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The multiple currencies of Sweden-Finland 1534-1803*

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Abstract

This paper deals with the exchange rates between the domestic currencies of Sweden-Finland in 1534-1803. In 1534, the first silver daler coins were minted in Sweden, which existed alongside the main silver coins at a fluctuating exchange rate. In 1624, a copper standard was introduced. However, the silver standard continued to exist alongside the copper standard. A distinctive feature of the multi-currency standard in Sweden-Finland during the 17th and 18th centuries, was that there was not only a fluctuating market exchange rate between the copper and silver currencies, but also between various silver currencies. At least five or six currency units were used, three based on silver, one or two based on copper and one based on gold. In 1776 a mono-currency, silver standard was reintroduced, with the riksdaler as the main unit. However, montery stability was not long-lasting. In 1789-1803 two different currencies existed, one fiat currency based on riksdaler riksgälds notes and one based on the riksdaler banco that continued to be convertible into silver coins by the Riksbank. In 1803 the relation 1 riksdaler riksgälds = ⅔ riksdaler banco was fixed, which basically ended the period of multiple currencies.

JEL-classification: E42; N13; N23

Key words: monetary history, bimetallism, debasement, copper standard, Sweden

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1. Introduction

This paper discusses the currency system of Sweden-Finland in 1534-1803 (Finland was part of the Swedish Kingdom before 1809). What characterises most of the period was the perplexing system of several parallel domestic currencies. Alongside the fluctuating exchange rates on foreign currencies, there were also fluctuating exchange rates between these domestic currencies. Such monetary system is here termed a multi-currency standard, which can be contrasted to the mono-currency standard with only one domestic currency in existence, typical for the modern age (see Edvinsson, 2009a).

The axiomatic law of identity says that "A" is always equal to "A". Such an identity is presumed in the modern capitalist economy, so that one "American dollar" always equals another "American dollar". However, for the pre-industrial such identities cannot automatically be assumed, since one monetary term could have different meanings in different contexts and periods, creating confusions and at occasions also conflict of how to interpret various contracts. Over time, the same monetary term could bifurcate, multiplying the number of monetary units in use sharing the same name. Rationalisation of monetary relations was itself part of the transformation from a pre-industrial to an industrial, capitalist economy.

From 16th century Sweden-Finland got two silver currencies, one based on the mark, equal to 8 öre or 192 penningar (pennies), the main currency, and one on the silver daler (dollar), with a floating exchange rates between the two. The silver daler was an international coin, which was minted in Sweden-Finland from 1534. In the next centuries additional currencies were added, based on silver, copper, and gold.

Figure 1 presents how the term "daler" went through several semantic bifurcations in 1534-1873, giving rise to multiple types of monetary units tracing their historical origin to the silver daler of the 16th century. In the late 16th a first bifurcation occurred between the silver daler as

a coin with stable silver content and the daler as a unit of account equal to 4 marks or 32 öre. The silver daler was termed slagen daler and later riksdaler (rix-dollar) and riksdaler specie, which continued to exist as a stable monetary unit up to 1873, with about the same fine silver content as the reichstaler according to the Leipzig convention in 1566 and later the Hamburger reichstaler banco. In the 17th century further bifurcations occurred for the terms daler and riksdaler.

Although, in 1777 the riksdaler became the only currency unit (if not considering the gold ducat), this mono-currency standard only lasted to 1789, when two different currencies arose, one based on the riksdaler banco and one on the riksdaler riksgälds. When the riksdaler riksgälds was fixated to 2/3 riksdaler banco in 1803, the period of multiple currencies essentially ended. Even though the riksdaler specie and the ducat continued to exist as separate currencies at a floating exchange rate after 1803, they played only a minor role as domestic currencies. However, it was not until 1873, when the gold standard was introduced and the krona replaced the riksdaler riksmynt as the main unit of account, that Sweden finally got a true mono-currency standard.

The main disposition of the paper is chronological. Section 2 examines the period 1521-1624, section 3 the period 1624-1719, the first period of the copper and silver standard, section 4 the period 1719-1776, and section 5 the period after 1776 when riksdaler became the main currency unit in Sweden-Finland. Section 6 summarises the main results.

Since the same monetary label could have different meanings in different circumstances and in different periods, most monetary terms dealt with in this paper are not translated into English since that could create some misunderstandings. For example, the Swedish currency unit “daler silvermynt” could be translated into “dollar silver coin” or “dollar silver specie”, which would give the impression of a dollar existing in the form of a silver coin. However, the “daler silvermynt” was a unit of account, and copper plate coins were denominated in this

unit. Furthermore, after around 1665, actual silver coins were counted in daler courant and daler carolin rather than in daler silvermynt (see Figure 1).

To estimate exchange rates between various currencies both primary and secondary sources are used.

Wallroth's *Sveriges mynt 1449-1917* (1918) presents data on the minting, fine metal content and exchange rates between monetary currencies in Sweden from the late Middle Ages to the First World War. Its data on the legally fixed relations between currencies in Sweden is easily accessible, and have been used in this study. Its data on the market exchange rate for the riksdaler is only used sporadically, when other sources are missing. A problem with Wallroth's exchange rate data is that he does not always presents his sources. For some periods he calculates the exchange rate between two coins based on their fine silver contents. However, circulation by weight (i.e. in accordance with the coins intrinsic metal value) cannot simply be assumed.

In Sveriges Riksbank (1931) annual exchange rates are presented from 1740 onwards. The annual figures are calculated as averages of the daily market exchange rates in *Stockholm stads priscourant*[1] and *Post- och Inrikes tidningar* (some of these primary sources are today missing). These daily exchange rates were never published by the Riksbank, but are available in hand-written form at the Riksbank archive. This material also provides information on the daily market exchange rates in the period 1705-1736.[2]

In his study on the copper minting in 1624-1714 Wolontis (1936) presents monthly market exchange rates for the 17th century.

[1] *Stocholms stads priscourant* were published weekly from the early 18th century. The first known issues are from 1705. Initially the prices were handwritten on pre-published formulas, but from March 1740 the price courants were published as a numbered paper. See *Svenska folket genom tiderna: vårt lands kulturhistoria i skildringar och bilder. 5, Den karolinska tiden* (1939), p. 33.

[2] "Växelkurser å Stockholms börs. Primärtabeller (1705-)/1740-1803". Online at: http://www.historia.se/exchangerates1705_1803.pdf [070201]. Unnamed volume with exchange rates 1804-1889. Online at: http://www.historia.se/exchangerates1804_1889.pdf [070201].

The Sandbergska samlingen at the Riksarkivet contains some important information on the exchange rates from the Middle Ages to the 19th century.[3] The material is of a mixed quality, but seems to be quite reliable when the data is checked with other sources.

Other sources have also been used, which are discussed further below.

The exchange rates are less reliable the further back in time one goes. One specific problem is that not all the reported exchange rates were relevant for the whole of Sweden and there could be quite large regional differences.[4]

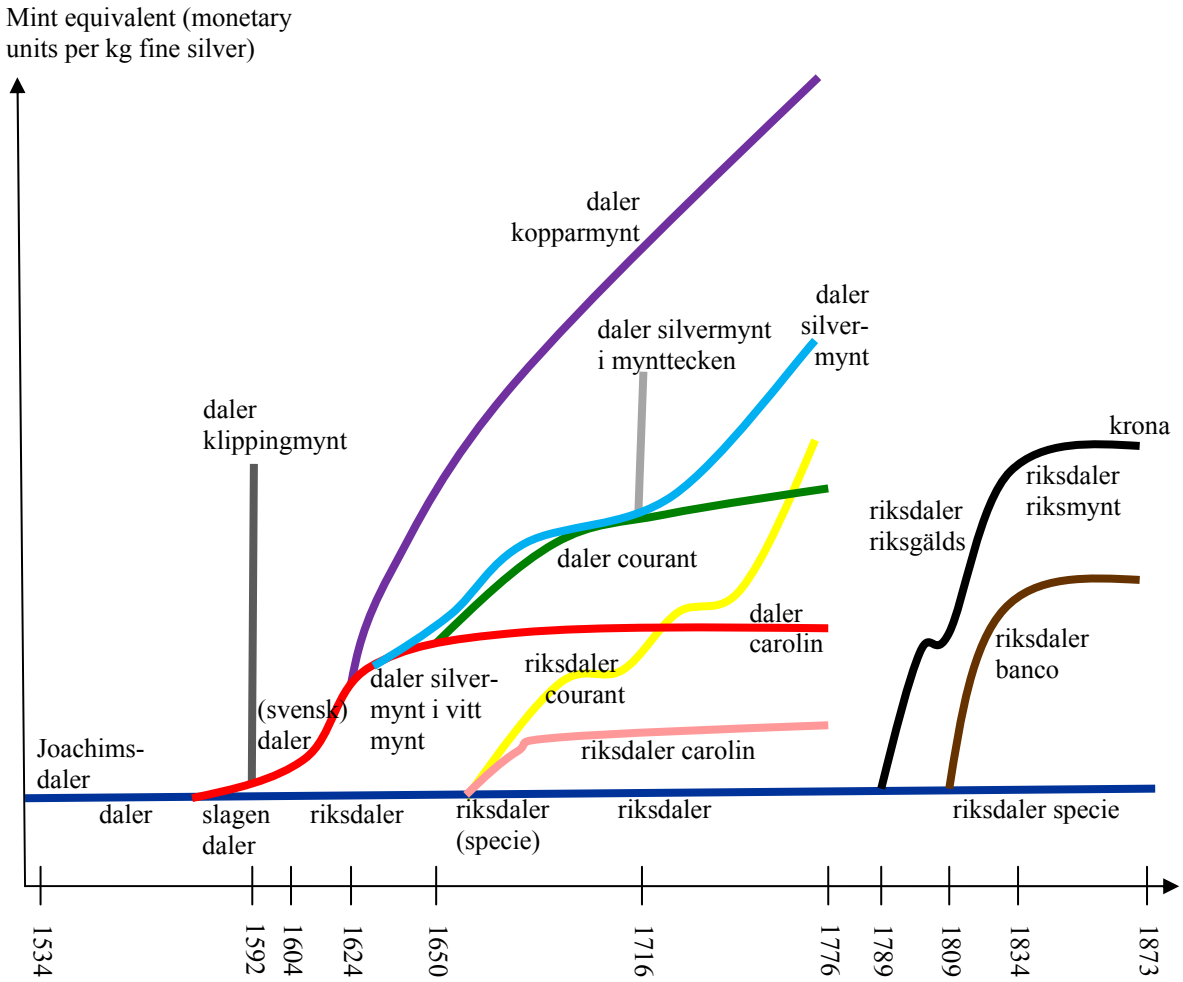
To calculate central measures of exchange rate data different methods could be used.

When data is reliable, the geometric average is used, especially when annual averages are calculated from monthly data.[5] The advantage of geometric average over the arithmetic average is the symmetry of the geometric average and the fact that exchange rates rather grow geometrically than arithmetically. For example, if an annual geometric average is calculated from the monthly data on *one pound in dollars*, the inverse of this value would be the same as the annual geometric average calculated for the monthly data of *one dollar in pounds* using the same data set. Such automatic equality is not guaranteed by the arithmetic average.[6]

When data is less reliable the median is used. The median is especially effective to eliminate extreme values. The arithmetic average is also occasionally used.

[3] Sandbergska samlingen, vol. O:1, O:2 and OO (Riksarkivet).
[4] Hegardt (1975), p. 222.
[5] The geometric average of data expressed in percent (mainly various premiums) is calculated first by transforming the data to ratios, then calculating the geometric average of the data in ratio form, and finally transforming the average ratio to a percent figure.
[6] For example, say that in one year one pound is paid one and two dollars, respectively. The arithmetic average exchange rate is 1.5 dollars per pound, and the inverse value is 0.667 pounds per dollar, which expresses the value of one dollar in pounds. However, calculating the arithmetic average of the exchange rate of one dollar in pounds (one dollar is paid one and ½ pound, respectively), is 0.75 pounds per dollar. The geometric average is 0.707 pounds per dollar.

Figure 1: *The bifurcations of the term "daler" 1534-1873.*



Note: This type of figure of semantic bifurcations has been originally proposed by Klas Fregert. The left scale is ordinal, and the differences between levels should not be interpreted as exact measures. The same colur follows the same monetary unit, whose name could change over time:
- Dark blue: Joachimsdaler/daler/slagen daler/riksdaler/riksdaler specie (1534-1873)
- Red: (svensk) daler/daler silvermynt i vitt mynt/daler carolin (1576-1776). Bifurcated from daler.
- Dark grey: Daler klippingmynt (1591-1593). Bifurcated from (svensk) daler.
- Purple: Daler kopparmynt (1624/1633-1776). Bifurcated from (svensk) daler.
- Light blue: Daler silvermynt (1624/1633-1776). Bifurcated from (svensk) daler.
- Green: Daler courant (1650s-1776). Bifurcated from daler silvermynt i vitt mynt.
- Light red: Riksdaler carolin (1660s-1776). Bifurcated from riksdaler (specie).
- Yellor: Riksdaler courant (1660s-1776). Bifurcated from riksdaler (specie).
- Light grey: Daler silvermynt i mynttecken (1716-1719). Bifurcated from daler silvermynt.
- Brown: Riksdaler banco (1789/1809-1855/1873). Bifurcated from riksdaler (specie).
- Black: Riksdaler riksgälds/riksdaler riksmynt/krona (1789-present). Bifurcated from riksdaler (specie).

2. The period 1534-1624

Up to 1624, Sweden-Finland had a de facto mono-metallic silver standard. However, there were some deviations from this standard. Most notably, individuals did not possess the right to turn bullion into coins, i.e. free minting was restricted.[7] This was used by the Crown in attempts to raise the value of coins above their intrinsic metal value, and thus to increase seignorage from minting. These attempts could succeed only if the quantity of minted coins were restricted, which was practiced only in some periods and with a limited success. The 16th century thus saw elements of an inconvertible currency, although it was not until the 18th century that such currencies were introduced on a grander scale.

The period 1534-1624 saw two major debasement cycles: 1561-1576 and 1590-1593. Both coincided with wars, and a need to finance the war effort through increased seignorage. Some of the inferior coins were called clippings since they were clipped in a square form to save time when minted. After some delay the value of the debased coins fell towards their intrinsic metal value. The two debasement cycles were followed by recoinage and the reintroduction of better coins. The face value of the debased coins was reduced.

Two minor debasements also occurred in 1534-1624, in 1540 and 1604, but were not followed (within the next 1-2 decades) by further debasements or a recoinage, and were, therefore, not part of a debasement cycle.

The two debasement cycles of 1534-1624 followed the pattern in other countries. During the Great Debasement in England 1542-1551 seignorage rose to as much as 57 percent of government revenue, while it was typically less than two percent under normal circumstances.[8] Sussman and Zeira stress that with time the public found ways to protect themselves against the effects of debasement, and the effectiveness of debasement policy

[7] Heckscher (1935), vol. I:1, p. 202.
[8] Velde, Weber and Wright (1999), p. 293.

declined.[9] There was a limit how much the fineness of coins could fall. The lower the fineness, the higher the probability of recoinage. The expectation rose that the debased coins would be soon worth only their fine metal content. Minting, therefore, often declined towards the end of the debasement cycles.

Rolnick, Velde and Weber (1996) write that profitability of debasement is still a puzzle. By presenting empirical evidence that lag in prices and exchange rates due to debasement was, at most, only a matter of weeks, they come to the conclusion that gold coins circulated by weight, and that silver coins did that at least some of the time. This constitute a puzzle since they also find that minting and seignorage following debasement increased dramatically, which would be illogical if coins were indeed always circulating by weight (at least under free minting). Peter Spufford similarly upholds, in relation to Medieval Europe, that when "the debasements or strengthenings of a currency were very large, the exchange rates, as with modern devaluations, altered radically within weeks or even days".[10]

In their study of the debasement cycles in France during the 14th and 15th centuries, Nathan Sussman and Joseph Zeira maintain that debasement was an effective instrument of public finance.[11] In the ordinary life, debased coins circulated by tale (i.e. in accordance with their face value), not by weight. This was so because detecting fineness required the specialised assistance of silversmiths, which was a costly task.[12] As Sussman and Zeira puts it: "people did not go to an expert before each transaction at the marketplace, but they did go to an expert after a debasement to check which coins to remint".[13] The price level did not adjust immediately in response to debasement but lagged behind up to several years, according to them. While the mint price was disclosed, the mint equivalent (the nominal value minted from

[9] Sussman and Zeira (2003).
[10] Spufford (1988) p. 293.
[11] Sussman (1993) and Sussman and Zeira (2003).
[12] In his study of the Swedish Middle Ages, Hans Hildebrand (1983, p. 935) also argues that, while the general public was well informed of the weight of coins, so not of the percent fine silver.
[13] Sussman and Zeira (2003), p. 1776.

a fixed weight of a metal) was not necessary known to the general public. This could be used in the short term to increase the mint equivalent much more than the mint price, and thus to increase the rate of seignorage. Despite of the high seignorage, merchants voluntarily provided the mint with more bullion than previously. The price level tended to follow the mint price rather than the mint equivalent, at least in the short term.[14]

In her study, Angela Redish concludes that the effect of undervaluation was ambiguous.[15]

The high seignorage rate during a debasement (which was typical[16]) partly constitutes a temporary deviation from free minting in the proper sense and introduces elements of a fiat standard. If debasement policy is successful, the debased coins, at least temporarily, de facto function as token coins. For example, assuming a gross seignorage rate of 300 percent, when coins are converted into bullion, only 25 percent of their nominal value is recovered.

In Sweden-Finland, at periods, the fine silver content per unit of value of coins of lower denomination was lower than of coins of larger denomination, which opened up for the possibility of a fluctuating exchange rate between coins of various denominations (so that one mark in coins of higher denomination could temporarily be worth more than 8 öre in coins of lower denomination, despite that officially 1 mark = 8 öre). Such a multi-currency standard probably existed temporarily in the early 1570s, early 1590s and a few years after 1604, but became more common later, during the 17th and 18th centuries.

Better coins minted earlier in time continued to circulate after the mint equivalent had been increased. The coins of Kings Gustav Eriksson (Vasa) (minted up to 1560) and King Erik XIV (minted 1561-1568) continued to circulate in the last two decades of the 16th century.

[14] Sussman (1993) pp. 55 and 61.
[15] Redish (2000), p. 33.
[16] Velde, Weber and Wright (1999), p. 292.

However, these older coins did not necessarily circulate by weight.[17] Loans were often paid back in the same coins, for example, in silver daler or gold coins[18] in which they were originally made, thus safeguarding the creditor from inflation. These are clear examples of a multi-currency standard and an economy where money was not fully a generalised unit of account.

The first silver daler coins

During the 16th century, the first larger silver coins were minted, an indication that trade in larger volumes became more common. In the 1520s, so-called gyllen coins were minted, but were later superseded by the daler coins.

In 1534, the first daler coin was minted,[19] after the German taler that was introduced in the late 15th century.[20] The silver content of one daler was first 28.06 grams. From 1540 it was reduced to 25.6 grams, and with some minor changes had this stable silver content up to 1873 (when the krona was introduced).

From 1593 the slagen daler was also called riksdaler[21] (earlier the term riksdaler mainly referred to foreign coins), which became the only label for these coins from the early 17th century.

[17] In 1576, 1.25-1.625 marks in the coins of King Erik XIV (Wallroth, 1918, p. 23) were exchange for one mark in new coins. The exchange rate, 1.625 marks in coins of King Erik XIV for one mark in new coins, is also reported for 1583 (see *Vadstena stads äldsta tänkeböcker 1577-1610* (1952), p. 79). Coins of King Gustav Eriksson (Vasa) circulated after 1576 to their nominal value, despite having a higher silver content than the coins minted after 1576. According to one source, marks of King Gustav Eriksson (Vasa) were exchanged to half their nominal value in 1598 (*Vadstena stads äldsta tänkeböcker 1577-1610* (1952), p. 271), which was significantly below their intrinsic metal value.
[18] One example of a loan in engelots can be found in *Stockholms stads tänkeböcker 1568-1575* (1941), p. 624.
[19] Wallroth (1918).
[20] Shaw (1895), p. 363.
[21] Heckscher (1935), vol. I:1, p. 219.

The minted daler must be differentiated from the unit of account called a daler that was set equal to 4 marks from the 1570s onwards. The daler depreciated continually relative the riksdaler during the 17th and 18th centuries.

Later the term riksdaler also came to refer to different currency units of different values. A riksdaler of a stable silver content was named riksdaler specie.

The daler of stable silver content is here called a silver daler (daler/slagen daler in the 16th century, riksdaler/riksdaler specie in the 17th, 18th and 19th centuries). Since the silver content of a silver daler was stable through time it also provides a reference for prices to be expressed in grams of silver.

To estimate the exchange rate of the silver daler in marks in the period 1534-1624 several sources are used (see Figure 3). When the values are different for the same year a median value has been calculated.[22] Some interpolations are also made for years when no reliable sources are available, although most years could be covered.

In the 1530s, one silver daler was worth between 3 and 4 marks (see Table 10), which was in accordance with the theoretical exchange rate based on silver contents of the two coins. In 1540 the silver content of both coins were reduced, but mostly so for the mark coins.

