5m. 6sc. pr.	£1 grote =	5,2500 m. pr.	Bruges	B	(Lesnikov, 1973, p. 449)
1415-03-11	£1 grote	5m. 8sc. pr.	£1 grote =	5,3333 m. pr.	Bruges	B	(Lesnikov, 1973, p. 450)
1415-03-30	£1 grote	5½m. pr.	£1 grote =	5,5000 m. pr.	Bruges	B	(Lesnikov, 1973, p. 450)
1415-04-29	£1 grote	6m. 14sc. pr.	£1 grote =	6,5833 m. pr.	Bruges	B	(Lesnikov, 1973, p. 450)
1415-05-06	£1 grote	5m. 15sc. pr.	£1 grote =	5,6250 m. pr.	Bruges	B	(Lesnikov, 1973, p. 450)
1415-05-15	£1 grote	5½m. pr.	£1 grote =	5,5000 m. pr.	Bruges	B	(Lesnikov, 1973, p. 450)
1415-09-02	£1 grote	6m. pr.	£1 grote =	6,0000 m. pr.	Danzig	M	(Lesnikov, 1973, p. 462)
1415-10-00	£200 grote	1200m. pr.	£1 grote =	6,0000 m. pr.	Thorn	C	(Kaczmarczyk, 1936, p. 191)

(autumn)

1416-00-00	£1 grote	11m. pr.	£1 grote =	11,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1416-00-00	£1 grote	10m. pr.	£1 grote =	10,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1416-09-29	£20 grote	74m. 4sc. pr.	£1 grote =	3,7083 m. pr.	Danzig	C	(Stieda, 1921, p. 198)
1416-10-21	£1 grote	11m. pr.	£1 grote =	11,0000 m. pr.	Bruges	B	(Rundstedt, 1939, p. 146)
1416-11-23	£1 grote	10m. pr.	£1 grote =	10,0000 m. pr.	Königsberg	A	(Sattler, 1887, p. 298)
1417-00-00	£1 grote	10m. pr.	£1 grote =	10,0000 m. pr.	Danzig	C	(Rundstedt, 1939, p. 145)
1417-01-05	£1 grote	10m. pr.	£1 grote =	10,0000 m. pr.	Danzig	C	(Stieda, 1921, p. 161)
1417-01-05	£1 grote	7½m. pr.	£1 grote =	7,5000 m. pr.	Danzig	C	(Stieda, 1921, p. 161)
1417-02-12	£1 grote	9½m. pr.	£1 grote =	9,5000 m. pr.	Danzig	C	(Stieda, 1921, p. 200)
1417-04-23	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Danzig	C	(Stieda, 1921, p. 170)
1417-07-04	£24 grote	150m. pr.	£1 grote =	6,2500 m. pr.	Lübeck	C	(Stieda, 1921, p. 186)
1417-07-27	£1 grote	7½m. pr.	£1 grote =	7,5000 m. pr.	Danzig	C	(Stieda, 1921, p. 190)
1417-08-26	£12 grote	106½m. pr.	£1 grote =	8,8750 m. pr.	Danzig	C	(Stieda, 1921, p. 202)
1417-08-26	£1 grote	8m. 21sc. pr.	£1 grote =	8,8750 m. pr.	Danzig	C	(Stieda, 1921, p. 202)
1417-09-08	£24 grote	212½m. pr.	£1 grote =	8,8542 m. pr.	Danzig	C	(Stieda, 1921, p. 202)
1417-09-08	£20 grote	175m. pr.	£1 grote =	8,7500 m. pr.	Danzig	C	(Stieda, 1921, p. 202)
1418-03-24	£30 grote	255m. pr.	£1 grote =	8,5000 m. pr.	Danzig	B	(Stieda, 1921, p. 255)
1418-03-24	£20 grote	170m. pr.	£1 grote =	8,5000 m. pr.	Danzig	C	(Stieda, 1921, p. 255)
1418-04-17	£50 grote	425m. pr.	£1 grote =	8,5000 m. pr.	Danzig	C	(Stieda, 1921, pp. 205 f.)
1418-05-25	£12 grote	100m. 12sc. pr.	£1 grote =	8,3750 m. pr.	Danzig	B	(Stieda, 1921, p. 255)
1418-06-14	£12 grote	100m. 12sc. pr.	£1 grote =	8,3750 m. pr.	Danzig	B	(Stieda, 1921, p. 256)
1418-07-04	£30 grote	250m. 5 ferd. pr.	£1 grote =	8,3750 m. pr.	Danzig	B	(Stieda, 1921, p. 256)
1418-08-12	£15 grote	125m. pr.	£1 grote =	8,3333 m. pr.	Danzig	C	(Stieda, 1921, p. 256)
1418-11-11	£10 grote	88m. 3 ferd. pr.	£1 grote =	8,8750 m. pr.	Danzig	C	(Stieda, 1921, p. 257)
1419-10-11	£50 grote	450m. pr.	£1 grote =	9,0000 m. pr.	Danzig	C	(Stieda, 1921, p. 246)
1420-00-00	£1 grote	9m. – 1 ferd. pr.	£1 grote =	8,7500 m. pr.	Bruges	B	(Sattler, 1887, p. 456)
1420-00-00	£3 10s. grote	28m. 4sc. pr.	£1 grote =	8,0476 m. pr.	?	C	(Stieda, 1921, p. 283)
1420-04-01	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Danzig	C	(Stieda, 1921, p. 261)
1420-05-16	£1 grote	9m. –½ ferd. pr.	£1 grote =	8,7500 m. pr.	Danzig	C	(Stieda, 1921, p. 333)
1420-05-19	£1 grote	7m. pr.	£1 grote =	7,0000 m. pr.	Danzig	C	(Stieda, 1921, p. 265)
1420-05-21	£3 10s. grote	28m. 4sc. pr.	£1 grote =	8,0476 m. pr.	Danzig	C	(Stieda, 1921, p. 268)
1420-05-25	£11 grote	97m. 15sc. pr.	£1 grote =	8,8750 m. pr.	Danzig	C	(Stieda, 1921, p. 333)
1420-06-09	£1 grote	9m. –½ ferd. pr.	£1 grote =	8,7500 m. pr.	Danzig	C	(Stieda, 1921, p. 333)
1420-06-20	£1 grote	9m. –½ ferd. pr.	£1 grote =	8,7500 m. pr.	Danzig	C	(Stieda, 1921, p. 334)
1420-06-25	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Prussia	C	(Stieda, 1921, p. 274)
1420-09-08	£1 grote	9m. –½ ferd. pr.	£1 grote =	8,8750 m. pr.	Danzig	C	(Stieda, 1921, p. 334)
1420-11-18	£1 grote	9m. –½ ferd. pr.	£1 grote =	8,8750 m. pr.	Danzig	C	(Stieda, 1921, p. 334)