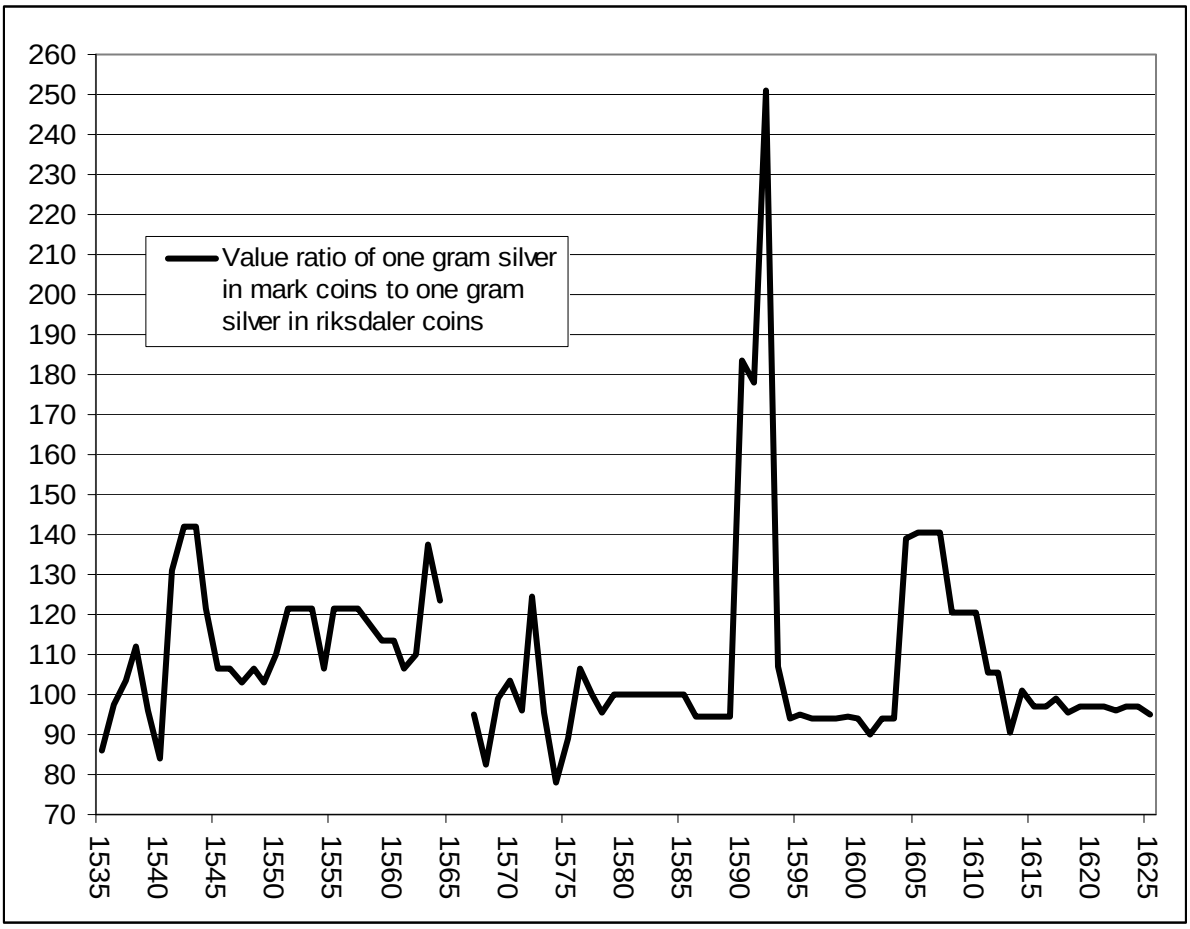
The Crown wanted the mark coins to circulate at the old exchange rate, but this initially failed. The exchange rate of the silver daler rose to 4-4.5 marks in the latter half of the 1540s (the theoretical exchange rate was 4.25 marks). King Gustav Eriksson complained over this. According to him the exchange rate should have been 3 marks for one silver daler. A conscious attempt was made to reduce minting. In 1550 the mint in Svartsjö was closed, and from 1555, it seems that no coins were minted in Sweden-Finland.[23] The reduced quantity of minted coins partly had the desired effect. The exchange rate of the silver daler fell to 3.5-

[22] Sandbergska samlingen, Riksarkivet, Heckscher (1935), pp. 211-212, Odén (1955), Odén (1960) and Wallroth (1918).
[23] Lagerqvist (1995), p. 142.

3.75 marks in the latter half of the 1550s, although not as low as 3 marks as desired by the king.

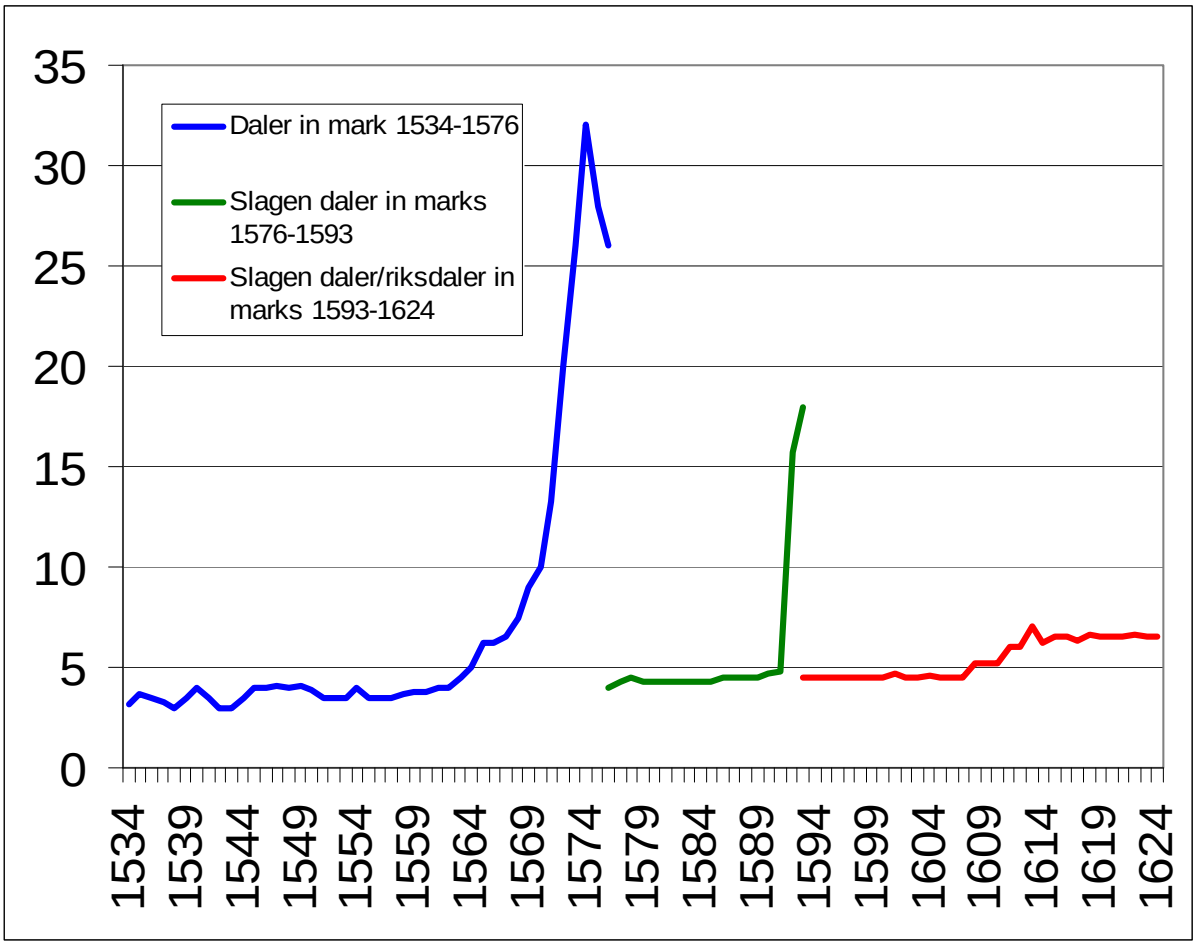
Figure 2 presents the value ratio (in percent) of one gram fine silver in mark coins to one gram fine silver in silver daler coins. A value of 100 percent is when the actual exchange rate of the mark was equal to the theoretical one. A value above 100 percent shows that mark coins were overvalued in comparison to silver daler coins, and that the seignorage rate was higher for mark coins than for riksdaler coins. Under circulation by weight, the value could fall somewhat below 100 percent, as can be observed for some periods, since mark coins were to a larger extent subjected to wear and tear and silver daler coins were used in international trade. A positive seignorage was possible at a level slightly less than 100 percent, since the unminted silver was worth somewhat less than silver in the form of silver daler coins. The figure shows that significant seignorage was made in the periods 1541-1560, 1590-1592 and 1604-1610, which as connected to debasements. However, the debasement in the early 1570s was probably not as successful in generating substantial seignorage to the Crown.

Figure 2: *Value ratio (in percent) of one gram fine silver in mark coins to one gram fine silver in riksdaler coins.*



Sources: Based on Table 10 and Wallroth (1918).

Figure 3: *Daler/slagen daler/riksdaler i marks 1534-1624, market rate.*



Sources: See Table 10. Two breaks occur. In 1575/1576, one new mark was exchanged for 6.5 debased coins marks. In 1593, one new mark was exchanged for 4 debased marks.

The debasement cycle of 1561-1576

During and after the Northern Seven Years' War 1563-1570 a continual depreciation of the mark took place, causing rampant inflation. In 1561-1562, one silver daler stood at 4 marks. In 1563 the rate stood at 4.5 marks, in 1566-1567 at 6-7 marks, and in 1568 at 7-8 marks. The worst depreciation took place after the war. Sweden had to ransom 150000 daler for the Älvsborg fortress. The price of one silver daler was at most 32 marks in 1574.[24]

[24] Wallroth (1918), pp. 28-29 and 36-37.

Various measures were taken to enforce the face value of the coins and prevent the older better coins to be melted down into bullion by others than the Crown. Although the Crown was initially able to exchange debased coins at par with the old coins (or at least at a better rate than suggested by their intrinsic metal content),[25] prices and exchange rates quickly adjusted in response to debasement. The annual consumer prices closely followed debasement.

By a decision 12th of May 1575, the public could exchange the debased coins for new better ones. However, the exchange rate was different for various coins. While the price of one silver daler was 4 marks in new money, it was 9.5-11 marks in coins of 1569, 13 marks in coins of 1570, and 26 marks in the coins of 1571-1574 (somewhat better than the market exchange rate in 1574).[26] Henceforth, at least towards the end of the debasement cycle, the various coins seem to have circulated by weight, and not by tale.

Since the minting of coins in 1571-1574 was much larger than in the previous period, it can probably be assumed that it was the coins of 1571-1574 that dominated domestic trade (the exchange operations of the Crown also reduced the supply of older coins). The value of the mark klipping-coin was later reduced to one öre (1/8 of a mark), i.e. below its official exchange rate in 1575 as well as its intrinsic metal value.

The daler became two different monetary units

The differentiation between money as unit of account and as commodity (intrinsic value coins) allows for the likelihood of terminological bifurcations of monetary units (see Figure 1).

[25] Heckscher (1935), vol. I:1, p. 205.
[26] Wallroth (1918), p. 23.

After the inflation episode in the first half of the 1570s, King Johan III wanted the silver daler to equal 4 marks, but that could not be upheld. The fine silver content of one silver daler was 4.25 times of the fine silver content of the mark coin. According to Birgitta Odén, it was in this period that the daler came to refer to two different currencies, as unit of account equal to 4 marks and as silver daler. Odén argues that Heckscher was wrong claiming that these two different meanings of daler arose first in the 1590s. It was, however, not until the 1590s that a substantial difference can be observed when prices are expressed in "slagen daler" (minted daler) or in "räknedaler" (daler as unit of account).

In the second half of the 1570s and early 1580s the silver daler stood at 4.25 mark (henceforth, 1 silver daler = 1.0625 "räknedaler"), which increased to 4.5 marks in the late 1580s.[27]

The debasement cycle of 1590-1593

The Northern Seven Years' War was almost immediately followed by a war with Russia, which continued up to 1595. The currency was quite stable for a period after the new mark was introduced. However, in the last years of the reign of Johan III the value of the Swedish mark deteriorated rapidly. The rampant inflation caused much confusion, and confidence was partly also lost for money. The exchange rate between the silver daler and marks was probably different depending on which coins the mark was counted in.

According to Wallroth, in 1592, the exchange rate of one silver daler rose to 38 marks in one-mark coins and 84 marks in ¼-öre-coins.[28] The difference can be explained by the much lower silver content of the ¼-öre-coins per unit of value relative to coins of higher

[27] Odén (1955), p. 241.
[28] The statistics of minting shows that the mark coins probably dominated circulation over coins of the lowest denomination.

denominations. However, Wallroth does not refer to any empirical sources. His exchange rates for 1592 rather seem to be based on the fine silver metal contents of the minted coins (a method he uses elsewhere in his work) and not on prevailing market rates.[29] In the present study, no empirical sources have been found that would support evidence of such high exchange rates. Therefore, Wallroth's assumptions for 1592 are not used.

The empirical material gives a somewhat confusing picture concerning prices and exchange rates in the early 1590s.

The price material, for example in *Handlingsräkenskaperna*, often displays a surprising stability in the early 1590s, which would suggest that the debased coins were accepted at their face value and did not cause any substantial inflation. However, Birgitta Odén argues that the prices in *Handlingsräkenskaperna* in 1591-1593 were fictitious, since they were used as the basis for barter trade to register relative prices between goods.[30] The old price level could, therefore, be retained, in spite of the rampant inflation when it came to actual monetary transactions.

Although minting shows that the debased coins dominated circulation compared to the coins minted earlier,[31] during the height of monetary disarray in the early 1590s most trade was, according to Eli Heckscher, probably conducted by barter or was interrupted, since people no longer trusted the coin as a means of exchange. Barter trade was also common under normal circumstances.[32]

In 1593 and 1594 the inferior coins were exchanged for new coins. As in 1575 the rate was different for different debased coins (see Table 1). However, while in mid-1570s debased

[29] Wallroth (1918), pp. 44-45. The fine silver content of the round one-mark coin was 0.6758 gram, the one-mark klipping coin 0.6473 gram, and the ¼-öre coin 0.0095 gram. Since the fine silver content of the one-daler coin was 25.5957 grams, the exchange rate based on silver content relations would be 37.9 marks in round one-mark coins, 39.5 marks in mark klipping coins and 84.2 marks in ¼-öre coins.
[30] Odén, (1960), p. 207.
[31] Wallroth (1918), p. 42-47.
[32] Heckscher, (1935), vol. I:1, p. 82.

coins were exchanged largely in accordance with their intrinsic metal value, in 1593-1594 they were exchanged to a much better rate than implied by their fine silver content. The fine silver content of the most inferior klipping-mark in 1592 was almost one tenth of the new silver mark minted in 1593, but it was devalued to ¼ of their face value. It was not until May 1594, that the klipping mark was devalued further, to ¾ öre, in accordance with its fine silver content.[33]

Still in 1593, the confidence in money had not yet been restored. According to *Stockholms stads tänkeböcker* klipping coins as well as proper coins were often rejected as payment.[34]

The debasement in the early 1590s could be seen as an attempt, under an emergency situation, to de facto introduce token coins that were supposed to circulate by tale. The attempt to de facto introduce a fiat currency was initially successful. Price regulations were imposed to assure this. In January 1591, King Johan III solemnly promised that the debased coins one year later would be exchanged to their full nominal value in better coins.[35] According to Eli Heckscher, arguing against a "metallic viewpoint" that the value of money is completely determined by its intrinsic metal content, the attempt only failed later because the minting of inferior coins became too large. The quantity theory of money, he insists, therefore, also have some relevance in explaining inflation in the 16th century.[36]

The effect of debasement on prices and exchange rates came with a time lag. *Stockholms stads tänkeböcker* is filled with reports of high prices and exchange rates in 1592, but none in 1590 or 1591.

On the 5th of June 1592, at a meeting between the King's representatives and the commons, it was announced that the mark klipping coin would be reduced to two öre (¼ mark), in

[33] *Stockholms stads tänkeböcker från år 1592*, part 1 (1939), p. 218.
[34] *Stockholms stads tänkeböcker från år 1592* (1939), part I, 1592-1595, p. 118.
[35] *Stockholms stads tänkeböcker 1589-1591* (1948), p. 239.
[36] Heckscher (1935), vol I:1, p. 227.

accordance with the then prevailing market rate, and that prices would be freed. However, already the next day, the decision was revoked, and it was decreed that the mark coin must be accepted to its full face value. A few days later traders were urged to sell at better prices and prices on beer and bread were imposed, but the traders refused to follow such a course.[37]

It is likely that during the second half of 1592, the exchange rate stabilised at four debased marks for one mark in proper (older) coins, and that the inflation during the debasement cycle in early 1590s was not more than 300 percent and not 800 percent (or more) as suggested by the silver content of the debased coins. For example, in July 1592, it is reported that iron was sold for 24 daler per ship pound in debased coins, but would be paid 6 daler per ship pound in older, better coins.[38]

Since the exchange rate of the debased coins, even when it stood lowest in 1592, was more than twice as high as their intrinsic metal value, they de facto functioned as token coins up to 1593 or early 1594. This is a clear difference with the debasement cycle of 1561-1576. One explanation for the difference could be that the debasement cycle of 1561-1576 was more protracted and that agents then had more time to come to terms with the true value of the inferior coins.

The minor debasement in the early 17th century

In the period 1593-1604 one silver daler was roughly equal to 4.5 marks. In 1604 the silver content of the mark coin was reduced. According to Wallroth,[39] this had the effect that the exchange rate of one riksdaler was 6 marks from 1604 onwards. However, according to the Sandbergska samlingen one riksdaler was worth 4.5 marks as late as 1610. Wallroth's

[37] *Stockholms stads tänkeböcker från år 1592* (1939), part I, 1592-1595, pp. 51-53 and 63.
[38] *Stockholms stads tänkeböcker från år 1592* (1939), part I, 1592-1595, p. 72.
[39] Wallroth (1918), p. 60.

"metallistic" assumptions must again be questioned. In 1607, the official value of the riksdaler was fixed to 4.5 marks.[40] The exchange rate probably rose gradually from 4.5 marks to 6 marks in this period. For example, in *Stockholms stads tänkeböcker*, an exchange rate of 5 marks and 2 öre for one riksdaler is reported for the early 1608.[41] Such an exchange rate suggests neither circulation by weight nor by tale, but something in-between. The adjustment of the exchange rate was probably not immediate, but a drawn out process lasting several years.

In this study, the assumption is made that the exchange rate of the riksdaler was 4.5 marks up to 1607, 5.25 marks in 1608-1610, and 6 marks in 1611 (see Table 10).

One reason for the slow adjustment in the exchange rate after 1604 was that the new lighter two-öre and one-öre coins came out in circulation on a larger scale not until 1608 and 1609.[42] A possibility is that the exchange rate of riksdaler was different in mark coins and in öre coins in the period 1605-1609. It must be borne in mind that it was the öre coins that dominated money supply. It is also possible that the new mark coins initially were accepted at the same or almost the same face value as the older mark coins, thus at a value significantly above their intrinsic metal value.

Gold coins

The circulation of gold coins in Sweden-Finland in the period 1534-1624 implied that there was not a pure silver standard. However, since the domestic transactions were overwhelmingly conducted in mark silver coins, the monetary standard should be described as a monometallic standard (with elements of bimetallism) in this period (see Edvinsson, 2009a).

[40] Sandbergska samlingen (Riksarkivet), O:1 , folio 1434.
[41] *Stockholms stads tänkeböcker från år 1592* (1963), vol. VI, 1605-1608, p. 302.
[42] Wallroth (1918), pp. 62-63. Some few 2-öre coins were minted in 1605, but annually from 1608 onwards. The lighter one-öre coins were not minted until 1609.

The first gold coin minted in Sweden-Finland was the ungersk gyllen. It was struck in 1568-1573.[43] Another gold coin, minted in 1569-1573 and 1598-1599, was the krongyllen.[44] The fine gold content of one ungersk gyllen was 4.1245 grams and of one krongyllen 3.0395 grams. One ungersk gyllen was equal to 1.5 silver daler and one krongyllen to 1.25 silver daler. Since the fine metal content of one silver daler was 25.5957 grams, this would imply that the gold-silver (value) ratio during the 1570s was 9.31:1 based on the ungersk gyllen and 10.53:1 based on the krongyllen. According to one source one ungersk gyllen was equal in value to 1⅔ daler in 1570 or late 1560s,[45] implying a gold-silver (value) ratio of 10.3, which is closer the the estimated value ratio based on the krongyllen.

Alongside the ungersk gyllen and krongyllen various other foreign gold coins circulated in Sweden-Finland in the second half of the 16th century.[46] The rosenobel was valued around 4 silver daler, the engelot around 2.25 silver daler, crona around 1.25 silver daler, the ducat 1.4-1.7 silver daler, the double ducat around 3.25 silver daler, the Rhine golden (rhensk gyllen) 0.75-1 silver daler, and the portugalös 12-15 silver daler.

In 1589-1592, 1603 and 1606-1626 gold coins were minted in the mark denomination, some of them as clippings since they were clipped in square form. The round gold coins struck in 1606-1624 had a fine gold content of 0.303 gram per mark, and the klipping gold coins 0.285 gram per mark in 1610-1611 and 0.273 gram per mark in 1626.[47] Since the silver mark at the time had the fine silver content of 4.05 gram, this would imply a gold-silver (value) ratio of 13.4-14.2 to 1 in 1606-1624 and 14.8:1 in 1626. In comparison, the ratio was around 1:15 in the second half of the 17th century and the 18th century. Also the international gold-silver

[43] Tingström (1972), p. 77.
[44] Forssell (1872), pp. 84-88.
[45] *Stockholms stads tänkeböcker 1568-1575* (1941), p. 96.
[46] See Forssell (1872), pp. 86-87 and Sandbergska samlingen (Riksarkivet), O:1 , folio 61.
[47] Wallroth (1918).

(value) ratio shows a significant increase between the late 16th century and the mid 17th century.

Table 1: *The official rates of conversion for various domestic currencies 1534- 1624.*

Date	Official rates of conversion	Assumption in this study
1568	1 ungersk gyllen = 1.5 slagen daler 1 krongyllen = 1.25 slagen daler	
12/5 1575	1 daler = 4 marks in new money (valid up to 1589) 1 new mark exchanged for 6.5 marks in coins of 1571-1574 1 new mark exchanged for 3.25 marks in coins of 1570 1 new mark exchanged for 2.375-2.75 marks in coins of 1569 1 new mark exchanged for 2.125 marks in coins from Vadstena of 1568 1 new mark exchanged for 1.25-1.625 marks in coins of King Erik XIV 1 mark of coins of King Gustav Eriksson (Vasa), no change in nominal value[48] After 6/3 1576, for klipping coins not exchanged previously: 1 new mark = 8 marks in klipping coins	1 new mark = 6.5 old marks
12/1 1593	1 new mark = 4 marks in 1 mark- and 2 öre-coins of 1591 and 1592 (1-mark klipping reduced to 2 öre already 8/12 1592) 1 new mark exchanged for 2 marks in 1/2 öre-coins of 1591 and 1592 1 new mark exchanged for 1⅓ mark in coins of 1590 (including gold coins), and 2 mark- and 1/2-mark-coins of 1591 and 1592 1 new mark = 1 mark in coins minted before 1590 1 (Swedish) daler = 4 marks (unit of account used up to 1776) 1 silver daler (slagen daler) = 4.5 marks = 1.125 Swedish daler 8/5 1594, 1-mark klipping further devalued to ¾ öre.[49]	1 new mark = 4 old marks
22/3 1604	1 (Swedish) daler = 4 marks (valid to 31/12 1776)	
1607	1 riksdaler = 4.5 marks = 1.125 daler	
7/9 1619	1 riksdaler = 52 öre = 6.5 marks = 1.625 (Swedish) daler (valid to 16/8 1633)	

Sources: Wallroth (1918), *Kulturhistoriskt lexikon för nordisk medeltid från vikingatid till reformationstid* (1956-1978), Sandbergska samlingen (Riksarkivet), Lagerqvist and Nathorst-Böös (1968) and Franzén (2006).

[48] According to a Royal decree in January 1575. See *Stockholms stads tänkeböcker 1568-1575* (1941), p. 544.
[49] *Stockholms stads tänkeböcker från år 1592*, part 1 (1939), p. 218.