1420-12-02	11s. 8gr 2 engel grote	4m. 33s. pr.	£1 grote =	7,7630 m. pr.	Danzig	C	(Stieda, 1921, p. 333)
1420-12-30	£1 grote	9m. – 9sc. pr.	£1 grote =	8,6250 m. pr.	Danzig	C	(Stieda, 1921, p. 334)
1421-01-17	£1 grote	9m. –½ ferd. pr.	£1 grote =	8,8750 m. pr.	Danzig	C	(Stieda, 1921, p. 334)
1421-01-17	£1 grote	9m. – 4sc. pr.	£1 grote =	8,8333 m. pr.	Danzig	C	(Stieda, 1921, p. 334)
1421-06-24	£1 grote	9m. –½ ferd. pr.	£1 grote =	8,8750 m. pr.	Danzig	C	(Stieda, 1921, p. 334)
1422-07-01	£1 grote	8m. 1sc. pr.	£1 grote =	8,0417 m. pr.	Bruges	B	(Sattler, 1887, p. 471)
1423-00-00	£1 grote	6m. 2sc. pr.	£1 grote =	6,0833 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1423-05-29	£1 grote	4m. – 1 ferd. pr.	£1 grote =	3,7500 m. pr.	Königsberg	A	(Sattler, 1887, p. 305)
1423-09-08	£1 grote	6m. 2sc. pr.	£1 grote =	6,0833 m. pr.	Danzig	C	(WAP Gd., 300, R F, 4, fol. 2 r.)
1424-00-00	£1 grote	6m. 18sc. pr.	£1 grote =	6,7500 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1424-00-00	£6 14s. grote	47m. pr.	£1 grote =	7,0149 m. pr.	Bruges	A	(Sattler, 1887, p. 470)
1424-00-00	£1 grote	6m. 3 ferd. 7s. pr.	£1 grote =	6,8667 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1425-12-00	£1 grote	8m. – 1 ferd	£1 grote =	7,7500 m. pr.	Bruges	B	(Sattler, 1887, p. 483)
1427-11-08	£25 grote	161 geringe m. pr.	£1 grote =	6,4400 m. pr.	Elbing	C	(Hanserecesse, 1897, p. 205)
1427-11-08	£1 grote	6m. 7s. pr.	£1 grote =	6,1167 m. pr.	Elbing	B	(Hanserecesse, 1897, p. 205)
1428-00-00	£1 grote	6m. 12sc. pr.	£1 grote =	6,5000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1428-00-00	£1 grote	6m. pr.	£1 grote =	6,0000 m. pr.	Bruges	A	(Sattler, 1887, p. 500)
1428-06-12	£25 grote	161 geringe m. pr.	£1 grote =	6,4400 m. pr.	Elbing	C	(Hanserecesse, 1897, p. 302)
1428-12-15	£25 grote	161 geringe m. pr.	£1 grote =	6,4400 m. pr.	Elbing	C	(Hanserecesse, 1897, p. 358)
1429-00-00	£1 grote	5m. 18sc. pr.	£1 grote =	5,7500 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1429-00-00	£1 grote	6m. - 1 ferd	£1 grote =	5,7500 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1429-02-18	£25 grote	161 geringe m. pr.	£1 grote =	6,4400 m. pr.	Marienburg	C	(Töppen, 1878, p. 516)
1430-00-00	£1 grote	6m. 4sc. pr.	£1 grote =	6,1667 m. pr.	Bruges	H	(Hirsch, 1858, p. 243)
1430-00-00	£1 grote	5m. 12sc. pr.	£1 grote =	5,5000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1430-00-00	£1 grote	5½m. pr.	£1 grote =	5,5000 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1431-10-04	£2 grote	12m. pr.	£1 grote =	6,0000 m. pr.	Bruges	B	(Sattler, 1887, p. 510)
1433-00-00	£1 grote	5m. pr.	£1 grote =	5,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1433-00-00	£1 grote	5m. 6sc. pr.	£1 grote =	5,2500 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1433-00-00	£1 grote	6m. pr.	£1 grote =	6,0000 m. pr.	Bruges	M	(Sattler, 1887, p. 517)
1433-00-00	£1 grote	5m. pr.	£1 grote =	5,0000 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1435-00-00	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1435-11-16	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Danzig	C	(Rundstedt, 1939, p. 74)
1436-00-00	£1 grote	5m. 18sc. pr.	£1 grote =	5,7500 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1436-00-00	£1 grote	6m. 2sc. pr.	£1 grote =	6,0833 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1436-00-00	£1 grote	7m. pr.	£1 grote =	7,0000 m. pr.	Bruges	H	(Hirsch, 1858, p. 243)
1436-00-00	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Bruges	H	(Hirsch, 1858, p. 243)
1436-00-00	£1 grote	8m. 6sc. pr.	£1 grote =	8,2500 m. pr.	Bruges	H	(Hirsch, 1858, p. 243)
1436-00-00	£1 grote	8m. 8sc. pr.	£1 grote =	8,3333 m. pr.	Bruges	B	(Ropp, 1876, p. 500)