3. The period 1624-1719

In 1624 the first copper coins were minted in Sweden-Finland. These were intrinsic value coins, since their face value were supposed to follow the value of the copper metal they were composed of. From then on, Sweden-Finland had (to a larger or lesser extent) a combined copper and silver standard. It was ended in 1777, when the sole silver standard was reintroduced. One reason for the introduction of copper coins was to manipulate the price of copper. Sweden was the dominant international producer of copper. When the copper prices were low it was thought that the prices could be increased by reducing export and minting large amount of copper coins for domestic circulation.

When the copper coins were introduced in 1624, the copper price was high. After a few years the price fell. The minting of copper coins was extremely large in the late 1620s, putting pressure on the copper coins to fall towards their intrinsic metal value. However, also the öre minted in silver depreciated in value relative to the riksdaler, while the mark coin did not fall as much.

During the first two decades of the copper standard, the only copper coins were of öre denomination. From 1644 onwards so-called copper plates were struck in higher denominations.

By a decision on the 26th of August 1633 the öre copper coins were reduced in official value by 50 percent.[50] This gave rise to two different counting systems, one in daler silvermynt (daler silver coins), abbreviated d.s.m., and one in daler kopparmynt (daler copper coins), abbreviated d.k.m. In 1633 the relation became: 1 d.s.m. = 2 d.k.m. 1 daler = 4 mark = 32 öre in the respective system.

[50] Stiernstedt (1863), p. 109.

In 1643 the öre coins in copper were devalued by a further 20 percent (for example, the one-öre copper coin from before 1633 was devalued to 2/5 öre silvermynt e, while the copper coin minted as one öre silvermynt in 1635-1641 was devalued to 4/5 öre silvermynt). Henceforth: 1 d.s.m. = 2.5 d.k.m.

In 1665 the copper coins were devalued by a further 1/6, so that 1 d.s.m. = 3 d.k.m. This was also the last reduction, which was valid until 1776.[51]

The differentiation between daler/mark/öre silvermynt and daler/mark/öre kopparmynt constituted a system of account and did not necessarily refer to whether the payments were made in coins of copper or silver. In fact, some petty copper coins were minted in the denomination of öre silvermynt, while all copper plates were minted in the denomination of daler silvermynt.

Often when the payment was made in actual silver coins and not in copper plate money, the terms "daler/mark silvermynt in specie" or "daler/mark vitt mynt" (daler/mark white coins) were initially used.[52] From the 1660s the term carolin came to refer to actual silver coins in mark denomination and courant to actual silver coins in öre denomination. One carolin was equal to two marks in actual silver coins, and one daler carolin to 4 marks in actual silver coins or two carolins. One öre courant was the same as one öre in actual silver coins, and one daler courant was equal to 32 öre courant. In some periods, the öre courant was in fact equal to öre silvermynt, but usually the equality could not be upheld.

[51] Wallroth (1918), p. 57.
[52] Hegardt (1975), p. 226.

The currency units in Sweden-Finland 1624-1776

From around mid-17th century up to 1776, Sweden-Finland de facto had five or six different currencies, three based on silver, one or two based on copper and one based on gold. During some periods additional currencies existed.

From the 16th century there were three different types of currencies based on silver: 1) silver daler/slagen daler/riksdaler (specie), 2) mark/carolins (1 carolin = 2 silver marks) and 3) öre.[53] Although 1 mark = 8 öre was upheld as an accounting equality, this equality was not valid between coins for all periods. The fine silver content of 8 öre in silver coins in öre denomination was also normally lower than the fine silver content of one mark in silver coins in mark denomination. In 1681 the mark coins were revalued relative to öre coins so that the equality between one daler carolin and one daler courant definitely disappeared.

Copper coins were de facto also forming two different systems, one in petty coins of lower denominations (slantar) and one in copper plates of higher denominations.[54] After 1680, the mint equivalent became higher for petty coins than for copper plate coins. The difference was quite small in the late 17th and early 18th centuries (most likely motivated by the higher production costs per unit of value of petty copper coins), but became significant from 1719 onwards. Before 1719 both petty copper coins and copper plate coins (not considering the coin tokens of 1716-1719) could be described as intrinsic value coins, but after 1719 this was true only for copper plates.[55]

Alongside copper and silver coins, there were coins minted in gold. In a sense, there was a monetary standard based on three metals (trimetallism, at least de jure). The main minted gold coin after mid 17th century was the ducat (imported ducats circulated in Sweden already in the Middle Ages). The ducat was minted in Sweden in the period 1654-1868 (in foreign provinces

[53] Wolontis (1936), p. 183.
[54] Davidson (1919), p. 121.
[55] Stiernstedt (1863), pp. 418-419 and Talvio (1995), p. 203.

also in earlier years). In mid-1660s, the legal value of the ducat was fixed. The exchange rate between the ducat and the riksdaler fluctuated, but roughly followed the change in the gold-silver (value) ratio. Throughout the period one ducat was worth about twice as much as one riksdaler.[56] The total amount of ducats minted was quite small. In the 18th century ducats probably did not account for more than 0.5 percent of the total minted stock.[57]

In addition, foreign coins were still used in domestic transactions, but their role declined during the course of the 17th century.[58]

How could this multi-currency system exist for such a long time, and why did not one of the currencies replace the others as suggested by Gresham's law?

Milton Friedman and Anna Schwartz point out that "Gresham's law, that cheap money drives out dear money, applies only when there is a fixed rate of exchange between the two", and that the law has been misunderstood and misused because this requirement is often forgotten. For example, because greenback and gold dollars in the 1860s were not interchangeable at a fixed rate, greenback dollars did not drive out gold dollars, and the two units could coexist for a time.[59] A premium (agio) on dear money allows it to stay in circulation.

Arthur Rolnick and Warren Weber go further, and argue that while the Gresham's Law relies on the "existence of a fixed rate of exchange that is different from the market price", they "have found no evidence that such a fixed rate of exchange ever existed, and that is not surprising since it is hard to believe it ever could exist".[60] According to them, this does not imply that cheap money never drives out dear money, but it cannot be stated as a law. There are transaction costs involved in using the dear money at a premium. Rolnick's and Weber's hypothesis is that cheap money drives dear money out of circulation when the transaction

[56] Wallroth (1918). The main source for the exchange rates of ducats before 1740 used this study is the Sandbergska samlingen. In Wolontis (1936), p. 167, monthly exchange rates are available for 1686.
[57] Own calculations based on Wallroth (1918).
[58] Heckscher (1936), vol. I:2, pp. 638-639.
[59] Friedman and Schwartz (1963), p. 27.
[60] Rolnick and Weber (1986), p. 186.

costs involved in using the dear money as a means of payment at a premium are significant. Without such transaction costs cheap money would never drive out good money. Since coins of small denominations are more expensive to use at a non-par premium than money of large denominations, it is often petty coins that are driven out of circulation and not coins of higher denominations.[61]

The relation between the market and legal values is somewhat complicated. For example, a premium can reflect the costs involved in the exchange rate market. That is why exchange rates should be calculated as the average of the buying and selling rates, but information on these two types of rates are mostly not available for earlier times. The premium on better coins could reflect other circumstances than the value relations of various currency units. For example, in Sweden-Finland there was a discount (negative premium) on copper plates during the 18th century, because of the high transportation costs when copper plates were used as means of payment. Copper plate coins, which were of higher denominations, therefore, tended to be driven out of circulation (exported) when undervalued due to high copper prices.

The Swedish multi-currency standard was based on different systems of account. Debts in one type of currency had to be paid back in the same currency. Stockholm banco, and later the Riksbank, had to be liquid in all domestic currencies.[62] Eli Heckscher argues that this was so because the monetary system was not fungible, an example of an economy based on self-subsistence and payments in kind.[63] Money existed as several types of commodities, and was not fully all-purpose money. Even when undervalued, various coin currencies were not driven out of circulation, since they could not be substituted within their sphere of circulation by other coin currencies.

[61] However, it should be taken into account that hoarding of petty coins is more costly per unit of value than hoarding coins of higher denominations.
[62] Heckscher (1936), vol. I:2, p. 607 and Davidson (1919), pp. 117-120.
[63] Heckscher (1936), vol. I:2, p. 638.

In Sweden-Finland, it was during this period of multiple currencies circulating alongside each other that the fiat standard arose. The existence of several currencies based on the same precious metal presupposes a large "fiat component" of the coins' face value. A very small fiat component, due to free minting, would in effect lead to fixed exchange rates between monetary units based on the same metal.

For the 1620 and 1630s, annual exchange rates between domestic currencies are presented in Swenne (1933), although the figures are not very reliable for all years. Monthly exchange rates for the riksdaler exist for the period 1640-1686.[64] These are presented in Table 3. Monthly exchange rates for carolins and öre courant exist for the period 1670-81 and for 1686.[65] These are presented in Table 4 and Table 5.

The relation between copper and silver

While there is a constant pressure for depreciation under a mono-metallic standard, the pressure is even greater under a bimetallic standard. During the latter, changes in the relative prices of the two metals implies that coins of one of the metals after some time become undervalued. Angela Redish points out "that undervaluation in a bimetallic standard could be removed either by depreciating the undervalued metal or by appreciating the overvalued metal. Yet in virtually all instances it was the former that occurred."[66] This is especially relevant when analysing the double copper and silver standard in Sweden-Finland 1624-1776. There are also stabilising factors underpinning bimetallism. For example, when gold became cheaper relative to silver in the 1850s and 1860s, France, which was on bimetallic standard at

[64] Wolontis (1936), pp. 167 and 310-311, and Sandbergska samlingen, O:1, folios 1475-1488.
[65] Wolontis (1936), pp. 167 and 313-314.
[66] Redish (2000), p. 33.

the time, absorbed more than half of world's total production of gold, thus counteracting the fall in the gold-silver (value) ratio.[67]

Even though both silver and copper coins circulated widely in trade, during the period 1624-1776 there was an alternation between which metal was officially viewed as the basis of the main currency unit. In 1624-1633 it was copper, in 1633-1644 silver, in 1644-1664 copper, in 1664-1674 silver, in 1674-1681 copper, in 1681-1709 silver, in 1709-1766 copper and in 1766-1776 silver.[68] In 1716-1719 and 1745-1776 there was de facto a fiat standard.

Wolontis questions the view that the alternation between the official silver and copper standard in the period 1624-1714 can be attributed to the change in the relative price of copper to silver, i.e. that high copper prices (above the higher copper point) brought about a silver standard (since copper coins would then be driven out of circulation) and low copper prices (below the lower copper point) brought about a copper standard (since silver coins would then be driven out of circulation). There were other factors at work as well.[69]

The exchange rate between silver and copper coins was not fixed, but fluctuated during most of the period. The monopoly position of Sweden at the copper market, entailed that the copper price could be affected by various policy measures (not necessarily always profit maximising in the short-term), and was, therefore, not an independent variable. The relation between different currencies changed not only because the price of copper relative to silver fluctuated, but also because the mint equivalent (the nominal value minted from a ship pound of copper or silver) of various coin currencies changed themselves. The mint equivalent of copper plates was increased on numerous occasions in the 17th and 18th, mostly as a consequence of temporary increases in the copper price. When the copper price later fell back, copper plates became overvalued, which was adjusted either by increasing the mint equivalent of silver

[67] Friedman (1990), pp. 89-91, and Jevons (1875), ch. xii.
[68] Wallroth (1918), pp. 59 and 93.
[69] Wolontis (1936), pp. 185-189.

coins (mainly öre coins) or increasing the official value of existing silver coins relative to copper coins.

Minting was to a large extent conducted on government account.[70] Free minting did not apply to copper, so no lowest copper point existed. Even if the minting volume of private copper could be large, its maximum quantity was always predetermined.[71] In 1660, the (net) seignorage tax (slagskatt) on the minting of private copper was increased significantly, almost to the level of various charges to ship copper abroad.[72] Because free mining was restricted, the face value of copper plate coins was in some periods significantly above their intrinsic metal value.

Free minting applied, at least in some periods, to some silver and gold coins. To stimulate more minting of silver and gold coins, the (net) seignorage tax (slagskatt) was abolished for these coins in 1664 (except for silver coming from the Sala silver mine). No written permission was necessary to deliver silver and get silver coins back. This did not apply to 1-öre and 2-öre silver coins, which contained less fine silver per unit of value than the carolins. In 1709, a restriction was imposed that only one third of the silver delivered to the mint would be minted into 5-öre silver coins, while the other two thirds would be seen as a loan to the Crown at 6 percent interest rate.[73]

One problem is that there was not one, but several copper prices prevailing at the market. There are also many gaps in the time series of the various copper prices.

Most notably, there was a difference between the prices of free and unfree copper, which was substantial after 1655. There was no difference in quality between free and unfree copper, but

[70] Davidson (1919), pp. 125-126.
[71] Heckscher (1936), vol. I:2, p. 606.
[72] Wolontis (1936), p. 133.
[73] *Nordisk familjebok* (1913), online at: http://runeberg.org/nfbs/0051.html [date of access: 070814].

only in their legal status. If shipped abroad, the owner of unfree copper had to pay various duties, while free copper was exempt from these taxes. Private copper was usually unfree.

Furthermore, the price of Swedish garcopper in Amsterdam was usually substantially higher than the free copper price in Stockholm, which can be explained by the high transportation costs and risks involved (which could account for 10-15 percent of the price in Amsterdam). The difference fluctuated. The higher the international price relative to the price of free copper, the higher was the incentive to export copper from Sweden-Finland. Copper plate coins were usually exempt from duties when exported, except for the periods 1655-1662 and 1666-1673 (although the duties on copper plate coins were then lower than for unfree copper). At periods, the export of copper plate coins was banned, which led to additional transactions costs if copper plate coins were to be smuggled abroad.[74]

A price for copper plate coins can also be estimated. For the period 1624-1715, Josef Wolontis calculates such a price in riksdaler per ship pound of copper plates based on the exchange rate of the riksdaler and the mint equivalent of copper plates. This price is a measure of the value of copper plate coins as means of exchange. For example, in 1677, the price of unfree copper was 36 riksdaler per ship pound, of copper plate coins 45.9 riksdaler per ship pound and of free copper 50 riksdaler silvermynt per ship pound. The price of Swedish garcopper in Amsterdam in that year was 64.9 riksdaler per ship pound.[75] The price difference in Amsterdam between Swedish copper coin (plates) and Swedish garcopper was insignificant.[76]

In theory, the price of copper plate coins should be highly correlated with the prices of free copper in Sweden and garcopper in Amsterdam (with the deduction of transaction costs, including duties and smuggling costs at periods). In reality, the prices of free copper in

[74] Wolontis (1936), pp. 26-28 and 199.
[75] Wolontis (1936), pp. 234, 244, 319 and 325. The mint equivalent of copper plates was 100 daler silvermynt per ship pound, while the riksdaler stood at 26.16 marks kopparmynt or 2.18 daler silvermynt (see Table 10).
[76] Wolontis (1936), p. 193.

Sweden and garcopper in Amsterdam fluctuated sharply compared to the price of copper plate coins in Sweden. For example, while the Amsterdam copper price was very low in the early 1650s, the price of copper plate coins in riksdaler did not fall, and copper plates became worth much more as means of payment than as copper metal for export.[77]

With the exception of the 1760s and 1770s (during the fiat standard at the time), the price of copper plates as means of payment was probably never below the unfree copper price (which would have induced melting down of copper plates for domestic use). Thus, when there was a de facto metallic standard, copper plate coins were always worth more as means of payment than as copper for domestic use. When taken out of circulation copper plate coins were almost exclusively either exported or saved as treasure.

The period 1624-1633

During the period 1624-1633, the copper coin was officially the main currency unit, although there was de facto a multi-currency, copper and silver standard since silver coins circulated alongside copper coins at a floating exchange rate.

Although first at par, at 6.5 marks (52 öre) per riksdaler, the öre kopparmynt fell quickly in value. The market exchange rate of one riksdaler rose from 6.5 marks in copper coins in 1624, 1625 and early 1626 to 8 marks in late 1626, fell back to 6.5 marks in 1627, and increased to 9 marks in early 1628, 10 marks in late 1628 and 1629, and 14 marks in 1630-1633 (see Figure 5 and Table 10).[78] These fluctuations were too sharp to be explained by the fluctuations in the copper price. Even though copper price stood high in 1624-1625, the market value of copper öre in those years was significantly above its intrinsic metal value. In other words, the copper coins initially circulated by tale rather than by weight.

[77] Wolontis (1936), pp. 194-209.
[78] Wolontis (1936), pp. 66-76.

The öre silver coin fell in value compared to the riksdaler and the mark coin as well. The öre in silver metal fell much below its intrinsic metal value, which is somewhat puzzling. If the value of öre silver coins would have fallen to their intrinsic metal value, one riksdaler would have increased to 7.9 marks in one-öre silver coins. However, the riksdaler increased to as much as 12 marks in one-öre silver coins in 1631.[79]

One reason for the fall in the value of öre coins in silver was that the towns of Kalmar, Gothenburg and Norrköping were given permission to mint their own öre silver coins in 1623, 1625 and 1626. These coins did not contain as much silver as stated, and were therefore declared to be invalid as means of payment as of 1st of February 1632.[80] Another explanation could be that the excessive minting of especially copper coins satisfied the previous shortage of means of payment, which also affected the value of öre silver coins.[81]

The mark silver coin fell in value relative the riksdaler as well, but not as much as the öre silver and copper coins.

The öre copper coins were minted in two kinds, as klippings and as round coins. In the late 1620s the copper klipping fell in disrepute, and there was a premium on the round copper coin relative the klipping coin. The klipping coin was taken out of circulation by a decision on 12th of January 1629, but was exchanged at par in round copper coins with a percentage reduction.[82]

The relation between öre silver and copper coins seems to have been one-to-one at least up to 1628. However, after this the öre copper coin fell more in value than the öre silver coin. Henceforth, already in 1629 the exchange rate fluctuated between the four main currencies in Sweden-Finland, öre silver and öre copper coins, mark silver coins and the riksdaler.

[79] Swenne (1933), p. 193.
[80] Tingström (1995), p. 185.
[81] Wolontis (1936), pp. 94-95.
[82] Wolontis (1936), p. 71.

The period 1633-1644

During the period 1633-1644 the silver coins were officially the main currency unit. However, Josef Wolontis argues that it was the copper coins that de facto dominated money supply not least since the minting of copper coins was much larger than the minting of silver coins.[83]

By a decision on the 26th of August 1633 the öre copper coins were officially devalued by 50 percent. The official value of one riksdaler was reduced to 48 öre silvermynt, i.e. 6 mark silvermynt (or 12 mark kopparmynt), from previously 6.5 mark.[84] The market exchange rate for the riksdaler was, however, higher than 12 mark kopparmynt, at 13-14 in the period 1634-1639 and 15 in 1640-1644.

The source material is not completely reliable concerning the market exchange rate between copper and silver coins in the 1630s and 1640s. For example, "mark silvermynt" could either refer to the accounting unit (equal to two mark kopparmynt or ½ daler kopparmynt) or actual mark coins in silver.[85] The relation 1 daler silvermynt = 2 daler kopparmynt seems to have been upheld at least up to 1639,[86] implying a de facto bimetallic standard. Silver coins, especially mark-coins, became undervalued.[87] However, in the early 1640s, it seems that silver coins circulated by tale in some meetings and with a premium at other meetings (although not necessarily in full proportion to their weight). It is also possible that öre silver coins were more likely to circulate by tale than mark silver coins, although this cannot be confirmed from any sources.

[83] Wolontis (1936), p. 98.
[84] Stiernstedt (1863), p. 109.
[85] This is not fully considered in Swenne (1933), p. 190, in his account of the exchange rate of the riksdaler in mark silver coins.
[86] According to Sandbergska samlingen (Riksarkivet), OO, folio 612, one riksdaler in 1639 stood at 7.5 marks in "hwit mynt" (white coins). In copper coins one riksdaler stood at 14-15 marks kopparmynt.
[87] In the early 1640s the riksdaler stood at around 7.5 marks (60 öre) in silver coins. The fine silver content of the riksdaler coin was 6.12 times higher than the fine silver content of the one-mark silver coin. The theoretical exchange rate based on the fine silver content of öre coins was 6.84 marks (55 öre) per riksdaler.

On the 24th of March 1643 the official value of one riksdaler was increased to 15 marks kopparmynt, in accordance with the market rate.[88] At the same time the value of one daler silvermynt was increased a second time to 2.5 daler kopparmynt. Thus the official value of öre and mark silver coins increased relative the copper öre coins, for the purpose of reestablishing the fixed relations that in theory should underpin bimetallism.

The period 1644-1664

In 1644-1664 the copper coins were officially the main currency.

The first copper plates minted in 1644 were in the denomination of 10 daler silvermynt, weighing 19.7 kg. These plates were mainly exported and not used as means of payment in domestic trade. The minting of copper plates seized in 1645, but was resumed in 1649.[89] Copper plates were from then on also minted in lower denominations (1, 2, 4 and 8 daler silvermynt) that could be more effectively used as means of payment in domestic trade. The mint equivalent of copper plate coins (but not round copper coins) was at same time increased by 14 percent, which led to an increase in the exchange rate of the riksdaler during the 1650s, especially towards the end of the decade.

The mark and öre silver coins seem to have been at par with the copper coins at least up to 1655, despite of a deep fall in copper prices 1650-1652. Copper prices were quite high in 1654 and 1655. After mid-1650s there was a premium on the öre and mark silver coins relative the copper coins.[90] The premium was probably somewhat higher for silver coins than for the öre silver coins, but no reliable source could be found for the 1650s. The de facto bimetallic standard was transformed to a de facto multi-currency standard.

[88] Stiernstedt (1863), p. 119.
[89] Wolontis (1936), p. 114.
[90] Wolontis (1936), p. 108.

The mint equivalent was further increased in 1660 for both copper plates and round copper coins, due to increased copper prices. The increased mint equivalent was too large, and led to subsequent increases in the exchange rate of the riksdaler and the premiums on mark and öre silver metal coins. The old copper coins minted to a lower mint equivalent were exported and largely disappeared from circulation, creating a money shortage. There was also a premium on these coins.

Stockholms Banco was formed in 1657. The bank's director was Johan Palmstruch. Large amounts of old copper plates minted to a lower mint equivalent were deposited at the Stockholm Banco. The bank, therefore, took the measure in 1661-1664 to clip the deposited copper plates in accordance with the new higher mint equivalent, making huge profits from the operation.[91] This was quite an unual form to increase seignorage from debasement, but is an interesting example of how money as an abstract unit of account must be distinguished from money as physical objects circulating as means of payment.