1436-00-00	£1 grote	9m. pr.	£1 grote =	9,0000 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1436-00-00	£1 grote	8m. 1 ferd. pr.	£1 grote =	8,2500 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1436-10-19	£1 grote (alt gelt)	6 geringe m. 2sc. pr.	£1 grote =	6,0833 m. pr.	Danzig	C	(Rundstedt, 1939, p. 113)
1437-00-00	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1437-00-00	£1 grote	8m. 1 ferd. pr.	£1 grote =	8,2500 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1437-00-00	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1437-05-18	£1 grote	8 geringe m. pr.	£1 grote =	8,0000 m. pr.	Danzig	C	(Rundstedt, 1939, p. 134)
1438-00-00	£1 grote	7m. 12sc. pr.	£1 grote =	7,5000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1438-00-00	£1 grote	7m. pr.	£1 grote =	7,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1438-05-31	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	?	C	(Rundstedt, 1939, p. 404)
1439-02-20	£26½ grote	212m. pr.	£1 grote =	8,0000 m. pr.	?	C	(Rundstedt, 1939, p. 427)
1439-03-30	£58 15s. grote	528m. 3 ferd. pr.	£1 grote =	9,0000 m. pr.	?	C	(Rundstedt, 1939, p. 358)
1440-00-00	£1 grote	7m. 12sc. pr.	£1 grote =	7,5000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1441-00-00	£1 grote	8m. 12sc. pr.	£1 grote =	8,5000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1443-00-00	£1 grote	6m. 6sc. pr.	£1 grote =	6,2500 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1443-00-00	£1 grote	7m. pr.	£1 grote =	7,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1443-00-00	£1 grote	6m. - 1 ferd	£1 grote =	5,7500 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1444-00-00	£1 grote	6m. 17sc. pr.	£1 grote =	6,7083 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1444-00-00	£1 grote	7m. - 7sc. pr.	£1 grote =	6,7083 m. pr.	Danzig	H	(Slaski, 1905, p. 25)
1444-01-21	£60 grote	200m. pr. (good m.)	£1 grote =	3,3333 m. pr.	Thorn	C	(Ciesielska and Tandecki, 1992, p. 200)
1445-00-00	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1446-10-15	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Holland	C	(Ropp, 1881, p. 166)
1447-00-00	£1½ grote	12m. pr.	£1 grote =	8,0000 m. pr.	Thorn	C	(Ciesielska and Tandecki, 1993, p. 70)
1448-08-02	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Marienburg	C	(Hildebrand and Schwartz, 1896, p. 331)
1449-11-18	£11½ grote	83½m. pr.	£1 grote =	7,2609 m. pr.	?	C	(Stein, 1899, p. 57)
1450-00-00	£1 grote	8m. pr.	£1 grote =	8,0000 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1450-07-19	£2 grote	16m. pr.	£1 grote =	8,0000 m. pr.	?	C	(Stein, 1899, p. 61)
1452-00-00	£1 grote	7m. 2sc. pr.	£1 grote =	7,0833 m. pr.	Danzig	H	(Hirsch, 1858, p. 243)
1452-09-00	£11 15s. grote	80m. pr.	£1 grote =	6,8085 m. pr.	Danzig	C	(Ropp, 1883, p. 83)
1453-00-00	£144 grote	1028m. pr.	£1 grote =	7,1389 m. pr.	?	C	(Stein, 1899, p. 704)
1454-00-00	£1 grote	11m. pr.	£1 grote =	11,0000 m. pr.	Prussia	C	(Stein, 1899, p. 237)
1464-09-17	£48 grote	385m. pr. (levis)	£1 grote =	8,0208 m. pr.	Danzig	C	(Stein, 1903, p. 71)
1475-01-03	30 grote flem.	1m. pr. (danziger paiment)	£1 grote =	8,0000 m. pr.	Danzig	C	(Stein, 1907, p. 228)
1494-05-21	£2723 21 grote	20422m. 4s. pr.	£1 grote =	7,4996 m. pr.	Stralsund	C	(Schäfer, 1888, p. 233)
1494-05-21	£4311 16s. 9 grote	32338m. 15s. pr.	£1 grote =	7,4999 m. pr.	Stralsund	C	(Schäfer, 1888, p. 233)
1494-05-21	£1 grote	7½m. pr.	£1 grote =	7,5000 m. pr.	Stralsund	C	(Schäfer, 1888, p. 233)