In 1661 Stockholm Banco began to issue the first bank notes, one reason being to solve the problem of money shortage due to the increased mint equivalent in 1660. Initially, the bank notes were quite popular with the public, since they were more convenient means of payment than the metal coins (in particular the heavy copper plates). There was even a small premium on the notes relative to metal coins. The notes probably did not account for more than 10-20 percent of the total money supply (according to Palmstruch the total amount of issued notes was 2.7 million daler kopparmynt), although the circulation velocity of notes was most likely higher than of copper plates. This was enough for the notes to fall in value, although the discount was never more than 8-10 percent. When the bank continued to exchange notes at their par value, there was a rush to the bank from the possessors of the notes. In 1664, the notes became inconvertible. The Swedish parliament, the riksdag, decided to withdraw the

[91] Wolontis (1936), pp. 126-130.

notes. This was done to their full value. Stockholms Banco was taken over by the Swedish parliament, the riksdag, and the Riksbank was formed in 1668, the first central bank in history. For the rest of the 17th century no more bank notes were issued.[92]

The period 1664-1681

In 1664-1674 silver coins were officially the main currency, although there was de facto a multi-currency, copper and silver standard.

On the 7th of October 1665, the official value of one daler silvermynt was increased for the third time, now to 3 daler kopparmynt, which was in accordance with the market exchange rate. It was a consequence of the previous increases in the mint equivalent of copper coins. The official value of one riksdaler was increased from 48 öre (6 marks) to 52 öre (6.5 marks) in silver metal coins,[93] and from 15 to 19.5 mark kopparmynt, although this was still below the market exchange rate. The official value of one ducat was set to 100 öre silvermynt, i.e. 1 ducat ≈ 1.923 riksdaler. Since the fine silver content of one riksdaler was 25.2739 grams and the fine gold content of one ducat was 3.3966 grams, the derived value ratio of gold to silver would be around 1:15, which was in accordance with the ratio prevailing in the international markets.

Already before the appreciation of the riksdaler to 52 öre in 1665, there was a difference between a riksdaler expressed in different types of silver coins, i.e. between a riksdaler in actual specie coins, in mark silver coins equal to 6 marks and in öre courant equal to 48 öre. For example, in 1662, while the official value of the riksdaler was 15 mark kopparmynt, at the market, one riksdaler in specie was valued 18.25 marks kopparmynt, one riksdaler in mark silver coins 17.25 marks kopparmynt and one riksdaler in "smått mynt" (in "petty coins" or

[92] Heckscher (1936), vol. I:2, pp. 629-630, and Wolontis (1936), pp. 130-133.
[93] Stiernstedt (1863), p. 153.

öre courant) 17 marks kopparmynt.[94] After 1665, the practice to count a riksdaler in 48 öre or 6 marks in silver coins continued, even though the official value of the riksdaler specie was increased to 52 öre or 6.5 marks in silver coins. A riksdaler equal to 6 marks in silver coins, or 3 carolins, was termed a riksdaler carolin (1 riksdaler carolin = 1.5 daler carolin). The term riksdaler courant was also used, but up to 1681 the term could probably refer to either 48 öre courant or 3 carolins (although further investigation is needed on this issue). This can cause certain confusion.

The mint equivalent of copper plates was further increased in 1674, following high copper prices in the previous years. In the period 1674-1681 the plate copper coins became the official currency unit, but de facto a multi-currency standard was in place, since there was a premium on both carolins and öre courant. Copper prices began to fall from 1674. Since the mint equivalent of petty copper coins was not increased until 1680, in the second half of the 1670s there was also a premium on round copper coins relative copper plates, at least in some regions.[95]

Very few riksdaler-coins were minted after the reign of Queen Christina, which ended in 1654. 791 riksdaler were minted in 1676, 2344 in 1707 and 9943 in 1713,[96] i.e. in total only 13078 riksdaler during a 60-year period! No exact figures are known, but a guesstimate is that during the reign of Queen Christina maybe up to one million riksdaler coins were minted.[97] The riksdaler coins of Queen Christina contained less fine silver, 25.2739 grams, than the coins minted from 1676 onwards, which contained 25.6973 grams of fine silver. However, since the riksdaler coins of Queen Christina probably dominated the circulation also in the

[94] Sandbergska samlingen, O:1 , folio 262.
[95] Wolontis (1936), p. 159.
[96] Wallroth (1918).
[97] Just in the year 1652 117908.5 riksdaler were minted in riksdaler coins. This level was not surpassed until 1769. See Wallroth (1918).

late 17th and early 18th centuries, the assumption in this study is that the riksdaler coin contained 25.2739 grams of fine silver in 1639-1718, and 25.6973 grams in 1719-1830.

The exchange rate on Swedish riksdaler can be compared with the exchange rates on two other types of rix-dollar, the Hamburger reichstaler banco and the Amsterdam rijksdaalder courant, which were the most quoted foreign currencies in Sweden in the 17th and 18th centuries.

In the period 1660-1681 the median price of one Amsterdam rijksdaalder courant (estimated spot price) was 0.961 Swedish riksdaler. Since one Amsterdam rijksdaalder contained 24.35 gram fine silver, and one Swedish riksdaler 25.27 gram fine silver, the theoretical price should have been 0.963 Swedish riksdaler for one Amsterdam rijksdaalder courant, i.e. only 0.2 percent above the actually median price during the period in question. This is a clear indication of relatively efficient markets.

In the latter half of the 17th century, the exchange rate of the Swedish riksdaler seems to be almost equal to the exchange rate on Hamburg, which is not surprising since the silver contents of the two currency units were almost identical.

The period 1681-1709

In 1681 the silver standard was officially reintroduced, lasting until 1709. Silver coins de facto became the main means of payment. On the 19th of March 1681, the official value of one riksdaler was increased from 19.5 to 24 mark kopparmynt, of one ducat to two riksdaler, and of one carolin from 6 to 7 mark kopparmynt. On the 15th of May 1686 one carolin was further increased to 7.5 mark kopparmynt, in accordance with the prevailing market exchange rates. However, the market exchange rates of the riksdaler and the carolin against copper

coins implied that the copper plates became undervalued when compared to the international copper price.[98] When the official relations between silver coins and copper plates were adjusted to the market exchange rates, the undervaluation of copper plates (in terms of the international bullion price) became legally fixed. Copper plates became dear money, and in the coming period were exported and disappeared from circulation. There are also reports that there was a premium on copper plates in the late 18th century (8 percent in 1697).[99]

One öre silvermynt continued to be equal to three öre kopparmynt, implying that the official value of one carolin was increased from 16 to 18⅔ öre silvermynt in 1681 and to 20 öre silvermynt in 1686. It was further increased to 25 öre silvermynt in 1716. One daler carolin (equal to two carolins or 4 marks in carolins) was no longer officially equal to one daler silvermynt or one daler courant. Up to 1681, the fine silver content per unit of value of the öre courant was 15 percent below the fine silver content per unit of value of the carolins. This was recognized in the market exchange rate between courant öre-coins and carolins. The increase in the official value of the carolin in 1681 was, therefore, only recognized the market situation, ensuring a stable relation between the two silver currency units. When the official value of one carolin was increased to 20 öre silvermynt in 1686, the fine silver content of the öre silver coin was at the same time reduced, in order to retain the relation 1 daler silvermynt = 1 daler courant = 3 daler kopparmynt.

In 1686 there was still a premium on öre silver coins. The premium was somewhat higher for the 4-öre silver coin than for the 2-öre silver coin.[100] This premium disappeared during the course of the next two decades as the fine silver content of the newly minted öre coins was decreased[101] and the silver coins replaced the copper plates as the main currency.

[98] Wolontis (1936), p. 161.
[99] See footnote 105.
[100] Wolontis (1936), p. 167.
[101] The 5-öre silver coin that was minted from 1690 had the same fine silver content as the previous 4-öre silver coin. 4-öre coins were also reminted into 5-öre coins. See Wallroth (1918) and Wolontis (1936), p. 168.

The widening difference between the two silver currencies, daler carolin and daler courant, from the 1680s onwards was, in itself, a consequence of the bimetallic copper and silver standard, and the attempt to make öre courant to follow the copper currency, while not debasing carolins.

After 1681, the riksdaler courant and the riksdaler carolin definitely became two different units of account. After the legal appreciation of the carolin to 7.5 marks in 1686 the difference between the two units became quite large.[102] In 1686-1716, one riksdaler carolin was legally fixed to 22.5 (3 times 7.5) marks kopparmynt or 60 (3 times 20) öre silvermynt. This was 25 percent above the level of one riksdaler courant equal to 48 öre courant. Lars Herlitz writes that during the 18th century, at least in various official documents, the riksdaler courant became a pure unit of account, equal to 1.5 daler silvermynt (i.e. 48 öre silvermynt), and, henceforth, was not anymore linked to the courant coins. The term was only sporadically used after the mid-18th century.[103]

According to Wolontis the market exchange rate of one riksdaler carolins was 22.5 mark kopparmynt or 60 öre silvermynt, its par value, throughout the period 1695-1709.[104] In this study the assumption is made that no premium existed on carolins and öre courant throughout the period 1687-1715.[105]

[102] Wolontis (1936, p. 156) argues that the two units "riksdaler carolin" and "riksdaler courant" were the same, both equal to 3 carolins, but this assumption can be questioned. For example, in Sandbergska samlingen two examples are given, one from 1690 (Sandbergska samlingen, O:1, folio 774) and one from 1697 (Sandbergska samlingen, O:1 , folio 779), when 1 riksdaler courant is set equal to ¾ riksdaler specie and to 1.5 daler silvermynt. This is possible only if assumed that 1 riksdaler courant is equal to 48 öre courant (which also confirms that the market rate was at par with the legal rate in the 1690s). Wolontis (1936, p. 156) quotes the same source, stating that "effter som här i landet gemeligen plägar förstås RD courant till 6 m Smt", but here "6 m Smt" most likely refers to 1.5 daler silvermynt and not 3 carolins.

[103] Herlitz (1974), p. 127.

[104] Wolontis (1936), p. 176.

[105] In Sandbergska samlingen, O:1, folio 1780, one document reports that, in 1697, 1 riksdaler was sold for 72 to 73 öre silvermynt, i.e. 27-27⅜ marks kopparmynt, but 25 marks kopparmynt in copper plates. However, copper plates had largely disappeared from domestic circulation in the late 1690s, and the only copper coins that were widely used were the ones of smaller denominations. Furthermore, in 1697 the riksdaler also stood higher than usual.

According to Wolontis, the exchange rate on Swedish riksdaler as well as on Hamburger reichstaler banco was quite stable at around 25 marks kopparmynt in 1686-1695.[106] The riksdaler coins circulating in the late 17th century and early 18th century were mainly the ones minted during the reign of Queen Christina (and to a large extent also foreign taler coins).[107] The Riksbank's holdings of riksdaler specie decreased from 134000 in 1696 to a few thousands in the 1710s.[108]

In *Stockholms stads priscourant* weekly exchange rates for various currencies can be found for the period 31st of May 1705 to 9th of February 1707.[109] These show that the Hamburger reichstaler banco (at 26.75-27.75 marks kopparmynt[110]) was valued slightly above the Swedish riksdaler specie (at 26-26.5 marks kopparmynt).[111]

One explanation for the higher exchange rate of foreign currencies could be the greater demand on Sweden to finance its war efforts during the Great Nordic War 1700-1721.[112] The exchange rate of the riksdaler specie also fluctuated around a narrower band (0.5 mark kopparmynt difference between the highest and lowest value) than the Hamburger reichstaler banco (1 mark kopparmynt difference between the highest and lowest value).

The par value for the riksdaler stood at 24 marks kopparmynt, which was significantly lower than both the market exchange rate of the riksdaler and the Hamburger reichstaler banco. Since the carolins became the main currency unit, at least from the 1690s onwards, the mark kopparmynt as a unit of account was linked to carolins. One riksdaler in specie was officially

[106] Wolontis (1936), pp. 175 and 322.
[107] Of the coin treasures found for the period 1701-1721, the few riksdaler coins (in total 11 coins) were from the times of Gustav II Adolf and Queen Christina. The foreign taler coins were more numerous than the Swedish riksdaler coins in the findings. For the period 1722-1738 no riksdaler coins are reported to have been found. The mint treasures are often good indicators of which coins circulated during the time the treasure was laid down (which can often be determined by the coin with the latest year of minting). See Sarvas (1969).
[108] Sveriges Riksbank (1931), p. 35.
[109] "Växelkurser å Stockholms börs. Primärtabeller (1705-)/1740-1803". Online at: http://www.historia.se/exchangerates1705_1803.pdf.
[110] This is direct data. The spot rate would be slightly higher.
[111] In December 1708 the exchange rate of the Hamburger reichstaler-banco was 27 marks and of Swedish riksdaler specie 26.25 marks. See Sandbergska samlingen, O:1 , folio 335 (Riksarkivet).
[112] Wolontis (1936), pp. 174-175.

3.2 carolins, which, in turn, had the fine silver content of 23.11 grams, 8.6 percent below the fine silver content of one riksdaler in specie. Based on these relations of fine silver contents, a currency linked to the carolins motivated an exchange rate for the riksdaler specie of 26.25 marks kopparmynt. The average exchange rate of one riksdaler was also raised from 25 marks kopparmynt around 1690 to 26.25 marks kopparmynt in the early 18th century almost perfectly in accordance with the theoretical exchange rate. Given there was free minting of carolins, such circulation by-weight is an expected outcome of an efficient market.

The reintroduction of the copper standard in 1709

During the period 1709-1766 Sweden-Finland was officially on a copper standard, although a fiat standard was in place in 1716-1719 and 1745-1776. In 1710 copper plates were once again minted on a larger scale. In a longer perspective this had a profound effect on the monetary system in Sweden-Finland and stimulated the rise of fiat monies. In this respect, there is some similarity with the effect of the introduction of copper plates in the 1640s and 1650s, which subsequently led to the issuing of the first bank notes in Europe in the 1660s.

When copper plates were once again minted on a larger scale in 1710 the mint equivalent was increased. However, in the early 1710s the copper price increased substantially compared to the previous decade. Copper plates became dear money, and tended to be driven out. The export of copper plates increased, and in 1713-1714 export of copper plates was temporarily banned.[113] On 17th of May 1715 it was decided that copper plates would be revalued by 50 percent, after getting a stamp for this revaluation.[114] Copper plates once again became cheap money, and were more valuable as means of payments than as metal.

[113] Wolontis (1936), pp. 180-181 and Tingström (1984), p. 48.
[114] Hegardt (1975), p. 229.

The experiment with token coins in 1716-1719

Towards the end of the Great Nordic War, 1716-1719, the monetary system turned into disarray, which was caused by several changes, most notably the circulation of token coins, called emergency coins (nödmynt) or coin tokens (mynttecken).

The coin tokens minted in 1716-1719 were de facto fiat money. The value of the copper metal from which these coins were minted was only 0.5 to 1 percent of their face value.

From an international perspective, this was not the first time token coins were used to replace commodity money. For example, the metal value of the copper coins minted in Spanish Low countries in 1543 was around 20 percent of their face value.[115] The debased coins circulating in early 1590s in Sweden also partly functioned as token coins (see section 2). Although the banknotes of Stockholm Banco in the 1660s were non-metallic money, they never came to dominate the money supply and mainly functioned as convertible fiduciary notes. Only briefly did they circulate as unconvertible fiat notes before being exchanged to their full value.[116]

Different measures were taken to ensure the use of coin tokens by the general public and to draw in proper money to the State. By a decision on the 20th of December 1717 the old carolins were made invalid as means of payment and exchanged for coin tokens,[117] but were reinstated as legal means of payments 18th of April 1719. To replace the old carolins, the so-called Görtz' carolin was minted in 1718 with a lower fine silver content and the face value of 16 öre silvermynt (instead of 25 öre silvermynt), the old official value of the carolin (before 1681).

By a decree 23rd of April 1719 the circulated coin tokens valued one daler silvermynt (32 öre daler silvermynt) were redeemed for another type of token coin, Hoppet, valued two öre daler

[115] Sargent and Velde (2002), p. 228.
[116] Heckscher (1936), vol. I:2, p. 634.
[117] Wallroth (1918), p. 92.

silvermynt and a note worth 14 öre daler silvermynt that was supposed to be later exchanged to its full value.[118] The exchange was carried out in June 1719. This implies that the coin token worth one daler silvermynt was in effect devalued by 50 percent. In reality the devaluation was larger, since not all notes were exchanged to their full value (although the main part was later repaid) and the value of the devalued coin tokens continued to depreciate. Despite of this, an assumption could be made, for example, when constructing a price index, that for 1719, the following relation holds: 1 daler silvermynt in coin tokens = ½ daler silvermynt in proper money.

Initially the coin tokens did not disturb the monetary system to any significant extent, and were even met positively because of the easiness to handle this currency. However, later on the coin tokens contributed to inflation. During most of the period of coin tokens, the premium on better coins (mainly copper plates and öre courant) was below 15 percent, and only for a few months or half a year did it rise above 50 percent.

According to Gösta Lindeberg, the premium was 4-8 percent in the second half of 1716, 6-12 percent in the first half of 1717, 12-36 percent in the second half of 1717, 2-5 percent in the first half of 1718, 12-14 percent in July-October 1718, and 20-80 percent in October-December 1718.[119]

According to Hegardt, in January 1719, the Uppsala Academy sold rye for 26 marks kopparmynt per barrel when paid in copper plates, but 40 marks when paid in coin tokens, implying a premium of 67 percent on plates. Mixed grain was sold for 18 marks kopparmynt when paid in copper plates and 24 when paid in coin tokens, implying a premium of 33 percent.

[118] Stiernstedt (1853), pp. 320-328.
[119] Lindeberg (1941), pp. 114, 146, 195 and 223.

Although monthly exchange rates are absent for the late 1710s, there are some sources concerning monthly prices. One problem is that the sources can report prices either in proper coins or in coin tokens, without explicitly stating this.

The best source to follow monthly prices during this period is probably for Gothenburg, found in the minutes of the Board of Commerce of the city.[120] In Figure 5 a weighted monthly price index is presented for Gothenburg based on 18 goods.[121] The index grew continually from July 1718 to March 1719. From March to April 1719, the index decreased by 61 percent. The only reasonable interpretation is that there was a change in the currency unit in which prices were expressed, from coin tokens up to March 1719 to proper coins the subsequent month.

According to another source from Gothenburg, the accounts of the hospital,[122] shows that butter was purchased for 16 öre silvermynt per Swedish pound (skålpund, equal to 425 g) from 27th of January 1719 (12 öre silvermynt 22nd of January) to 11th of May the same year. From 27th of May, butter was bought to the price of 6 öre silvermynt, i.e. a decrease by 62 percent, which almost perfectly corresponds to the change in the index based on the prices reported in the minutes of the Swedish Board of Commerce.

Both these sources indicate that the premium on better coins continued to increase in the early 1719, and may have been as high as 150 percent in March to May 1719, higher than implicated by the official reduction of coin tokens by 50 percent announced in April 1719. This is an expected result, since the devaluation of the emergency coins, as explained above, was de facto greater than 50 percent.

Another source of monthly prices is from Falun, where the salesman Erik Sjöberg sold rye for 36 marks kopparmynt per barrel in September 1718, February 1719 and March 1719, for 40

[120] Göteborgs rådhusrätts och magistrats arkiv före år 1900, Signum L:I (Kollegiernas protokoll), vol. 4-6, Göteborgs landsarkiv.
[121] The 18 goods are: wheat, rye, malt, barley, oats, peas, barley groats, meat, fish, salt, butter, cheese, pork, tallow, hop, twist tobacco, bread and beer.
[122] Göteborgs rådhusrätts och magistrats arkiv före år 1900, Signum G:d (Handlingar angående hospitalet), vol. 20 and 22, Göteborgs landsarkiv.

marks kopparmynt in May 1719 and 48 marks kopparmynt in December 1719. Since this is in complete contrast to the change in monthly prices in Gothenburg during the period, it is highly likely that the prices in Falun throughout the period were expressed in proper coins rather than token coins.[123]

The coin tokens officially circulated to their full value up to early June 1719. Thereafter they circulated to a reduced official value of two öre silvermynt. The problem of exchange rates did not disappear after mid-1719. Even though the face value of the coin tokens was reduced, it was still too high. The market value of coin tokens was much lower than two öre silvermynt after June 1719.[124] All these factors may have contributed to the high prices in late 1719.[125] The effect was probably largest on prices of smaller transaction volumes. According to a decree from 4th of May 1719, coin tokens to the reduced value of two öre silvermynt were to be accepted up to the sum of 10 daler silvermynt, and above this 10 daler per 100 daler.[126]

In 1719-1720 large amounts of coin tokens were reminted to one öre kopparmynt (i.e. 1/3 öre silvermynt). Finally, on the 18th of February 1724 the face value of the coin token still in circulation was officially reduced to one öre kopparmynt,[127] which was probably in accordance with the market rate.

In addition to the coin tokens, there were also notes, termed myntsedlar (coin notes), which circulated in the same period. These notes fell in value even more than the coin tokens. According to Stiernstedt these notes lost most of their credit worth. For example, Danish war

[123] "Priset på spannmålen i Fahlun från 1716 til 1723 inclusive, av Erik Sjöberg" in Äldre Kommissioner (Riksarkivet), 408, vol. 6, p. 390.
[124] Stiernstedt (1867, p. 332) writes that in Autumn 1719, token coins were not even accepted as one öre silvermynt. He gives one example, when the State got paid 1200-1400 daler kopparmynt per ship pound in coin tokens for metal of canons, but only 240 daler kopparmynt per ship pound in proper money.
[125] Stiernstedt (1863), p. 324.
[126] Stiernstedt (1863), p. 323.
[127] Stiernstedt (1863), pp. 339-340.

prisoners almost starved to death because the notes that went to their maintenance could not buy anything.[128]

For the period 1715-1719, and particularly for the year 1718, it is especially difficult to calculate a mean exchange rate of the riksdaler in mark kopparmynt. The problem is partly connected to whether the mark kopparmynt is expressed in coin tokens or copper plates. When the metal content of new copper plates was reduced by one third and the face value of old copper plates was increased by 50 percent in 1715, the riksdaler was considered to be valued 36 marks kopparmynt. However, the official value of one riksdaler was changed to 36 marks kopparmynt not until the 29th of December 1718.[129]

Stiernstedt gives one example for the first half year of 1718, i.e. before the dramatic increase in the premium on better coins towards the late 1718, when one riksdaler was registered (supposedly based on the average exchange rate on Hamburg) to the value of 58 mark kopparmynt and one ducat to 118 mark kopparmynt.[130]

The exchange rates reported for this period on Amsterdam and Hamburg are most probably noted in proper money (mainly copper plates) and not in coin tokens or notes.[131] The use of coin tokens was most likely only possible to enforce on domestic transactions and not on the foreign exchange, although there are some controversies on this matter.[132] Even so, the exchange rates should have risen already in 1716 because of the revaluation of older copper plates and carolins. However, such a rise did not occur until 1717.[133] One contributing factor could be high copper prices. Although carolins had also been revalued (in 1716), it was only by 25 percent. One reason why foreign exchange rates did not increase in 1716 could be that

[128] Stiernstedt (1863), pp. 295-296.
[129] Stiernstedt (1863), p. 270.
[130] Stiernstedt (1863), p. 270.
[131] Lindeberg (1941), pp. 21-23.
[132] Lindeberg (1941), p. 197.
[133] Hegardt (1975), p. 231.

foreigners often controlled the traffic to and from Sweden.[134] Another explanation could be that the exchange rates, at least in 1716, were in units of account rather than actual market rates.[135]

The exchange rates on Hamburg and Amsterdam were much below 58 mark kopparmynt for most of 1718, which indicates that the reported 58 mark kopparmynt for one riksdaler probably was probably counted in coin tokens. Only for the late 1718 are there reports of an exchange rate of around 80 marks kopparmynt in proper coins and 140 in coin tokens on Amsterdam and Hamburg, respectively.[136] At the height of the monetary disarray, the fall in the exchange rate of Swedish relative to foreign currency not only affected coin tokens, but also proper coins.