5.3. Mark of Prussia in Mark of Lübeck

yyyy-mm-dd	original1	original2		E_t	place	type	source
1358-09-29	1m. pr.	23½s. lüb.	1m. pr. =	1,4688 m. lüb.	Hamburg	B	(Mollwo, 1901, p. 45)
1358-11-01	1m. pr.	23½s. lüb.	1m. pr. =	1,4688 m. lüb.	Hamburg	C	(Mollwo, 1901, p. 45)
1358-11-01	1m. pr.	23s. lüb.	1m. pr. =	1,4375 m. lüb.	Hamburg	C	(Mollwo, 1901, p. 45)
1399-00-00	30m. pr.	56m. 4s. lüb.	1m. pr. =	1,8750 m. lüb.	Königsberg	M	(Sattler, 1887, p. 144)
1400-04-18	223m. pr.	383m. 4½s. lüb.	1m. pr. =	1,7188 m. lüb.	Königsberg	B	(Sattler, 1887, p. 145)
1400-04-18	1m. pr.	27½s. lüb.	1m. pr. =	1,7188 m. lüb.	Königsberg	B	(Sattler, 1887, p. 145)
1400-07-25	81m. 1 ferd. pr.	150m. lüb.	1m. pr. =	1,8462 m. lüb.	Danzig	C	(Pelech, 1987a, p. 173)
1400-09-29	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	B	(Sattler, 1887, p. 146)
1401-00-00	600m. pr.	1012½m. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	C	(Sattler, 1887, p. 148)
1401-00-00	500m. pr.	843m. 12s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	C	(Sattler, 1887, p. 150)
1401-00-00	1m. pr.	2m. lüb.	1m. pr. =	2,0000 m. lüb.	Königsberg	A	(Sattler, 1887, p. 150)
1401-02-15	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	B	(Sattler, 1887, p. 146)
1402-07-13	400m. pr.	675m. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	C	(Sattler, 1887, p. 150)
1403-00-00	12sc. pr.	1m. lüb.	1m. pr. =	2,0000 m. lüb.	Danzig	H	(Hirsch, 1858, p. 243)
1403-00-00	12sc. 2s. pr.	1m. lüb.	1m. pr. =	1,8750 m. lüb.	Danzig	H	(Hirsch, 1858, p. 243)
1403-06-03	53m. 8sc. pr.	100m. lüb.	1m. pr. =	1,8750 m. lüb.	Danzig	C	(Pelech, 1987a, p. 180)
1403-06-15	1m. pr.	30s. lüb.	1m. pr. =	1,8750 m. lüb.	Marienburg	C	(Hanserecesse, 1880, p. 94)
1403-11-11	1m. pr.	30s. lüb.	1m. pr. =	1,8750 m. lüb.	Königsberg	B	(Sattler, 1887, p. 256)
1403-11-11	1m. pr.	29s. lüb.	1m. pr. =	1,8125 m. lüb.	Königsberg	C	(Sattler, 1887, p. 256)
1404-06-24	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	L	(Sattler, 1887, p. 180)
1404-09-24	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	L	(Sattler, 1887, p. 180)
1405-06-24	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	L	(Sattler, 1887, p. 185 f)
1405-06-24	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	L	(Sattler, 1887, p. 210 f)
1405-06-24	1m. pr.	26s. lüb.	1m. pr. =	1,6250 m. lüb.	Königsberg	L	(Sattler, 1887, p. 210)
1405-06-24	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	L	(Sattler, 1887, p. 212)
1405-11-11	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	L	(Sattler, 1887, p. 213)
1406-00-00	1m. pr.	2m. lüb.	1m. pr. =	2,0000 m. lüb.	Königsberg	A	(Sattler, 1887, p. 281)
1407-00-00	12sc. pr.	1m. lüb.	1m. pr. =	2,0000 m. lüb.	Danzig	H	(Hirsch, 1858, p. 243)
1407-00-00	600m. pr.	1080m. lüb.	1m. pr. =	1,8000 m. lüb.	Prussia	B	(Töppen, 1878, p. 371)
1408-00-00	12sc. pr.	1m. lüb.	1m. pr. =	2,0000 m. lüb.	Danzig	H	(Hirsch, 1858, p. 243)
1408-03-27	33s. pr.	1m. lüb.	1m. pr. =	1,8182 m. lüb.	Elbing	A	(Pelech, 1987b, p. 81)
1408-03-27	30s. pr.	1m. lüb.	1m. pr. =	2,0000 m. lüb.	Elbing	A	(Pelech, 1987b, p. 81)
1408-06-00	600m. pr.	1200m. lüb.	1m. pr. =	2,0000 m. lüb.	Marienburg	A	(Hanserecesse, 1893, p. 157)
1409-10-00	18m. 8sc. pr.	36m. 10s. lüb.	1m. pr. =	1,9977 m. lüb.	Lübeck	C	(Stieda, 1921, p. 30)