To calculate the exchange rates in coin tokens the estimated premium on better coins is used as an indicator. For 1718 this calculation yields an annual average estimate of 60 mark kopparmynt for one riksdaler in coin tokens, which comes very close to the example of Stiernstedt.

The confusion in the exchange rate market probably caused some people to be cheated. For example, the revaluation of old copper plates was announced 17th of May 1715, but was not enforced until the 22nd the same month. Some individuals used the opportunity to buy copper plates during the interregnum period at the old rate from individuals who yet did not know about the revaluation.[137]

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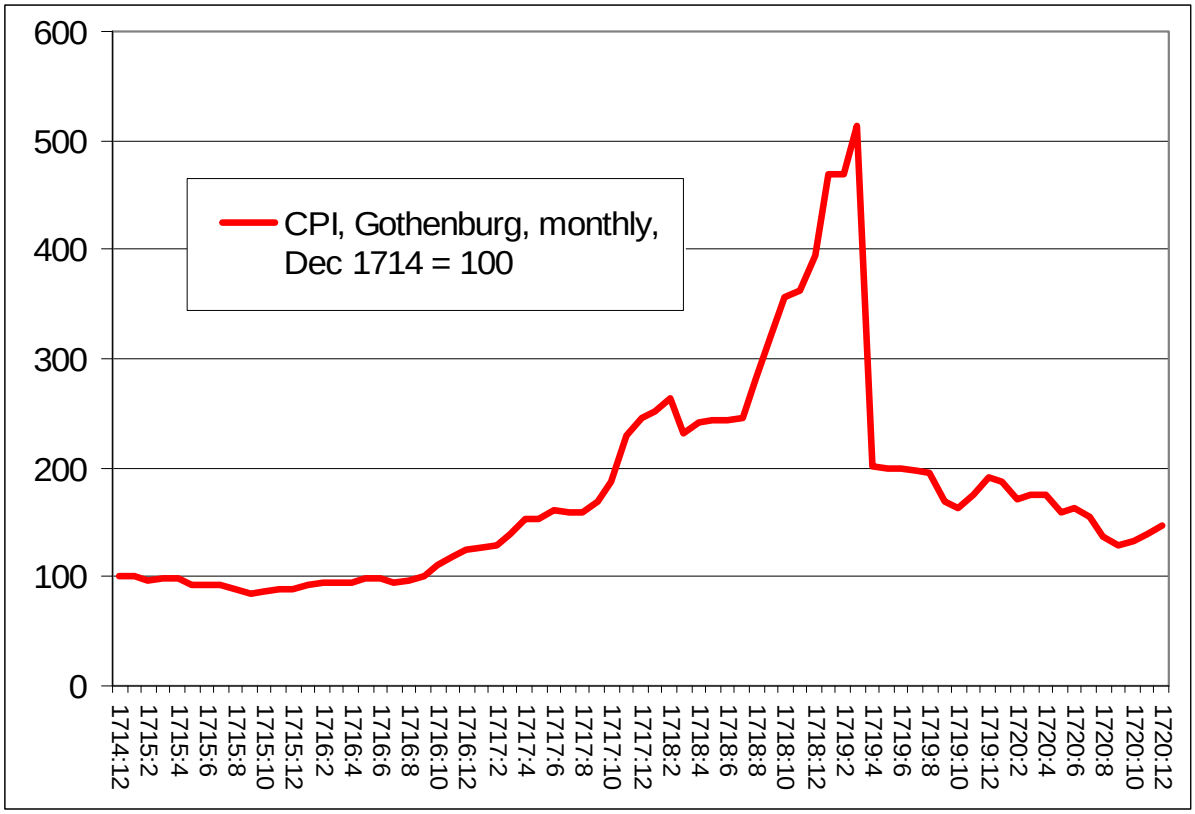
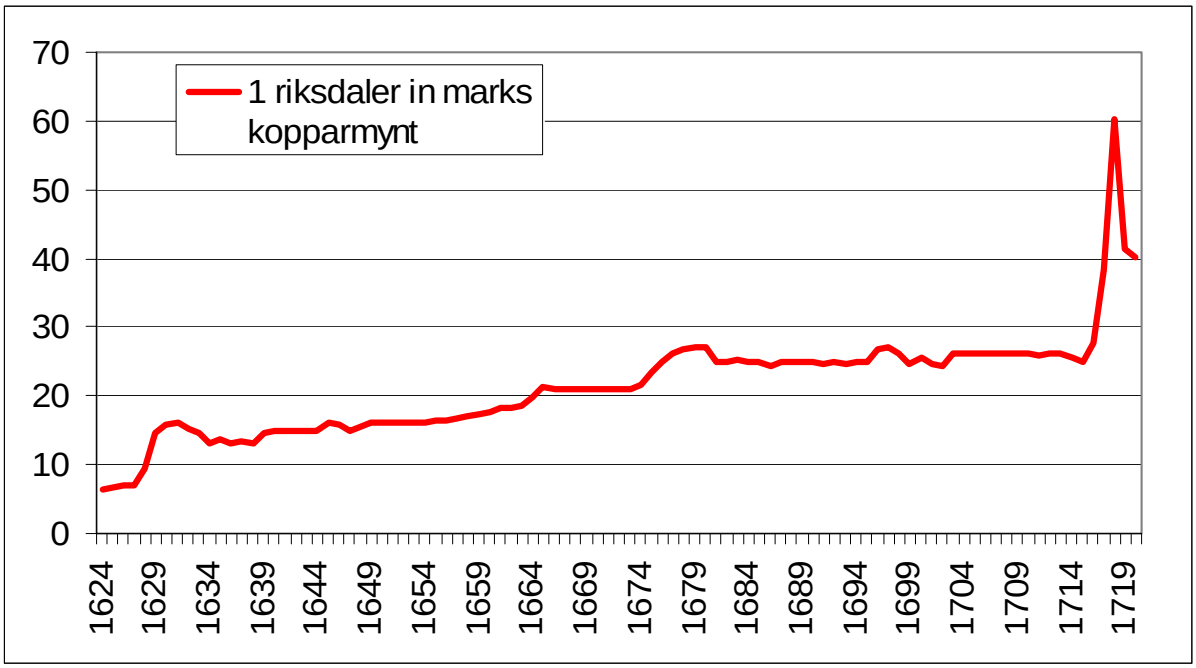
[134] Stiernstedt (1863), p. 269.
[135] Stiernstedt (1863, p. 270) argues that amongst the general public one riksdaler was seen to be valued at 36 mark kopparmynt already in 1716.
[136] Lindeberg (1941), p. 22. This implies that the premium on better coins was 75 percent, which is in accordance with other sources. According to Riksarkivets ämnessamlingar (Riksarkivet), Handel och sjöfart, Ser. I, vol. 1 Järnhandel, the exchange rate on Amsterdam was 42-47 marks in the early 1718 and 80 marks kopparmynt in November and December 1718, and according to Sandbergska samlingen (Riksarkivet), O:1, folio 364, the exchange rate on Hamburg varied between 43.75 and 83.75 marks in 1718. This is in accordance with the source stating that the exchange rate on riksdaler in the late 1718 was 80 mark kopparmynt in proper coins and 140 in coin tokens.
[137] Stiernstedt (1863), p. 222.

Figure 4: *The Consumer Price Index for Gothenburg December 1714 (=100) to December 1720.*



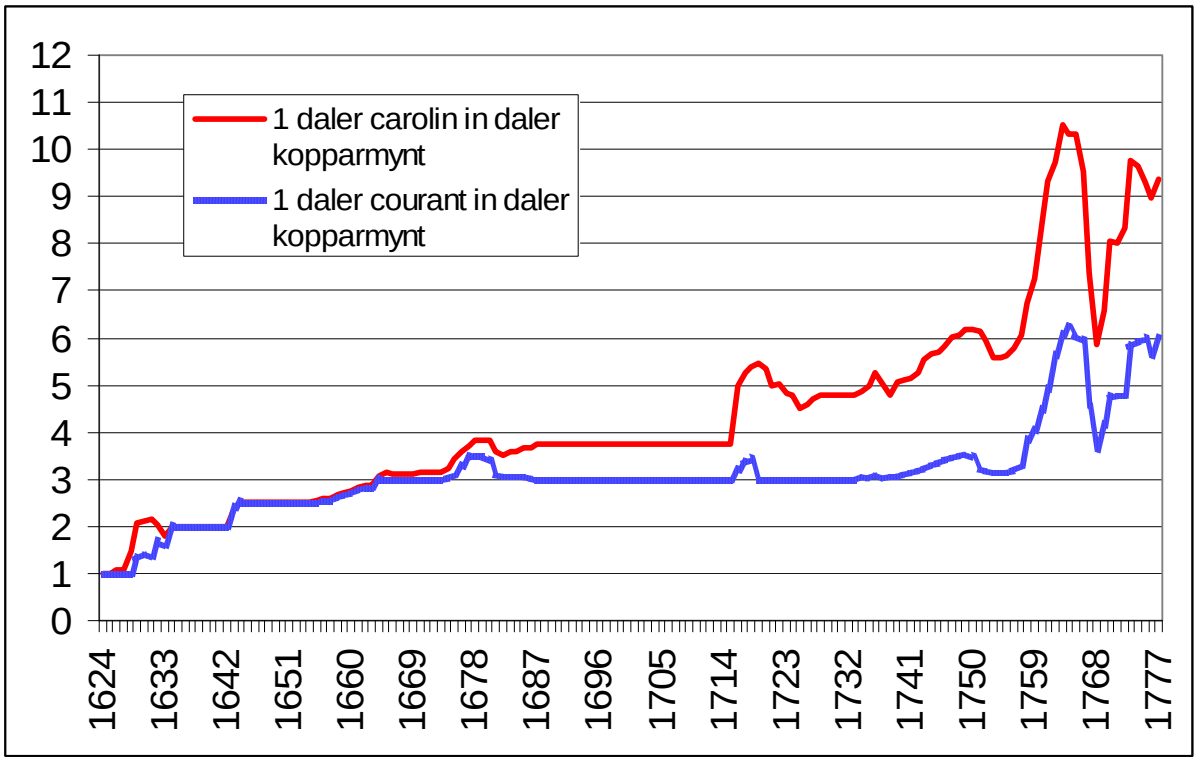
Sources: Göteborgs rådhusrätts och magistrats arkiv, Signum L I (Kollegiernas protokoll), vol. 4-6, Göteborgs landsarkiv.

Figure 5: *Riksdaler in marks (kopparmynt), market rate 1624-1720.*



Sources: See Table 10.
Marks kopparmynt in coin tokens 1716-1718.

Figure 6: *1 daler carolin and 1 daler courant in daler kopparmynt 1624-1777.*



Sources: See Table 12 and Table 13.
Notes: Daler kopparmynt in coin tokens 1716-1718.

Table 2: *The official rates of conversion for various domestic currencies1624-1724.*

Date	Official rates of conversion	Assumption in this study
1624	1 öre in copper coins = 1 öre in silver coins (valid to 16/8 1633)	
16/8 1633	1 d.s.m. = 2 d.k.m. (valid to 24/3 1643) 1 riksdaler = 12 marks k.m. = 48 öre s.m. = 1.5 d.s.m. (valid to 24/3 1643)	
24/3 1643	1 d.s.m. = 2.5 d.k.m. (valid to 7/10 1665) 1 riksdaler = 15 marks k.m. = 48 öre s.m. = 1.5 d.s.m. (valid to 7/10 1665)	
7/10 1665	1 d.s.m. = 3 d.k.m. (valid to 1776, for carolins to 19/3 1681) 1 riksdaler = 52 öre s.m. = 19.5 marks k.m. = 52 öre s.m. = 1.625 d.s.m. (valid to 19/3 1681) 1 ducat = 100 öre s.m. (valid to 19/3 1681)	
19/3 1681	1 daler carolin (= 2 carolins) = 3.5 d.k.m. = 1 1/6 d.s.m. = 37⅓ öre s.m. (valid to 15/5 1686) 1 riksdaler = 24 marks k.m. = 64 öre s.m. = 2 d.s.m. (valid to 29/12 1718) 1 riksdaler = 1 5/7 daler carolins (valid to 15/5 1686) 1 ducat = 128 öre s.m. (valid to 29/12 1718) = 2 riksdaler (valid to 1776)	
15/5 1686	1 daler carolins = 3.75 d.k.m. = 1.25 d.s.m. = 40 öre s.m. 1 riksdaler = 1.6 daler carolins (valid to 23/1 1716)	
22/5 1715	Copper plates minted before 1715 revalued 50 percent (valid to 1776), although this did not apply to plates of canon metal	
23/1 1716	1 daler carolins = 50 öre s.m. = 1.5625 d.s.m. = 4.6875 d.k.m. (valid to 1776, with the exception of 20/12 1717 to 18/4 1719)	
18/3 1716	4-öre silver coins of 1665-1684 and 5-öre silver coins of 1690-1715 revalued to 5 1/3 öre s.m. = 0.5 d.k.m. (valid to 20/12 1717)	
20/12 1717	4-öre silver coins of 1665-1684 and 5-öre silver coins of 1690-1715 revalued to 6 öre s.m. (valid to 31/12 1776) 1- and 2-öre silver coins revalued by 100 percent (valid to 4/5 1719) Old carolins no longer legal means of payment (valid to 18/4 1719)	
1718	1 Görtz' carolin = 16 öre s.m. = 0.5 daler s.m. (valid to 31/12 1776)	
29/12 1718	1 riksdaler = 36 marks k.m. = 3 d.s.m. (valid to 1776) 1 ducat = 192 öre s.m. = 2 riksdaler (valid to 1/1 1777)	
18/4 1719	1 daler carolins = 50 öre s.m. = 1.5625 d.s.m. = 4.6875 d.k.m. (valid to 1776)	
23/4 1719	Coin tokens devalued by 50 percent (1 d.s.m = 32 öre s.m. of a token coin could be exchange up to 16/6 for a new token coin of 2 öre s.m. and a debt note worth 14 öre s.m.)	1 d.s.m. in proper coins = 2 d.s.m. in coin tokens
4/5 1719	1 and 2 öre silver coins devalued to their actual face value	
18/2 1724	Nominal value of remaining coin tokens reduced from 2 öre s.m. (6 öre k.m.) to 1 öre k.m.	

Sources: Wallroth (1918), Stiernstedt (1863) and Lindeberg (1941).

Table 3: *Monthly data on riksdaler in marks (kopparmynt) 1626-1686.*

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave-rage
1626		6.5			6.5					8			6.966
1627						6.5							6.5
1628		9								10			9.487
1640	15	15	15	15	15	15	15	15	15	15	15	15	15
1641	15	15	15	15	15	15	15	15	15	15	15	15	15
1642	15	15	15	15	15	15	15	15	15	15	15	15	15
1643	15	15	15	15	15	15	15	15	15	15	15	15	15
1644	15	15	15	15	15	15	15	15	15.25	15	15	15	15.02
1645	16	16	16	16	16	16	16	16	16	16	16	16	16
1646	16	16	16	16	16	16	15.5	15	15.75	15.75	15.75	15.75	15.79
1647	15.5	15	15	15	15	15	15	15	15	15	15	15	15.04
1648	15	15	15	15	15	16	16	16	16	16	16	16	15.58
1649	16	16	16	16	16	16	16	16	16	16	16	16	16
1650	16	16	16	16	16	16	16	16	16	16	16	16	16
1651	16	16	16	16	16	16	16	16	16	16	16	16	16
1652	16	16	16	16	16	16	16	16	16	16	16	16	16
1653	16	16	16	16	16	16	16	16	16	16	16	16	16
1654	16	16	16	16	16	16	16	16	16	16	16	16	16
1655	16	16	16.25	16.25	16.38	16.25	16.25	16.25	16.75	16.75	16.25	16.25	16.3
1656	16.5	16.5	16.5	16.5	16.63	16.5	16.63	16.5	16.63	16.63	16.63	16.63	16.56
1657	16.25	16.75	16.63	16.75	16.75	16.75	16.75	16.75	17	17	17	16	16.7
1658	17	17	17	17	17	17	17	17	17	17	17.25	17.13	17.03
1659	17.13	17.38	17.75	17.25	17.25	17.25	17.25	17.5	17.5	17.75	17.75	17.75	17.46
1660	17.25	17.25	17.25	18	18	17.75	17.25	18	18	18	18	18	17.73
1661	18	18	18	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.19
1662	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.25
1663	18.25	18.25	18.25	18.25	18.25	18.75	18.75	18.5	18.5	19	19	19	18.56
1664	20	20	20	20	20	19	19	19	20	20.5	20.5	21	19.91
1665	21.5	21.75	21.5	21.5	21.25	21	21	21	21	21	21	21	21.21
1666	21	21	21	21	21	21	21	21	21	21	21	21	21
1667	21	21	21	21	21	21	21	21	21	21	21	21	21
1668	21	21	21.25	21.25	21	21	21	21.06	21	21	21	21	21.05
1669	21	21	21	21	21.25	21.13	21	21	21	21	21	21	21.03
1670	21	21	21	21	21	21	21	21	21	21	21	21	21
1671	21	21	21	21	21	21	21	21	21	21	21	21	21
1672	21	21	21	21	21	21	21	21	21	21	21	21	21
1673	21	21	21	21	21	21	21	21.13	21.13	21.13	21.13	21.31	21.07
1674	21.31	21	21	21.13	21.25	21.5	21.5	21.75	22	22	22	22	21.53
1675	22	22.25	22.5	22.56	22.88	22.94	23.13	23.38	26.38	24.13	24.5	24.5	23.4
1676	24	24	24.25	24.25	24.38	24.88	25.13	25.75	26	25.75	25.75	25.75	24.98
1677	25.75	25.75	25.75	26	26	26.5	26	26	26.5	26.5	26.5	26.75	26.16

Table 3: *Monthly data on riksdaler in marks (kopparmynt) 1626-1686, continued.*

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave-rage
1678	26.75	26.75	26.75	27	27	27	27	26.75	26.75	26.75	26.75	26.75	26.83
1679	27	27	27	27	27	27	27	27	27	27	27	27	27
1680	27.27	27	27.27	27	27	27	27	27	27.27	27.27	27.27	27.27	27.13
1681	27.27	27.27	27	24	22.56	24	24	24	24.5	24.5	25	25	24.88
1682	24.75	25	25	25	25	25	25	25	25	25	25	25	24.98
1683	25.13	25.13	25.13	25.44	25.44	25.44	25	25	25	25	25	25	25.14
1684	25	25	25	25	25	25	25	25	25	25	25	25	25
1685	25												25.06
1686	25.13	25.13	24.69	24	24	24	24	24	24	24	24	24	24.24

Sources: Wolontis (1936) and Swenne (1933). Annual average calculated as geometric one.

Table 4: *Monthly data on one riksdaler carolin in marks kopparmynt 1670-1686.*

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave-rage
1670	19	19	19	19	19	19	19	19	19	19	19	19	19
1671	19	19	19	19	19	19	19	19	19	19	19	19	19
1672	19	19	19	19	19	19	19	19	19	19	19	19	19
1673	19	19	19	19	19	19	19	19	19	19	19	19	19
1674	19	19	19	19	19	19.5	19.5	19.63	20	20	20	20	19.464
1675	20	20	20	20.19	20.31	20.5	20.5	21	21	21.13	21.13	21.38	20.588
1676	21	21	21	21	21	21	21.5	21.75	22	22	22	22	21.433
1677	22	22	22	22	22	22.13	22.13	22.13	22.13	22.5	22.63	22.88	22.207
1678	23	23.13	23.13	23.38	23	23	23	23	23	23	23	23	23.052
1679	23	23	23	23	23	23	23	23	23	23	23	23	23
1680	23	23.23	23.06	23	23.13	23.13	23.13	23.06	23.06	23.06	23.06	23.06	23.082
1681	23.19	23	23	21	21	21	21	21	21	21	21	21	21.498
1686	22	22	21.5	21	21	21	22.5	22.5	22.5	22.5	22.5	22.5	21.949

Source: Wolontis (1936). Annual average calculated as geometric one. 1 riksdaler carolin = 3 carolins.

Table 5: *Monthly premium (percent) on courant silver coins 1670-1686.*

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave-rage
1670	0	0	0	0	0	0	0	0	0	0	0	0	0
1671	0	0	0	0	0	0	0	0	0	0	0	0	0
1672	0	0	0	0	0	0	0	0	0	0	0	0	0
1673	0	0	0	0	0	0	0	0	0	0	0	0	0
1674	0	0	0	0	0	1	1	1.25	1.75	1.75	2	2	0.896
1675	2	2.25	2.25	3	3	3	3	3	3.75	3.75	3.75	5.5	3.188
1676	6.25	7.75	6.75	6.75	7.75	8.25	9.5	10.25	11.5	12.33	12.33	12.5	9.326
1677	12.5	12.5	12.5	12.5	15	16.5	17.5	17.5	17.5	17.5	17.5	17.5	15.54
1678	17.75	17.75	17.75	18.5	18.5	17	17	16.75	17	16	16.5	16.5	17.25
1679	16.75	16.75	16.75	16.75	16.75	16.75	16.75	16.75	16.75	16.75	15.17	15.17	16.49
1680	15.17	15.17	15.5	14.44	13.5	14.33	11.44	12.17	9.778	11.17	11.17	11.17	12.92
1681	9.778	6.5	6.5	2	2	2	2	2	2	2	2	2	3.398
1686	3* (2.5 **)	3* (2.5 **)	3* (2.5 **)	1.5* (1**)	1.5* (1**)	1.5* (1**)	1.5* (2**)	1.5* (1**)	1.5* (1**)	1.5* (1**)	1.5* (1**)	1.5* (1**)	1.77* (1.4**)

Source: Wolontis (1936). Annual average calculated as arithmetic one.
Par value: 1 öre courant = 1 öre silvermynt.
* 4-öre coins
** 2-öre coins

4. The period 1719-1776

The period 1719-1776 continued the complicated multi-currency standard of the previous period, although the monetary situation stabilised somewhat during the 1720s and 1730s. The 1740s saw the rise of a fiat standard based on paper notes. The fiat currency existed alongside the five metallic currencies – öre courant, carolins, riksdaler, ducats and copper plates – at a fluctuating exchange rate. Plans were made to simplify the monetary system and introduce a mono-currency silver standard with the riksdaler as the main unit, but these plans could not be realised until 1777.

Sources

Annual exchange rates between various domestic currencies for the period 1740-1767 are published in Sveriges Riksbank (1931). These are based on *Stockholms stads priscourant.* The background material to the work, which exists at Riksbankens arkiv, also contains weekly exchange rates between Swedish currencies for the period 1705-1767.[138] In *Stockholms stads priscourant* there are weekly data on the exchange rate for the riksdaler and the ducat for the period 1768-1776, and for some years also for carolins and öre courant, which are used in this study to estimate monthly and annual averages. Table 6 presents monthly exchange rates between Swedish currencies in the period 1705-1776.

The exchange rate on the Swedish riksdaler was of lesser importance than the exchange rates on Hamburger reichstaler banco and Amsterdam rijksdaalder courant (see Edvinsson, 2009b).

[138] ”Växelkurser å Stockholms börs. Primärtabeller (1705-)/1740-1803”. Online at: http://www.historia.se/exchangerates1705_1803.pdf [070201].

When the exchange rate of riksdaler was mentioned without specification of the type of riksdaler, it was commonly the Hamburger reichstaler banco that one was referring to.[139]

Few sources exist for the annual exchange rate of the Swedish riksdaler and ducats in the 1720s and 1730s. For the years where no data is available, the exchange rates on Hamburg and Amsterdam are used as indicators for the Swedish riksdaler. The gold-silver (value) ratio in Hamburg is used as an indicator to estimate the market rate of ducats in Swedish riksdaler when no other source exist.

The multi-currency, metallic standard of 1719-1745

In 1719 and 1720 the monetary system stabilised in Sweden, and remained stable until the Swedish-Russian War in 1741-1743. The official exchange rate of one riksdaler was 36 marks kopparmynt. The exchange rate of the Hamburger reichstaler banco was 38-41 mark kopparmynt in Autumn of 1719, and fell to 37 mark kopparmynt already in January 1720 (see Edvinsson, 2009b). For the remainder of 1720 it reached 36 mark kopparmynt - the perceived par value.[140]

In 1728-1733 the market rate of the riksdaler was probably the same as the official rate, but during the later part of the 1730s a premium on the riksdaler arose.

The price level fell during the course of 1720 (the high price level in the first half of 1720 was also caused by a bad harvest in 1719), and was quite stable during the 1720s and 1730s.[141]

While up to 1715 the legal value ratio of riksdaler to carolins was too low (based on the fine silver contents of the two coins), from 1719 onwards the legal value ratio became too high. This could have several effects: the riksdaler could fall below the par value of 36 marks

[139] Heckscher (1949), vol. II:2, p. 734.
[140] Riksarkivets ämnessamlingar (Riksarkivet), Handel och sjöfart, Ser. I, vol. 1 Järnhandel.
[141] Lindgren (1971), pp. 330-333.

kopparmynt, a premium could arise on carolins or there would be a move to melt down or hoard carolins. All three phenomena seem to have been present during the course of the 1720s and 1730s.

In the period 1718-1729 a total of around 75000 riksdaler was minted, which can be compared to just 13078 during the whole period 1655-1717.[142] For 1724-1733, the assumption in this study is made that the market rate of carolins was at par with the copper coins. In the mid-1720s the exchange rate of the riksdaler fell below its par value (36 marks kopparmynt),[143] but in the late 1720s it rose to its par value again. Since the silver content of the carolin was 8 percent higher than the riksdaler according to the legal relation between the carolin and riksdaler,[144] it was profitable to melt down carolins given there was no premium on carolins. Some sources indicate that during the three years preceding 1731 four million carolins were melted down in Danish and Holstein mints,[145] amounting to around one third of the total stock of carolins.[146] An official report in 1731 stated that the weaker coin, the copper plate, had driven out the better coin, the carolin.[147] In the same year, free minting of silver coins was introduced at very favourable terms.[148]

Table 6 shows that at least from January 1734 there was a small premium paid on carolins, which allowed the carolins to stay in circulation, counteracting the mechanisms of Gresham's Law. At least up to 1757, the premium was larger for carolins than for riksdaler coins.

In the first decades of the 18th century important changes took place that created a pure circulation device, not having any intrinsic value content.

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[142] Calculations based on Wallroth (1918).
[143] Sjöstrand (1908), p. 17.
[144] In 1719-1776, the official exchange rate of one riksdaler specie was 3.84 carolins. However, the fine silver content of 3.84 carolins was 27.74 grams, while the fine silver content of one riksdaler was 25.7 grams. In comparison, one riksdaler was officially equal to 96 öre courant, while the fine silver content of 96 öre courant was 22.34 grams in one-öre-coins and 24.96 grams in pjeser (in 5-öre and 10-öre coins with the legal values of 6 and 12 öre, respectively). Calculated from Wallroth (1918).
[145] Sjöstrand (1908), p. 9.
[146] Based on minting data, see Wallroth (1918).
[147] Tingström (1984), p. 62.
[148] Sjöstrand (1908), pp. 12-13.

In 1701, the Riksbank began to issue so-called transportsedlar (transferred notes). The name was given since after each transaction they had to be transported, i.e. assigned from the old owner to the new one. In the early 18th century wider circulation of these notes was prevented since such method was time-consuming, people did not want to put their name on the notes, illiteracy was widespread among the peasantry and there were substitutes for notes (so-called "assignationer" and "kassasedlar") that function more efficiently. During the course of time the public learnt to avoid transportation, until the owner wanted the note to be cashed by the bank.[149]

As mentioned in the previous section, in 1709 the copper standard was officially reintroduced, and from 1710 copper plates were once again minted on a larger scale. These plates were very unpractical means of payment. The Crown had itself an interest in facilitating more convenient means of payment. After 1710 the use of transferred notes expanded significantly, which coincided with the reintroduction of the copper standard. A decree in 1726 ordained that the transferred notes of the Riksbank would be accepted as payment of taxes.[150]

The total amount of outstanding notes increased from 12219 daler silvermynt in 1722 to one million daler silvermynt in 1730 and to 5.3 million daler silvermynt in 1740, roughly from 0.01-0.02 percent of GDP in 1722 to 1-1.5 percent of GDP in 1730 and 5-6 percent of GDP in 1740.[151]

The exchange rate of riksdaler was expressed in mark kopparmynt, which became linked to the market value of notes rather than the market value of plates. Initially the expansion of notes did not cause the exchange rate on riksdaler to increase significantly. The notes were convertible into copper plates by the Riksbank. In 1730, there was, in fact, a premium of 1.5-2 percent on notes relative plates. There was also an additional cost of 6-7 percent (so-called

[149] Heckscher (1949), vol. II:2, p. 737-738, and Talvio (1995), p. 206.
[150] Lagerqvist and Nathorst-Böös (1968), pp. 168-169.
[151] Based on Sveriges Riksbank (1931) and Edvinsson (2005a) and (2005b).

"remissage") if plates were to be transported to the countryside.[152] Eli Heckscher estimates that the exchange rate had to rise at least 10 percent above the value of copper plates (free copper) to make it profitable to export copper.[153] However, only after 1733 did the market rate of the riksdaler increase above the par value of 3 daler silvermynt. In the early 1740s, the exchange rate was, on average, only 5 percent above the official par value (see Figure 7).

The fiat standard of 1745-1776

After a massive emission of notes during the war with Russia in early 1740s, the exchange rate on riksdaler increased from 3.17 daler silvermynt on average in 1741 to 3.46 daler silvermynt in 1744 (see Figure 7).[154] In 1743, the total amount of outstanding notes increased to 9.5 million daler silvermynt, roughly 10-12 percent of GDP. Since the banknotes were convertible, there was a massive drain on the metallic reserves of the Riksbank.[155] By a decree in October 1745, the notes of the Riksbank became inconvertible in copper plates,[156] and Sweden-Finland de facto introduced a fiat standard, which was in place until the coin reform of 1776. The Riksbank only converted notes into petty copper coins (slantar),[157] but the latter had a 67 percent higher mint equivalent than copper plates and were de facto token coins. Since various coin currencies continued to circulate alongside the notes, the fiat standard was combined with the copper and silver standard, forming a multi-currency standard.

[152] Heckscher (1949), vol. II:2, p. 737-738.
[153] Heckscher (1949), vol. II:2, pp. 746-747.
[154] Sjöstrand (1909), pp. 48-49.
[155] According to *Stockholms stads priscourant* (Kungliga biblioteket), in the period 1741-1753 (with data missing in 1743-1746 and 1751-1752), the price of free copper fluctuated around 180 daler silvermynt per ship pound, the mint equivalent of copper plates. In 1753, it still stood at 166 daler silvermynt per ship pound.
[156] Wallroth (1918), p. 93.
[157] Sjöstrand (1908), p. 63.

From mid-1740s non-metallic money came to constitute the largest part of money supply in Sweden-Finland. Petty copper coins followed the bank notes in value, but there was an increasing premium on carolins, öre courant and later also copper plates. In the period 1768-1776, the premium on copper plates was between 35 and 125 percent (see Table 6).

In the early 1760s the paper notes fell to their lowest levels hitherto. In 1762-1763 the riksdaler occasionally stood at over 100 marks kopparmynt. When "mössorna" (the cap party) overtook the power from "hattarna" (the hat party) at the Riksdag 1765/66 they attempted to reintroduce the old parity of the riksdaler (36 marks kopparmynt or 3 daler silvermynt). Preparations were made to abolish the copper standard and reintroduce the silver standard, but the fiat standard was de facto in operation up to 1776.[158] Notes were supposed to be exchanged into riksdaler specie, but since the notes had previously been issued based on copper, it would be at an exchange rate determined by the value relation of silver to copper (and copper stood low at the time).[159] It took a decade before the great coin reform took place in 1776.

How silver would be brought into circulation was not completely clear in 1766. Instead, the policy focused on the exchange rate.[160] The idea was that the old parity would be gradually attained over a ten-year period. Instead a sever deflation followed in the late 1760s with falling exchange rates (see Figure 7). Erik Heckscher argues that the notes in circulation did not decrease as much as indicated by the fall in the exchange rate. Large amount of notes were withdrawn from circulation and saved in the expectation of an increase in their value relative the silver currencies.[161] When "hattarna" regained power from "mössorna" in 1769 the exchange rate rose again. The par value of 36 marks kopparmynt had to be abandoned. Both the rise in the early 1760s and the fall in the late 1760s (see Figure 7) could be described

[158] Stiernstedt (1863), p. 397.
[159] Montgomery (1920), p. 46.
[160] Montgomery (1920), pp. 37-48.
[161] Heckscher (1949), vol. II:2, p. 783, and Jonung (1975), p. 181.

as overreactions, or "overshootings".[162] The preparation to introduce a sole silver specie standard was not abandoned by "hattarna", but continued.[163]

Large amounts of riksdaler coins were minted in the period 1766-1776. In 1766-1776 copper plates continued to be legal means of payment, but were more used as commodities.

Theoretically, based on the relation of fine silver contents, the Hamburger reichstaler banco should be worth 1.6 percent less in value, and the Amsterdam rijksdaalder courant 6.5 percent less in value, than the Swedish riksdaler. In median terms, in 1740-1776, the spot rate of Hamburger reichstaler banco stood 3.0 percent below the Swedish riksdaler and the Amsterdam rijksdaalder courant 7.9 percent below the Swedish riksdaler, in both cases below the theoretical exchange rate (see Edvinsson, 2009b). It was mostly in the period 1766-1776 that the exchange rate on Hamburg and Amsterdam was below the theoretical exchange rate. Looking at the period 1740-1765, the spot exchange rate stood mostly above the theoretical exchange rate.

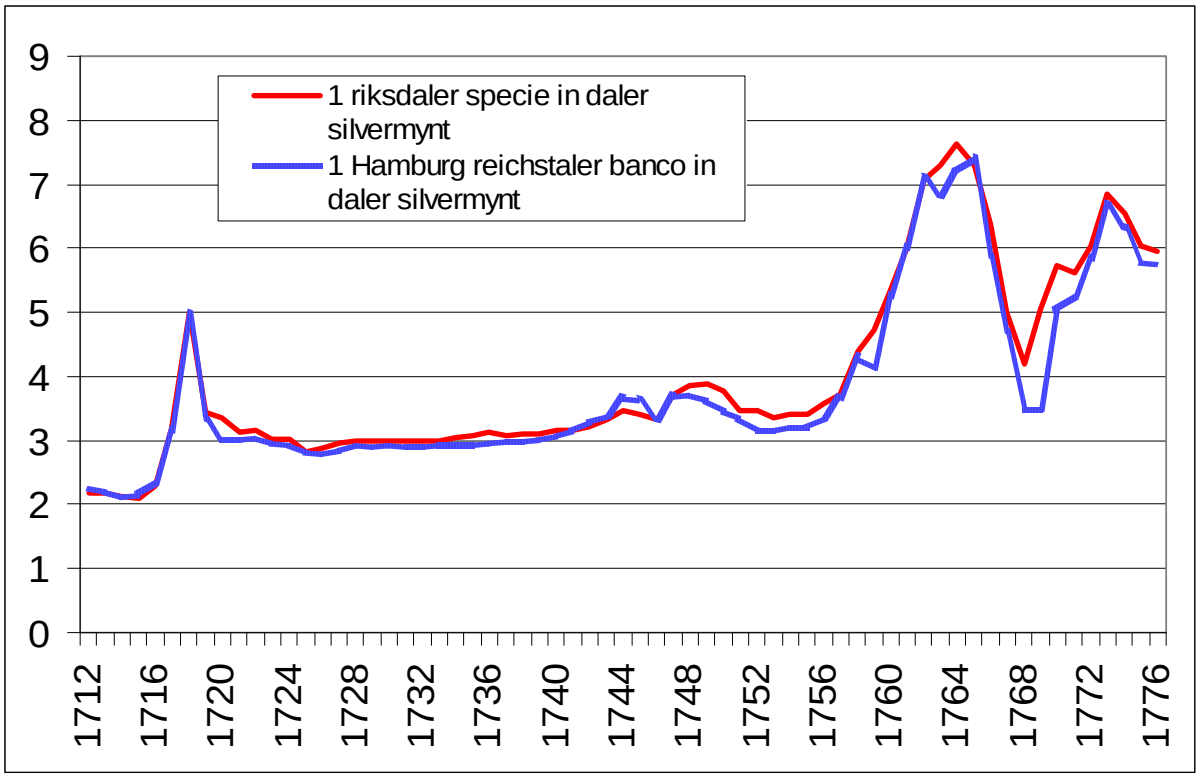
The largest discrepency between the exchange rates of the Swedish riksdaler and Hamburger reichstaler banco occurred during the deflation in the late 1760s (see Figure 7). While the Hamburger reichstaler banco decreased from its highest level of 89 mark kopparmynt in 1765 to 42 mark kopparmynt in 1768-1769 (spot rates), the Swedish riksdaler stayed at 50.7 mark kopparmynt in 1768 and 60.6 mark kopparmynt in 1769.

For the period 1740-1776, the correlation between the exchange rates of the Swedish riksdaler and ducats (+0.996) is, in fact, stronger than the correlation between the Swedish riksdaler and the Hamburger reichstaler banco (+0.976) and Amsterdam rijksdaalder courant (+0.977), respectively. This shows that the exchange rate on Hamburg and Amsterdam probably also reflected other factors than the price of silver. Henceforth, to transform nominal prices into

[162] Lobell (2000), p. 9.
[163] Montgomery (1920), p. 79.

silver prices the exchange rate of the Swedish riksdaler should be preferable, although the calculation of Swedish prices in Hamburger reichstaler banco and Amsterdam rijksdaalder courant could be useful for international comparisons.

Figure 7: *Hamburger reichstaler banco and Swedish riksdaler in daler silvermynt 1712-1776, market rate*.



Sources: See Table 10.
Note: Daler silvermynt in coin tokens 1716-1718. As of 1st of January 1777 the counting in silvermynt and kopparmynt was abolished. The riksdaler became the main currency unit in Sweden-Finland, set equal to 6 daler silvermynt in notes.

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776.*

Year	Month	1 ducat in daler kopparmynt (par value 12 daler k.m. before 1718, 18 daler k.m. after 1718)			1 riksdaler specie in daler kopparmynt (par value 6 daler k.m. before 1718, 9 daler k.m. after 1718)		
		Average	Lowest	Highest	Average	Lowest	Highest
1705	may	12.5	12.5	12.5	6.5	6.5	6.5
1705	jun	13.75	13.5	14	6.5	6.5	6.5
1705	jul	13.56	13.5	13.63	6.563	6.563	6.563
1705	aug	13.56	13.5	13.63	6.563	6.563	6.563
1705	sep	13.56	13.5	13.63	6.563	6.563	6.563
1705	oct	13.56	13.5	13.63	6.559	6.55	6.563
1705	nov	13.56	13.5	13.63	6.563	6.563	6.563
1705	dec	13.56	13.5	13.63	6.563	6.563	6.563
1706	jan	13.56	13.5	13.63	6.563	6.563	6.563
1706	feb	13.56	13.5	13.63	6.563	6.563	6.563
1706	mar	13.56	13.5	13.63	6.594	6.563	6.625
1706	apr						
1706	may	13.63	13.63	13.63	6.563	6.563	6.563
1706	jun	13.63	13.63	13.63	6.563	6.563	6.563
1706	jul	13.63	13.63	13.63	6.563	6.563	6.563
1706	aug	13.63	13.63	13.63	6.563	6.563	6.563
1706	sep	13.63	13.63	13.63	6.563	6.563	6.563
1706	oct	13.63	13.63	13.63	6.563	6.563	6.563
1706	nov	13.75	13.5	14	6.594	6.563	6.625
1706	dec	13.7	13.5	14	6.525	6.5	6.563
1707	jan	13.54	13.5	14	6.542	6.5	6.563
1707	feb	13.5	13.5	13.5	6.531	6.5	6.563
1708	dec	13.94	13.88	14	6.563	6.563	6.563
1711	sep	14.06	14.06	14.06	6.5	6.5	6.5
1728	nov	18.5	18.5	18.5	9	9	9
1729	sep	18.25	18.25	18.25	9	9	9
1729	oct	18.31	18.25	18.38	9	9	9
1733	jan	18	18	18	9	9	9
1733	feb	18	18	18	9	9	9
1733	mar	18	18	18	9	9	9
1733	apr	18	18	18	9	9	9
1733	may	18	18	18	9	9	9
1733	jun	18	18	18	9	9	9
1733	jul	18	18	18	9	9	9
1733	aug	18	18	18	9	9	9
1733	sep	18	18	18	9	9	9
1733	oct	18.18	18.16	18.19	9	9	9
1733	nov	18.03	18	18.16	9	9	9
1733	dec	18	18	18	9	9	9

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler specie in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1734	jan	18.19	18.16	18.25	9.125	9.125	9.125	1.016	1.015	1.018	25.97	25.94	26
1734	feb	18.13	18.13	18.19	9.133	9.125	9.188	1.016	1.015	1.018	25.97	25.94	26
1734	mar	18.18	18.13	18.25	9.156	9.125	9.188	1.016	1.015	1.018	25.91	25.81	26
1734	apr	18.22	18.19	18.25	9.156	9.125	9.188	1.015	1.015	1.015	25.84	25.81	25.88
1734	may	18.19	18.19	18.19	9.156	9.125	9.188	1.015	1.015	1.015	25.84	25.81	25.88
1734	jun	18.19	18.19	18.19	9.156	9.125	9.188	1.015	1.015	1.015	25.84	25.81	25.88
1734	jul	18.25	18.25	18.25									
1734	aug	18	18	18									
1734	sep	18.13	18	18.31									
1734	oct	18.23	18	18.31	9.188	9.188	9.188	1.02	1.02	1.02	25.88	25.88	25.88
1734	nov	18.23	18	18.38	9.198	9.188	9.25	1.023	1.02	1.025	25.88	25.88	25.88
1734	dec												
1736	jan												
1736	feb												
1736	mar	18.75	18.75	18.75									
1736	apr												
1736	may	18.75	18.75	18.75	9.375	9.375	9.375	1.038	1.038	1.04	27.81	27.75	27.88
1736	jun	18.78	18.75	19	9.375	9.375	9.375	1.035	1.035	1.035	27.89	27.88	27.91
1736	jul	18.75	18.75	18.75	9.375	9.375	9.375	1.035	1.035	1.035	27.88	27.88	27.88
1736	aug	19.12	18.75	19.75	9.437	9.375	9.5	1.035	1.035	1.035	27.88	27.88	27.88
1736	sep	18.78	18.75	18.86	9.375	9.375	9.375	1.035	1.035	1.035	28	28	28
1736	oct	18.75	18.75	18.75	9.375	9.375	9.375	1.027	1.025	1.03	28.08	28	28.13
1736	nov	18.75	18.75	18.75	9.5	9.5	9.5	1.027	1.025	1.03	28.56	28.25	29
1736	dec	18.73	18.5	18.81	9.416	9.375	9.5	1.025	1.025	1.025	28.41	28	28.75
1740	jan												
1740	feb												
1740	mar	18.61	18.56	18.63	9.45	9.375	9.5	1.033	1.03	1.035	27.26	27.13	27.38
1740	apr	18.6	18.56	18.63	9.5	9.5	9.5	1.032	1.03	1.035	27.32	27.25	27.44
1740	may	18.65	18.56	18.75	9.437	9.375	9.5	1.031	1.03	1.035	27.39	27.38	27.44
1740	jun	18.68	18.56	18.75	9.437	9.375	9.5	1.03	1.03	1.035	27.35	27.25	27.38
1740	jul	18.72	18.69	18.75	9.437	9.375	9.5	1.032	1.03	1.035	27.25	27.25	27.25
1740	aug	18.67	18.63	18.75	9.437	9.375	9.5	1.032	1.03	1.035	27.31	27.25	27.38
1740	sep	18.66	18.63	18.75	9.437	9.375	9.5	1.032	1.03	1.035	27.27	27.25	27.38
1740	oct	18.66	18.63	18.69	9.437	9.375	9.5	1.037	1.035	1.04	27.31	27.25	27.38
1740	nov	18.66	18.63	18.69	9.437	9.375	9.5	1.045	1.04	1.05	27.36	27.31	27.38
1740	dec	18.64	18.63	18.69	9.437	9.375	9.5	1.047	1.045	1.05	27.34	27.25	27.38
1741	jan	18.68	18.63	18.75	9.437	9.375	9.5	1.046	1.04	1.05	27.35	27.25	27.38
1741	feb	18.63	18.63	18.66	9.437	9.375	9.5	1.05	1.05	1.05	27.3	27.25	27.38
1741	mar	18.65	18.63	18.69	9.487	9.438	9.5	1.047	1.045	1.05	27.38	27.38	27.38
1741	apr	18.63	18.63	18.63	9.5	9.5	9.5	1.041	1.03	1.045	27.46	27.31	27.75
1741	may	18.72	18.69	18.75	9.5	9.5	9.5	1.03	1.03	1.03	27.85	27.75	28
1741	jun	18.72	18.69	18.75	9.5	9.5	9.5	1.036	1.03	1.04	27.8	27.75	27.88