1410-00-00	106m. 5sc. pr.	200m. lüb.	1m. pr. =	1,8831 m. lüb.	Marienburg	M	(Hanserecesse, 1893, p. 158)
1410-00-00	12 ½sc. pr.	1m. lüb.	1m. pr. =	1,9200 m. lüb.	Danzig	H	(Hirsch, 1858, p. 243)
1410-02-00	106m. 5sc. pr.	200m. lüb.	1m. pr. =	1,8831 m. lüb.	Elbing	M	(Hanserecesse, 1889, p. 115)
1410-08-01	1m. pr.	35s. lüb.	1m. pr. =	2,1875 m. lüb.	Cologne	B	(Stieda, 1921, p. 43)
1410-08-19	18m. pr.	36m. 10s. lüb.	1m. pr. =	2,0347 m. lüb.	?	C	(Stieda, 1921, p. 50)
1410-08-19	24m. pr.	50m. lüb.	1m. pr. =	2,0833 m. lüb.	?	C	(Stieda, 1921, p. 52)
1410-11-11	1m. pr.	27s. lüb.	1m. pr. =	1,6875 m. lüb.	Königsberg	L	(Sattler, 1887, p. 287)
1411-01-10	18m. pr.	36m. 10s. lüb.	1m. pr. =	1,7014 m. lüb.	?	C	(Stieda, 1921, p. 62)
1411-08-10	18m. 8sc. pr.	36m. 10s. lüb.	1m. pr. =	1,9977 m. lüb.	?	C	(Stieda, 1921, p. 73)
1411-08-10	24m. pr.	50m. lüb.	1m. pr. =	2,0833 m. lüb.	?	C	(Stieda, 1921, p. 74)
1412-01-13	18m. pr.	36m. 10s. lüb.	1m. pr. =	2,0347 m. lüb.	?	C	(Stieda, 1921, p. 81)
1412-06-24	1m. pr.	28s. lüb.	1m. pr. =	1,7500 m. lüb.	Königsberg	L	(Sattler, 1887, p. 287)
1416-06-02	24m. pr.	50m. lüb.	1m. pr. =	2,0833 m. lüb.	Cologne	A	(Stieda, 1921, p. 141)
1416-07-12	24m. pr.	50m. lüb.	1m. pr. =	2,0833 m. lüb.	?	A	(Stieda, 1921, p. 147)
1416-07-12	18m. pr.	36m. 10s. lüb.	1m. pr. =	2,0278 m. lüb.	?	A	(Stieda, 1921, p. 147)
1416-11-24	1m. pr.	1m. lüb.	1m. pr. =	1,0000 m. lüb.	Königsberg	A	(Sattler, 1887, p. 296)
1418-05-25	53m. 8sc. pr.	40m. lüb.	1m. pr. =	0,7467 m. lüb.	Danzig	A	(Stieda, 1921, p. 255)
1418-11-11	133m. 8sc. pr.	100m. lüb.	1m. pr. =	0,7500 m. lüb.	Danzig	C	(Stieda, 1921, p. 256)
1418-11-11	137m. 1sc. pr.	100m. lüb.	1m. pr. =	0,7297 m. lüb.	Danzig	C	(Stieda, 1921, p. 256)
1423-05-29	1700 gute m. pr.	3400m. lüb.	1m. pr. =	2,0000 m. lüb.	Königsberg	A	(Sattler, 1887, p. 305)
1430-00-00	20sc. pr.	1m. lüb.	1m. pr. =	1,2000 m. lüb.	Danzig	H	(Hirsch, 1858, p. 243)
1445-00-00	22sc. pr.	1m. lüb.	1m. pr. =	1,0909 m. lüb.	Danzig	H	(Hirsch, 1858, p. 243)
1445-00-00	24sc. pr.	1m. lüb.	1m. pr. =	1,0000 m. lüb.	Danzig	H	(Hirsch, 1858, p. 243)
1454-05-23	20sc. pr.	1m. lüb.	1m. pr. =	1,2000 m. lüb.	Lübeck	C	(Ropp, 1883, p. 201)
1454-05-25	20sc. pr.	1m. lüb.	1m. pr. =	1,2000 m. lüb.	Lübeck	C	(Ropp, 1883, p. 203)
1454-07-17	79m. pr. (geringes)	80m. lüb.	1m. pr. =	1,0127 m. lüb.	Lübeck	B	(Ropp, 1883, p. 215)
1478-06-05	1m. pr.	18s. lüb.	1m. pr. =	1,1250 m. lüb.	Lübeck	C	(Pauli, 1872, p. 161)