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1741	jul	18.75	18.75	18.75	9.5	9.5	9.5	1.044	1.04	1.05	27.7	27.63	27.75
1741	aug	19.29	18.88	20	9.5	9.5	9.5	1.049	1.045	1.05	27.67	27.63	27.75
1741	sep	19.06	19	19.25	9.5	9.5	9.5	1.046	1.045	1.05	27.53	27.5	27.63
1741	oct	19.25	19.19	19.38	9.523	9.5	9.563	1.047	1.045	1.05	27.33	27.25	27.5
1741	nov	19.31	19.19	19.5	9.581	9.5	9.625	1.049	1.045	1.05	27.24	27.13	27.38
1741	dec	19.28	19.25	19.38	9.594	9.563	9.625	1.052	1.05	1.06	27.28	27.25	27.38
1742	jan	19.46	19.38	19.56	9.594	9.563	9.625	1.056	1.05	1.06	27.34	27.25	27.38
1742	feb	19.64	19.5	20	9.594	9.563	9.625	1.057	1.055	1.06	27.51	27.5	27.56
1742	mar	19.66	19.5	19.75	9.594	9.563	9.625	1.058	1.055	1.06	27.56	27.5	27.63
1742	apr	19.83	19.75	20	9.594	9.563	9.625	1.06	1.06	1.06	27.77	27.63	27.88
1742	may	20	20	20	9.624	9.5	9.75	1.06	1.06	1.06	28.05	28	28.13
1742	jun	20	20	20	9.624	9.5	9.75	1.067	1.06	1.07	28.44	28.25	28.5
1742	jul	20.65	20	21	9.624	9.5	9.75	1.071	1.06	1.08	28.55	28.5	28.63
1742	aug	20.43	19.5	21	9.624	9.5	9.75	1.08	1.08	1.08	28.56	28.5	28.63
1742	sep	19.56	19	20	9.624	9.5	9.75	1.067	1.055	1.08	28.29	28.13	28.5
1742	oct	19.55	19.38	20	9.624	9.5	9.75	1.06	1.05	1.07	28.06	28	28.13
1742	nov	19.62	19.5	19.75	9.624	9.5	9.75	1.065	1.06	1.07	28.12	28	28.25
1742	dec	19.62	19.5	19.75	9.624	9.5	9.75	1.062	1.06	1.065	28.25	28.25	28.25
1743	jan	19.62	19.5	19.75	9.624	9.5	9.75	1.066	1.06	1.07	28.41	28.25	28.63
1743	feb	19.62	19.5	19.75	9.716	9.5	10	1.066	1.06	1.07	28.77	28.63	28.88
1743	mar	20.08	19.75	20.5	9.832	9.5	10	1.067	1.065	1.07	29.25	29	29.5
1743	apr	20.12	20	20.25	9.874	9.75	10	1.08	1.08	1.08	29.54	29.5	29.75
1743	may	20.12	20	20.25	10	10	10	1.078	1.075	1.08	29.7	29.63	29.75
1743	jun	20.67	20	22.5	10.04	10	10.25	1.085	1.08	1.11	29.87	29.75	30
1743	jul	20.16	20	20.5	10.12	10	10.25	1.076	1.07	1.08	30.12	30	30.25
1743	aug	20.25	20	21	10.12	10	10.25	1.068	1.065	1.07	30.25	30.25	30.25
1743	sep	20.25	20	20.5	10.12	10	10.25	1.072	1.065	1.08	30.22	29.5	30.5
1743	oct	20.31	20	20.5	10.12	10	10.25	1.072	1.07	1.075	29.56	29.5	30
1743	nov	20.59	20.5	20.75	10.17	10	10.38	1.077	1.07	1.08	29.5	29.5	29.5
1743	dec	20.78	20.5	21	10.34	10.25	10.5	1.08	1.08	1.08	29.5	29.5	29.5
1744	jan	20.81	20.5	21	10.34	10.25	10.5	1.085	1.08	1.09	29.62	29.5	30
1744	feb	20.87	20.75	21	10.31	10.25	10.38	1.09	1.09	1.09	29.91	29.75	30
1744	mar	20.87	20.75	21	10.31	10.25	10.38	1.086	1.08	1.09	29.96	29.88	30
1744	apr	20.81	20.75	21	10.44	10.38	10.5	1.091	1.09	1.095	30.06	30	30.13
1744	may	21	21	21	10.5	10.5	10.5	1.101	1.09	1.11	30.2	30	30.25
1744	jun	21	21	21	10.31	10.25	10.5	1.108	1.105	1.11	30.11	30	30.25
1744	jul	21.06	21	21.5	10.37	10.25	10.5	1.11	1.11	1.11	30.25	30.25	30.25
1744	aug	21	21	21	10.37	10.25	10.5	1.112	1.11	1.115	30.25	30.25	30.25
1744	sep	21.12	21	21.5	10.33	10.25	10.5	1.106	1.1	1.11	30.27	30.25	30.38
1744	oct	21.33	21.25	21.5	10.34	10.25	10.5	1.107	1.1	1.11	30.27	30.25	30.38
1744	nov	21.44	21.38	21.5	10.45	10.38	10.5	1.112	1.11	1.115	30.31	30.25	30.38
1744	dec	21.5	21.5	21.5	10.5	10.5	10.5	1.113	1.11	1.115	30.34	30.25	30.38

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1745	jan	21.62	21.5	21.75	10.62	10.5	10.75	1.114	1.11	1.12	30.34	30.25	30.44
1745	feb	21.62	21.5	21.75	10.62	10.5	10.75	1.115	1.115	1.115	30.4	30.38	30.44
1745	mar	21.94	21.75	22	10.75	10.75	10.75	1.117	1.115	1.12	30.69	30.5	30.75
1745	apr	21.22	20.75	21.75	10.62	10.25	10.75	1.112	1.105	1.12	30.64	30.38	30.88
1745	may	20.43	20	21	10.19	10	10.5	1.107	1.105	1.11	30.44	30.38	30.5
1745	jun							1.109	1.105	1.115	30.45	30.38	30.5
1745	jul	20	20	20	10	10	10	1.111	1.11	1.115	30.45	30.38	30.5
1745	aug	20	20	20	10	10	10	1.112	1.11	1.115	30.44	30.38	30.5
1745	sep	20	20	20	10	10	10	1.112	1.11	1.115	30.29	30.13	30.5
1745	oct	20	20	20	10	10	10	1.119	1.115	1.125	30.2	30	30.38
1745	nov	20	20	20	10	10	10	1.127	1.12	1.13	30.55	30.25	30.75
1745	dec	20	20	20	10	10	10	1.131	1.13	1.135	30.77	30.75	30.88
1746	jan	20	20	20	10	10	10	1.142	1.14	1.145	30.77	30.75	31
1746	feb	20	20	20	10	10	10	1.14	1.14	1.14	30.87	30.75	31
1746	mar	20	20	20	10	10	10	1.136	1.13	1.14	30.87	30.75	31
1746	apr	20	20	20	10	10	10	1.132	1.13	1.135	30.87	30.75	31
1746	may	20	20	20	10	10	10	1.128	1.12	1.13	30.65	30.5	30.75
1746	jun	20	20	20	10	10	10	1.125	1.12	1.13	30.66	30.5	30.75
1746	jul	20	20	20	10	10	10	1.135	1.13	1.14	30.82	30.75	31
1746	aug	20	20	20	10	10	10	1.145	1.14	1.15	30.94	30.88	31
1746	sep	20	20	20	10	10	10	1.15	1.15	1.15	31	31	31
1746	oct	20	20	20	10	10	10	1.15	1.15	1.15	31.19	31	31.25
1746	nov	20	20	20	10	10	10	1.147	1.14	1.15	31.31	31.25	31.5
1746	dec	20	20	20	10	10	10	1.14	1.14	1.14	31.62	31.25	31.75
1747	jan	20	20	20	10	10	10	1.137	1.13	1.14	31.9	31.75	32
1747	feb	20	20	20	10	10	10	1.132	1.13	1.135	32	32	32
1747	mar	20	20	20	10	10	10	1.141	1.14	1.145	32	32	32
1747	apr							1.143	1.14	1.15	32	32	32
1747	may	22.75	22.75	22.75	11.5	11.5	11.5	1.152	1.145	1.16	32.06	32	32.25
1747	jun	22.75	22.75	22.75	11.5	11.5	11.5	1.156	1.15	1.16	32	32	32
1747	jul	22.77	22.75	23	11.55	11.5	11.75	1.165	1.16	1.17	32.15	32	32.25
1747	aug	22.87	22.75	23	11.62	11.5	11.75	1.17	1.17	1.17	32.25	32.25	32.25
1747	sep	22.94	22.75	23	11.55	11.5	11.63	1.17	1.17	1.17	32.25	32.25	32.25
1747	oct	23	23	23	11.72	11.5	11.75	1.175	1.17	1.18	32.25	32.25	32.25
1747	nov	22.87	22.75	23	11.62	11.5	11.75	1.173	1.17	1.18	32.19	32	32.25
1747	dec	22.87	22.75	23	11.62	11.5	11.75	1.164	1.16	1.17	32.12	32	32.25
1748	jan	22.87	22.75	23	11.62	11.5	11.75	1.165	1.16	1.17	32.25	32	32.38
1748	feb	22.87	22.75	23	11.62	11.5	11.75	1.165	1.16	1.17	32.12	32	32.25
1748	mar	22.87	22.75	23	11.62	11.5	11.75	1.164	1.16	1.17	32.3	32	32.5
1748	apr	22.87	22.75	23	11.62	11.5	11.75	1.165	1.16	1.17	32.37	32.25	32.5
1748	may	22.87	22.75	23	11.62	11.5	11.75	1.169	1.16	1.18	32.37	32.25	32.5
1748	jun	22.67	22.5	23	11.5	11.5	11.5	1.177	1.175	1.18	32.37	32.25	32.5

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1748	jul	22.62	22.5	22.75	11.5	11.5	11.5	1.177	1.175	1.18	32.37	32.25	32.5
1748	aug	22.62	22.5	22.75	11.5	11.5	11.5	1.177	1.175	1.18	32.37	32.25	32.5
1748	sep	22.62	22.5	22.75	11.5	11.5	11.5	1.178	1.175	1.18	32.37	32.25	32.5
1748	oct	22.62	22.5	22.75	11.5	11.5	11.5	1.18	1.18	1.18	32.37	32.25	32.5
1748	nov	22.62	22.5	22.75	11.53	11.5	11.75	1.18	1.18	1.18	32.37	32.25	32.5
1748	dec	22.62	22.5	22.75	11.62	11.5	11.75	1.172	1.16	1.18	32.5	32.5	32.5
1749	jan												
1749	feb												
1749	mar												
1749	apr												
1749	may	22.62	22.5	22.75	11.62	11.5	11.75	1.177	1.175	1.18	32.75	32.75	32.75
1749	jun	22.62	22.5	22.75	11.62	11.5	11.75	1.177	1.175	1.18	33	33	33
1749	jul	22.62	22.5	22.75	11.62	11.5	11.75	1.178	1.175	1.18	33	33	33
1749	aug	22.62	22.5	22.75	11.62	11.5	11.75	1.18	1.18	1.18	33	33	33
1749	sep	22.56	22.5	22.75	11.62	11.5	11.75	1.18	1.18	1.18	33.09	33	33.25
1749	oct	22.47	22.25	22.5	11.62	11.5	11.75	1.18	1.18	1.18	33.12	33	33.25
1749	nov	22.5	22.5	22.5	11.62	11.5	11.75	1.18	1.18	1.18	33.12	33	33.25
1749	dec	22.33	22	22.5	11.62	11.5	11.75	1.18	1.18	1.18	33.12	33	33.25
1750	jan	22	22	22	11.62	11.5	11.75	1.177	1.175	1.18	33.12	33	33.25
1750	feb	22	22	22	11.62	11.5	11.75	1.175	1.175	1.175	33.12	33	33.25
1750	mar	22	22	22	11.62	11.5	11.75	1.175	1.175	1.175	33.12	33	33.25
1750	apr	21.91	21.5	22	11.62	11.5	11.75	1.175	1.175	1.175	33.12	33	33.25
1750	may	21.52	21	21.75	11.62	11.5	11.75	1.175	1.175	1.175	33.12	33	33.25
1750	jun	21.12	21	21.25	11.62	11.5	11.75	1.167	1.165	1.17	33.12	33	33.25
1750	jul	20.87	20.75	21	11.37	11.25	11.5	1.162	1.16	1.165	33.12	33	33.25
1750	aug	20.67	20.5	21	11.37	11.25	11.5	1.161	1.15	1.165	33.12	33	33.25
1750	sep	20.28	20	20.5	11.19	11	11.25	1.14	1.12	1.15	33.09	33	33.25
1750	oct	20.12	20	20.25	11	11	11	1.117	1.115	1.12	33	33	33
1750	nov	19.97	19.75	20.25	10.9	10.5	11	1.099	1.08	1.11	32.72	32.5	33
1750	dec	19.87	19.75	20	10.65	10	11	1.075	1.07	1.08	32.52	32.25	32.75
1751	jan	19.77	19.5	20	10.25	10	10.5	1.075	1.06	1.09	32.4	32	33
1751	feb	19.62	19.5	19.75	10.25	10	10.5	1.075	1.07	1.08	32.87	32.75	33
1751	mar	19.62	19.5	19.75	10.25	10	10.5	1.075	1.07	1.08	32.87	32.75	33
1751	apr	19.62	19.5	19.75	10.25	10	10.5	1.081	1.07	1.09	32.87	32.75	33
1751	may	19.72	19.5	20	10.25	10	10.5	1.074	1.07	1.08	32.87	32.75	33
1751	jun	19.87	19.75	20	10.25	10	10.5	1.082	1.07	1.09	32.87	32.75	33
1751	jul	19.87	19.75	20	10.25	10	10.5	1.085	1.08	1.09	32.87	32.75	33
1751	aug	19.87	19.75	20	10.25	10	10.5	1.085	1.08	1.09	32.87	32.75	33
1751	sep	19.87	19.75	20	10.25	10	10.5	1.085	1.08	1.09	32.62	32.5	32.75
1751	oct	19.87	19.75	20	10.71	10	11	1.076	1.07	1.09	32.25	32	32.75
1751	nov	19.87	19.75	20	10.87	10.75	11	1.072	1.07	1.075	32.12	32	32.25
1751	dec	19.87	19.75	20	10.87	10.75	11	1.072	1.07	1.075	32.37	32.25	32.5

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1752	jan	19.56	19	20	10.75	10.5	11	1.072	1.07	1.075	32.25	32	32.5
1752	feb	19.75	19.5	20	10.87	10.5	11.25	1.075	1.07	1.08	32.33	32	32.5
1752	mar	20	20	20	11.12	11	11.25	1.077	1.075	1.08	32.5	32.5	32.5
1752	apr	19.9	19.5	20	10.97	10.5	11.25	1.081	1.08	1.085	32.37	32	32.5
1752	may	19.44	19.25	19.5	10.5	10.5	10.5	1.077	1.07	1.08	32.05	32	32.25
1752	jun	19.55	19.25	19.75	10.4	10	10.5	1.074	1.07	1.08	32.11	32	32.25
1752	jul	19.12	19	19.5	10	10	10	1.071	1.07	1.075	32.06	32	32.25
1752	aug	19	19	19	10	10	10	1.067	1.06	1.07	31.87	31.5	32
1752	sep	19	19	19	10	10	10	1.054	1.05	1.06	31.45	31	32
1752	oct	19.16	19	19.25	10.16	10	10.25	1.048	1.045	1.05	30.31	30	30.5
1752	nov	19.12	19	19.25	10.12	10	10.25	1.05	1.05	1.05	30.34	30	30.5
1752	dec	19.12	19	19.25	10.12	10	10.25	1.05	1.05	1.05	30.05	30	30.5
1753	jan	19.12	19	19.25	10.15	10	10.5	1.049	1.045	1.05	29.78	29.5	30
1753	feb	19.12	19	19.25	10.16	10	10.5	1.051	1.05	1.055	29.75	29.63	30
1753	mar	19.12	19	19.25	10.12	10	10.25	1.05	1.05	1.05	29.69	29.63	29.75
1753	apr	19.12	19	19.25	10.12	10	10.25	1.05	1.05	1.05	29.69	29.63	29.75
1753	may	19.12	19	19.25	10.12	10	10.25	1.05	1.05	1.05	29.67	29.5	29.75
1753	jun	19.12	19	19.25	10.12	10	10.25	1.052	1.05	1.06	29.62	29.5	29.75
1753	jul	19.22	19	19.75	10	10	10	1.05	1.05	1.05	29.61	29.5	29.75
1753	aug	19.31	19	19.75	10	10	10	1.05	1.05	1.05	29.69	29.63	29.75
1753	sep	19.5	19.25	19.75	10	10	10	1.05	1.05	1.05	29.69	29.63	29.75
1753	oct	19.4	19.25	19.75	10.05	10	10.25	1.05	1.05	1.05	29.66	29.63	29.75
1753	nov	19.37	19.25	19.5	10	10	10	1.05	1.05	1.05	29.63	29.63	29.63
1753	dec	19.37	19.25	19.5	10.37	10.25	10.5	1.05	1.05	1.05	29.62	29.5	29.75
1754	jan	19.37	19.25	19.5	9.949	9.75	10	1.05	1.05	1.05	29.67	29.5	29.75
1754	feb	19.37	19.25	19.5	9.906	9.75	10	1.05	1.05	1.05	29.75	29.75	29.75
1754	mar	19.37	19.25	19.5	10	10	10	1.057	1.055	1.06	29.81	29.75	29.88
1754	apr	19.5	19.5	19.5	10.05	10	10.25	1.057	1.055	1.06	29.98	29.88	30.25
1754	may	19.59	19.5	19.75	10	10	10	1.057	1.055	1.06	29.95	29.88	30
1754	jun	19.62	19.5	19.75	10.09	10	10.5	1.055	1.055	1.055	29.94	29.88	30
1754	jul	19.62	19.5	19.75	10.37	10.25	10.5	1.055	1.055	1.055	29.94	29.88	30
1754	aug	19.62	19.5	19.75	10.37	10.25	10.5	1.051	1.05	1.055	29.91	29.75	30
1754	sep	19.52	19.5	19.63	10.37	10.25	10.5	1.051	1.05	1.055	29.86	29.75	30
1754	oct	19.37	19	19.75	10.49	10	11	1.05	1.05	1.05	29.87	29.75	30
1754	nov	19.59	19.5	19.75	10.5	10.5	10.5	1.05	1.05	1.05	29.86	29.75	30
1754	dec	19.52	19.5	19.75	10.3	10.25	10.5	1.053	1.05	1.055	29.91	29.75	30
1755	jan	19.62	19.5	19.75	10.25	10.25	10.25	1.055	1.055	1.055	29.94	29.88	30
1755	feb	19.55	19.5	19.75	10.19	10	10.25	1.055	1.055	1.055	29.98	29.88	30.13
1755	mar	19.56	19.5	19.63	10.06	10	10.25	1.055	1.055	1.055	30.14	30.13	30.25
1755	apr	19.57	19.5	19.75	9.996	9.5	10.25	1.055	1.055	1.055	30.05	29.88	30.25
1755	may	19.62	19.5	19.75	10	10	10	1.055	1.055	1.055	29.91	29.75	30
1755	jun	19.62	19.5	19.75	10	10	10	1.055	1.055	1.055	29.87	29.75	30

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1755	jul	19.62	19.5	19.75	10	10	10	1.055	1.055	1.055	29.97	29.75	30
1755	aug	19.72	19.5	20	10	10	10	1.055	1.055	1.055	30	30	30
1755	sep	19.5	19.5	19.5	10.22	10	10.75	1.055	1.055	1.055	30.05	30	30.13
1755	oct	19.78	19.5	20	10.59	10.25	10.75	1.055	1.055	1.055	30	30	30
1755	nov	19.87	19.75	20	10.5	10.25	10.75	1.055	1.055	1.055	30	30	30
1755	dec	19.96	19.75	20.13	10.5	10.25	10.75	1.055	1.055	1.055	30	30	30
1756	jan												
1756	feb										30.62	30.5	30.75
1756	mar							1.062	1.06	1.065	30.62	30.5	30.75
1756	apr							1.062	1.06	1.065	30.62	30.5	30.75
1756	may				10.5	10.5	10.5	1.06	1.06	1.06	30.62	30.5	30.75
1756	jun				10.5	10.5	10.5	1.06	1.06	1.06	30.62	30.5	30.75
1756	jul	21.25	21.25	21.25				1.06	1.06	1.06	30.87	30.5	31.25
1756	aug	20.75	20.75	20.75				1.06	1.06	1.06	31.05	31	31.25
1756	sep	20.75	20.75	20.75				1.06	1.06	1.06	31	31	31
1756	oct	20.75	20.75	20.75				1.062	1.06	1.07	31	31	31
1756	nov	20.9	20.75	21	11	11	11	1.068	1.065	1.07	31.07	31	31.13
1756	dec	21	21	21	11	11	11	1.07	1.07	1.07	31.13	31.13	31.13
1757	jan	21.47	21.25	21.5	11.12	11	11.5	1.07	1.07	1.07	31.13	31.13	31.13
1757	feb	21.5	21.5	21.5	11	11	11	1.07	1.07	1.07	31.19	31.13	31.25
1757	mar	21.7	21.5	22	10.8	10.5	11	1.06	1.06	1.06	31.6	31.5	31.75
1757	apr	21.75	21.5	22	10.87	10.75	11	1.06	1.06	1.06	31.62	31.5	31.75
1757	may	21.9	21.5	22	10.87	10.75	11	1.067	1.06	1.075	32	31.5	32.25
1757	jun	22	22	22	10.87	10.75	11	1.075	1.075	1.075	32.25	32.25	32.25
1757	jul	23	23	23	11	11	11	1.092	1.085	1.1	32.25	32.25	32.25
1757	aug	23.2	23	24	11	11	11	1.122	1.12	1.13	32.52	32.5	32.75
1757	sep	24	24	24	11.37	11.25	11.5	1.15	1.13	1.17	32.62	32.5	32.75
1757	oct	24	24	24	11.5	11.5	11.5	1.16	1.16	1.16	32.62	32.5	32.75
1757	nov	24	24	24	11.6	11.5	11.75	1.172	1.16	1.19	33.17	32.5	34
1757	dec	24	24	24	11.75	11.75	11.75	1.19	1.19	1.19	34	34	34
1758	jan	24.85	24.75	25	12.55	12.25	12.75	1.186	1.18	1.19	34.2	34	34.5
1758	feb	25.25	24.75	26	12.66	12.5	12.75	1.189	1.18	1.2	34.44	34	35
1758	mar	26.4	26	26.75	13	12.75	13.25	1.235	1.22	1.26	35.37	35	36
1758	apr	27	26.5	27.25	13.62	13.25	14	1.257	1.24	1.27	36.12	35.5	36.5
1758	may	27.22	27	27.5	13.75	13.5	14	1.268	1.25	1.28	36.25	36	36.5
1758	jun	27.06	26.75	27.5	13.62	13.5	14	1.275	1.26	1.28	36.37	36	36.5
1758	jul	26.56	26.25	27	13.12	13	13.5	1.282	1.28	1.3	36.5	36.5	36.5
1758	aug	26.12	26	26.75	13	13	13	1.286	1.28	1.32	36.5	36.5	36.5
1758	sep	26.09	26	26.25	13	13	13	1.31	1.3	1.32	36.5	36.5	36.5
1758	oct	26	26	26	13.1	13	13.5	1.316	1.3	1.33	36.5	36.5	36.5
1758	nov	25.81	25	26	13.25	13	13.5	1.327	1.32	1.34	36.69	36.5	37
1758	dec	25.93	25	26.5	13.25	13	13.5	1.335	1.33	1.34	37.12	37	37.25