5.4. Silver equivalents of the Pound Grote, Mark of Lübeck and Mark of Prussia, in grams of pure silver

	Pound Grote	Mark of Lübeck	Mark of Prussia
1318, March	864,12		
1325		78,72	
1332, March	836,21		
1337, May	697,83		
1443, April	568,60		
1346, January	544,91		
1346, November	496,04		
1350		64,32	
1351, May	461,99		
1354, December	419,24		
1359, October	402,08		
1361, December	390,91		
1365		61,44	
1368			87,30
1375		51,79	
1379, February		53,81	
1380, January	242,63		
1380, February			74,40
1381, April		52,80	
1383, September	232,52		
1384, July	281,46		
1386, April	270,63		
1386, October	246,89		
1387, April	203,67		
1387, May		50,88	
1388, October	187,38		
1389, December	246,89		
1391, January	244,74		
1393, June	246,89		
1396			75,60
1398		47,23	
1403, February		45,60	
1406, March		43,20	
1407			70,20
1407, April	265,52		
1407, July	246,89		
1409			66,00
1409, August	287,20		
1410, December		42,10	
1411, February			40,80
1411, September		40,46	
1413, October			45,60
1414, January			23,40
1416, July			52,20 (22,75[8])
1416, December	234,55		
1418, June	206,95		
1422, January	234,55		
1424, October		30,50	
1425, July	221,27		

[8] Silver equivalent of the lesser Mark according to the assay taken in 1439 (cf. Ropp, 1878, p. 225).

1426, July	218,50		
1426, December	215,36		
1428, June	195,46		
1428, November	182,62		
1429, January	180,98		
1429, June	173,74		
1431, December	162,88		
1432, September		25,44	
1433, January		24,61	
1433, May	201,04		
1433, October	195,46		
1439, May		24,35	
1441, October		24,64	
1442, May			48,60
1450, November		23,38	
1454, March			20,40
1466, May	170,58		
1467, April			19,80
1467, October	166,54		
1468, February		20,30	
1474, October	146,59		
1477			15,60
1487, April	175,89		

Units of measurement used at the mints:

Flanders	Mark of Troyes	244,753 g
Wendish Monetary Union	Mark of Cologne	233,893 g
Prussia	Mark of Kulm	190,038 g

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