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1759	jan	26.5	26.5	26.5	13.65	13	14	1.335	1.33	1.34	37.12	37	37.25
1759	feb	26.5	26.5	26.5	13.75	13.5	14	1.335	1.33	1.34	37.12	37	37.25
1759	mar	26.5	26.5	26.5	13.75	13.5	14	1.335	1.33	1.34	37.12	37	37.25
1759	apr	26.37	26.25	26.5	13.87	13.5	14	1.335	1.33	1.34	38.62	38.5	38.75
1759	may	26.45	26.25	26.5	13.75	13.5	14	1.335	1.33	1.34	39	38.5	39.5
1759	jun	26.5	26.5	26.5	13.75	13.5	14	1.335	1.33	1.34	39.25	39	39.5
1759	jul	26.5	26.5	26.5	14.5	14.5	14.5	1.335	1.33	1.34	39.25	39	39.5
1759	aug	26.5	26.5	26.5	14.5	14.5	14.5	1.335	1.33	1.34	39.25	39	39.5
1759	sep	26.5	26.5	26.5	14.5	14.5	14.5	1.335	1.33	1.34	39.25	39	39.5
1759	oct	26.55	26.5	26.75	14.6	14.5	15	1.357	1.33	1.4	39.45	39	40
1759	nov	26.62	26.5	26.75	14.75	14.5	15	1.39	1.38	1.4	39.75	39.5	40
1759	dec	27.06	26.5	27.5	15	14.5	15.25	1.42	1.38	1.45	39.75	39.5	40
1760	jan	27.8	27.5	28	15.45	15.25	15.5	1.45	1.45	1.45	41.94	39.5	42.5
1760	feb	28	28	28	15.5	15.5	15.5	1.46	1.46	1.46	43	43	43
1760	mar	29	28.5	29.5	15.75	15.75	15.75	1.47	1.46	1.48	43.37	43	43.5
1760	apr	29.95	29.5	30.25	15.75	15.75	15.75	1.48	1.48	1.48	43.6	43.5	43.75
1760	may	29.5	29	30	15.81	15.75	16	1.5	1.5	1.5	44.44	43.75	45
1760	jun	30.25	30	30.5	16	16	16	1.5	1.5	1.5	45.12	45	45.5
1760	jul	30	30	30	16	16	16	1.5	1.5	1.5	45.5	45.5	45.5
1760	aug	31	31	31	16.25	16.25	16.25	1.5	1.5	1.5	46.25	46.25	46.25
1760	sep	31	31	31	16.25	16.25	16.25	1.5	1.5	1.5	46.25	46.25	46.25
1760	oct	31	31	31	16.25	16.25	16.25	1.5	1.5	1.5	46.25	46.25	46.25
1760	nov	32	31.5	32.5	16.25	16.25	16.25	1.5	1.5	1.5	46.87	46.25	47.5
1760	dec	33	33	33	17	17	17	1.52	1.52	1.52	47.5	47.5	47.5
1761	jan	33.75	33.5	34	17.5	17.5	17.5	1.53	1.52	1.54	47.5	47.5	47.5
1761	feb	34	34	34	17.5	17.5	17.5	1.53	1.52	1.54	48.12	47.5	48.75
1761	mar	34.1	34	34.5	17.55	17.5	17.75	1.524	1.52	1.54	48.75	48.75	48.75
1761	apr	35.12	34.5	35.5	17.94	17.75	18	1.565	1.54	1.58	49.68	48.75	50
1761	may	35.5	35.5	35.5	18	18	18	1.6	1.6	1.6	50	50	50
1761	jun	35.8	35.5	36	18	18	18	1.61	1.6	1.65	50	50	50
1761	jul	36.5	36.5	36.5	18	18	18	1.65	1.65	1.65	50	50	50
1761	aug	36.5	36.5	36.5	18	18	18	1.675	1.65	1.7	50.56	50	50.75
1761	sep	36.2	36	36.5	18	18	18	1.73	1.7	1.75	50.75	50.75	50.75
1761	oct	36.56	36	36.75	18	18	18	1.75	1.75	1.75	50.75	50.75	50.75
1761	nov	36.25	36	36.5	18	18	18	1.725	1.7	1.75	50.75	50.75	50.75
1761	dec	36.5	36.5	36.5	18.5	18.5	18.5	1.72	1.7	1.75	50.75	50.75	50.75
1762	jan	36.5	36.5	36.5	18.5	18.5	18.5	1.7	1.7	1.7	50.75	50.75	50.75
1762	feb	36.87	36.5	37	18.75	18.5	19	1.725	1.7	1.75	50.75	50.75	50.75
1762	mar	38.4	38	39	19	19	19	1.75	1.75	1.75	50.75	50.75	50.75
1762	apr	39.75	39	40	19.5	19	20	1.75	1.75	1.75	50.75	50.75	50.75
1762	may	40	40	40	20	20	20	1.8	1.8	1.8	51	50.75	51.25
1762	jun	41.09	40	42	20.8	20	21	1.804	1.8	1.82	51.25	51.25	51.25

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1762	jul	42.75	42	43	21.75	21	22	1.88	1.82	1.9	51.81	51.25	52
1762	aug	43	43	43	22	22	22	1.959	1.9	2	52	52	52
1762	sep	43	43	43	22	22	22	2	2	2	52	52	52
1762	oct	48.49	48	50	24.2	23	27	2.09	2.06	2.12	52.25	52	52.5
1762	nov	49.59	48	50	25.67	24	27	2.095	2	2.12	55	55	55
1762	dec	45	45	45	24.25	24	25	2	2	2	55.61	55	57.5
1763	jan	43.47	42	45	24.49	24	25	2	2	2	57.5	57.5	57.5
1763	feb	42.73	42	45	23.24	22.5	24	2	2	2	57.5	57.5	57.5
1763	mar	44.18	42	45	22.79	22.5	24	2	2	2	57.5	57.5	57.5
1763	apr	42	42	42	21.25	21	22	2	2	2	57.5	57.5	57.5
1763	may	41.19	40	42	20.59	20	21	1.992	1.98	2	56.49	55	57.5
1763	jun	39.75	39	40	19.75	19	20	1.995	1.98	2	55	55	55
1763	jul	39.5	39	40	19.49	19	20	2	2	2	55	55	55
1763	aug	41	40.5	42	20.79	20	22	2	2	2	55	55	55
1763	sep	42.75	42	43	22.49	22	23	2.04	2	2.08	55	55	55
1763	oct	44.24	43	45	23.49	23	24	2.085	2.08	2.1	56.24	55	57.5
1763	nov	45.74	45	47	23.24	22.5	24	2.125	2.1	2.15	56.24	55	57.5
1763	dec	44.25	44	45	22.12	22	22.5	2.025	2	2.1	55	55	55
1764	jan	44.4	44	45	22	22	22	2	2	2	55	55	55
1764	feb	43.25	43	44	22.49	22	23	2	2	2	55	55	55
1764	mar	42.25	42	43	22.81	22.75	23	2	2	2	55	55	55
1764	apr	42.75	42	43	22.12	22	22.5	2	2	2	55	55	55
1764	may	43	43	43	22.99	22	23.5	2	2	2	55	55	55
1764	jun	43	43	43	22.5	22.5	22.5	2.1	2.1	2.1	55	55	55
1764	jul	43.2	43	44	22.6	22.5	23	2.1	2.1	2.1	55	55	55
1764	aug	44.25	44	44.5	23.83	23.5	24	2.1	2.1	2.1	55	55	55
1764	sep	45.37	45	45.5	23.75	23.5	24	2.125	2.1	2.15	55	55	55
1764	oct	45.3	45	46.5	23.1	23	23.5	2.15	2.15	2.15	55	55	55
1764	nov	46.62	46	47	23.75	23.5	24	2.15	2.15	2.15	55	55	55
1764	dec	46	46	46	23.25	23	23.5	2.15	2.15	2.15	55	55	55
1765	jan	45.2	45	46	23	23	23	2.15	2.15	2.15	55	55	55
1765	feb	44.12	44	44.5	22.87	22.5	23	2.111	2	2.15	55	55	55
1765	mar	44.25	44	44.5	22	22	22	2	2	2	55	55	55
1765	apr	44.5	44.5	44.5	22	22	22	2	2	2	55	55	55
1765	may	46	45	46.5	22	22	22	2	2	2	55	55	55
1765	jun	45.87	45	46	22	22	22	2	2	2	55	55	55
1765	jul	46	46	46	22	22	22	2	2	2	55	55	55
1765	aug	46	46	46	22.25	22	22.5	2	2	2	55	55	55
1765	sep	46	46	46	22.5	22.5	22.5	2	2	2	55	55	55
1765	oct	45.33	45	46	22.17	22	22.5	2	2	2	55	55	55
1765	nov	40.66	40	42	20.06	18	21	2	2	2	55	55	55
1765	dec	40	40	40	19.79	18	20	2	2	2			

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)		
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest
1766	jan	38.73	37	40	19.1	18	20	2	2	2			
1766	feb	37.99	37	39	18.61	18	19.5	2	2	2			
1766	mar	37.5	37	38	18.49	18	19	2	2	2			
1766	apr	39.03	37	42	20.12	18	21.5	2	2	2			
1766	may	41.5	41	42	21.25	21	21.5	2	2	2			
1766	jun	41.5	41	42	21.25	21	21.5	2	2	2			
1766	jul	40.3	39	41	20.39	19	21	2	2	2			
1766	aug	39.5	39	40	19.49	19	20	2	2	2			
1766	sep	37.2	36	38	18.5	18	19	1.996	1.98	2			
1766	oct	36.5	36	37	18	18	18	1.99	1.98	2			
1766	nov	35.68	35	37	17.43	17	18	1.944	1.9	2			
1766	dec	34.29	33.5	35.5	17.15	17	17.5	1.849	1.8	1.9			
1767	jan	33.5	33.5	33.5	17	17	17	1.79	1.78	1.8			
1767	feb	33.37	33	33.5	16.75	16.5	17	1.78	1.78	1.78			
1767	mar	33.75	33.5	34	16.87	16.5	17.25	1.76	1.76	1.76			
1767	apr	33.75	33.5	34	16.87	16.5	17.25						
1767	may	33.75	33.5	34	16.87	16.5	17.25						
1767	jun	33.6	33	34	16.7	16.5	17.25						
1767	jul	32.5	32	33	16.21	15.75	16.75						
1767	aug	30.55	27	32	15.12	14	15.75						
1767	sep	26.85	26.5	27	13.25	13	13.5						
1767	oct	24.49	24	25	12	11.75	12.25						
1767	nov	24.25	24	25	11.87	11.75	12						
1767	dec	24	24	24	12.03	11.75	12.5						

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)			1 daler s.m. in plates in daler s.m.
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	
1768	jan	24	24	24										
1768	feb	22	22	22										
1768	mar	22	22	22				1.167	1.167	1.167				
1768	apr							1.154	1.15	1.167				
1768	may	22	22	22				1.163	1.15	1.167	32	32	32	
1768	jun	22	22	22	12	12	12	1.167	1.167	1.167	32	32	32	
1768	jul	24.81	24.25	25.5	12.62	12.5	12.75	1.167	1.167	1.167				
1768	aug	25.32	25	25.5	13.1	12.75	13.25	1.25	1.25	1.25	30.5	30.5	30.5	1.383
1768	sep	25.25	25	25.5	13.12	13	13.25	1.25	1.25	1.25	30.5	30.5	30.5	1.385
1768	oct	25.75	25.5	26	12.84	12.5	13							1.356
1768	nov	26.33	26	26.5	13	13	13							1.372
1768	dec	27.25	27	27.5	14	14	14							1.478
1769	jan	27.5	27.5	27.5	14	14	14				33	33	33	1.478
1769	feb	27.5	27.5	27.5	13.87	13.5	14	1.333	1.333	1.333	33	33	33	1.464
1769	mar							1.333	1.333	1.333				
1769	apr	26.8	26.5	27	13.92	13.5	14	1.332	1.33	1.333				1.469
1769	may	26.75	26.5	27	13.62	13.5	14	1.331	1.33	1.333	34	34	34	1.438
1769	jun							1.333	1.333	1.333	34	34	34	
1769	jul	28	28	28	15.75	15.5	16	1.333	1.333	1.333	34	34	34	1.662
1769	aug	28.89	28	30	16.02	15.5	16.5	1.333	1.333	1.333				1.62
1769	sep	29.75	29.5	30	16.21	16	16.5	1.5	1.5	1.5				1.621
1769	oct				17.06	17	17.13	1.5	1.5	1.5				1.706
1769	nov				16.87	16.75	17	1.5	1.5	1.5				1.687
1769	dec				16.87	16.75	17	1.5	1.5	1.5				1.687
1770	jan	30.7	30	31	17.59	16.75	18	1.505	1.5	1.53				1.759
1770	feb	30	30	30	17.37	17.13	17.75							1.737
1770	mar	30	30	30	16.88	16	17							1.688
1770	apr				16.96	16.75	17							1.696
1770	may	31.75	31.5	32	16.9	16.75	17							1.69
1770	jun	31.12	31	31.5										
1770	jul	31	31	31	17.18	16.75	18							1.718
1770	aug				17.5	17.5	17.5							1.75
1770	sep	34.5	34.5	34.5	17.37	17.25	17.5							1.737
1770	oct	33.25	33.25	33.25	17.35	17.25	17.5							1.735
1770	nov	33	33	33	17.37	17.25	17.5	1.655	1.65	1.66				1.737
1770	dec				17.25	17.25	17.25	1.655	1.65	1.66				1.725

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)			1 daler s.m. in plates in daler s.m.
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	
1771	jan	33.25	33.25	33.25	17.55	17.25	17.75	1.655	1.65	1.66				1.852
1771	feb	33.62	33.25	34	17.75	17.75	17.75							1.874
1771	mar	33.56	33.5	34	17.42	17.25	17.5							1.838
1771	apr	33.5	33.5	33.5	17.19	17	17.25							1.814
1771	may	32.5	32.5	32.5	16.5	16.5	16.5							1.742
1771	jun	32.37	32	32.5	16.25	16	16.5							1.715
1771	jul	33	33	33	16.44	16.25	16.63							1.735
1771	aug	33	33	33	16.58	16.5	17.16							1.75
1771	sep	32.87	32.5	33	16.47	16.25	16.5							1.738
1771	oct	32.5	32.5	32.5	16.37	16.25	16.5							1.728
1771	nov	33	33	33	16.75	16.75	16.75							1.768
1771	dec	33.17	33	33.5	16.94	16.75	17.13							1.788
1772	jan	33.25	33	33.5	17.06	17	17.13							1.801
1772	feb	33.25	33	33.5										
1772	mar													
1772	apr				17.62	17.5	17.75							1.86
1772	may				17.81	17.5	18							1.88
1772	jun				18	18	18							1.9
1772	jul	35	34.5	35.5	18.37	18	19							1.939
1772	aug	35	34.5	35.5	19	19	19							2.006
1772	sep	33.37	33	34.5	18.77	18.75	18.88							1.981
1772	oct	34.37	33.5	34.5	18.72	18.63	18.75							1.976
1772	nov	34.5	34.5	34.5	18.88	18.88	18.88	1.6	1.6	1.6				1.992
1772	dec	36.12	36	36.25	19.4	19.25	19.5							2.048
1773	jan	36.12	36	36.25	19.44	19.38	19.5							2.052
1773	feb	36.12	36	36.25	19.44	19.38	19.5							2.052
1773	mar	39.5	39	40	20.71	20	21.5							2.186
1773	apr	39.25	39	40	20.57	19.75	21.5							2.171
1773	may				20.87	20.75	21							2.203
1773	jun	39.42	39	39.75	21	21	21							2.217
1773	jul	39.94	39.5	40	20.73	20.5	20.88							2.188
1773	aug	39.85	39	40	20.51	20.25	20.63							2.165
1773	sep	39.31	39	40	20.31	20.25	20.38							2.144
1773	oct	39.87	39	40	20.75	20.31	21							2.191
1773	nov	40	40	40	21.06	21	21.13	1.986	1.973	2				2.223
1773	dec	40	40	40	21.13	21.13	21.13	1.986	1.973	2				2.23

Table 6: *Monthly exchange rates between Swedish currency units 1705-1776, continued.*

Year	Month	1 ducat in daler kopparmynt (par value 18 daler k.m.)			1 riksdaler in daler kopparmynt (par value 9 daler k.m.)			1 öre courant in öre silvermynt (par value 1 öre s.m.)			1 carolin in öre silvermynt (par value 25 öre s.m.)			1 daler s.m. in plates in daler s.m.
		Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	Ave-rage	Lo-west	Hig-hest	
1774	jan	39.87	39.5	40	21.44	21.25	21.5	1.986	1.973	2				2.263
1774	feb	39.75	39.5	40	21.31	21.25	21.5	1.986	1.973	2				2.25
1774	mar	39.75	39.5	40	21.25	21.25	21.25	1.986	1.973	2				2.123
1774	apr	39.75	39.5	40	20.41	20.38	20.5	1.986	1.973	2				1.965
1774	may	39.15	39	39.5	19.75	19.5	20.25	1.986	1.973	2				1.902
1774	jun	39	39	39	19.5	19.5	19.5	1.986	1.973	2				1.878
1774	jul	38.75	38.5	39	19.31	19.25	19.5	1.986	1.973	2				1.86
1774	aug	36.75	36.5	37				1.986	1.973	2				
1774	sep	36.56	36.5	37	18.5	18.5	18.5	1.986	1.973	2				1.781
1774	oct	36.22	36	36.5	18.5	18.5	18.5	1.986	1.973	2				1.781
1774	nov	36.12	36	36.25	18.5	18.5	18.5	1.986	1.973	2				1.781
1774	dec	36.12	36	36.25	18.75	18.75	18.75	1.986	1.973	2				1.806
1775	jan	36.12	36	36.25	18.75	18.75	18.75	1.986	1.973	2				1.806
1775	feb	36.5	36.5	36.5				1.986	1.973	2				
1775	mar	36.5	36.5	36.5				1.986	1.973	2				
1775	apr	36.5	36.5	36.5				1.993	1.973	2				
1775	may	35.25	35.25	35.25	17.88	17.88	17.88	2	2	2				
1775	jun	35.75	35.75	35.75	17.88	17.88	17.88	2	2	2				
1775	jul				17.88	17.88	17.88	2	2	2				
1775	aug	36	36	36	18	18	18	2	2	2				1.667
1775	sep	35.83	35.5	36	17.83	17.5	18	2	2	2				1.651
1775	oct	35.5	35.5	35.5	17.5	17.5	17.5	2	2	2				1.62
1775	nov	35.5	35.5	35.5	17.5	17.5	17.5	2	2	2				1.62
1775	dec	35.5	35.5	35.5	17.5	17.5	17.5	2	2	2				1.62
1776	jan	35.5	35.5	35.5	17.5	17.5	17.5	2	2	2				1.62
1776	feb	35.5	35.5	35.5	17.59	17.5	18	2	2	2				1.629
1776	mar	35.5	35.5	35.5	17.87	17.75	18							1.655
1776	apr	35.45	35.25	35.5	17.89	17.75	18							1.656
1776	may	35.25	35.25	35.25	17.94	17.88	18							1.661
1776	jun	35.25	35.25	35.25	18	18	18							1.617
1776	jul	35.25	35.25	35.25	18	18	18	1.833	1.833	1.833				1.617
1776	aug	35.25	35.25	35.25	18	18	18	1.833	1.833	1.833				1.617
1776	sep	35.25	35.25	35.25	18	18	18	1.833	1.833	1.833				1.617
1776	oct	35.25	35.25	35.25	18	18	18	1.833	1.833	1.833				1.617
1776	nov	35.25	35.25	35.25	18	18	18	1.833	1.833	1.833				1.617
1776	dec	35.25	35.25	35.25	18	18	18	1.833	1.833	1.833				

Source: ”Växelkurser å Stockholms börs. Primärtabeller (1705-)/1740-1803” (online at: http://www.historia.se/exchangerates1705_1803.pdf) and *Stockholms stads priscourant* (Kungliga biblioteket, Stockholms stadsarkiv and Wahrendorffska arkivet). The monthly average is calculated as a geometric one.

5. The period after 1776-1873

The minting reform of 1776

In 1776 a large minting reform took place, which in principle abolished the old medieval division into marks, öre and penningar, the multi-currency, copper and silver standard, and the counting in kopparmynt, silvermynt, öre courant and carolins. A mono-currency, silver specie standard was de facto introduced with the riksdaler, the only stable means of payment that has existed in Sweden-Finland since the 16th century, as the sole unit of account (not considering the ducat). One riksdaler was divided into 48 skillings, and one skilling into 12 runstycken.

The old currencies stopped being legal means of payment 1st of January 1777, and were exchanged for riksdaler coins and fiduciary notes (although notes in daler kopparmynt continued to circulate for some years).[164] The old silver coins were exchanged to their full value, i.e. one riksdaler for 3 daler courant or for 1.92 daler carolins. However, the Riksbank notes and the round copper coins were reduced in value by 50 percent, i.e. 1 riksdaler = 6 daler silvermynt (72 mark kopparmynt), in accordance with the market rate of the riksdaler. The metallic value of 6 daler silvermynt of copper plates was worth more than one riksdaler, and a decision was taken on the 7th of October 1777 that one riksdaler would be exchanged for 4 daler silvermynt in copper plates.[165]

Many of the old labels (plåt, daler, styver, etc) for various currency units continued to be used well into the 19th century.[166] For example, daler silvermynt continued to refer to 1/6 riksdaler or 8 skillings (later 12 skillings riksgälds).

[164] Montgomery (1920), p. 221.
[165] Wallroth (1918), p. 93.
[166] Talvio (1995), p. 205.

The rise of three different riksdaler units after 1789

The reintroduced mono-currency, silver standard was not long-lasting. As seen on many other occasions, it was the demand to finance war efforts that reintroduced the fiat standard for some time.

A war with Russia led to the formation of the Riksgäldskontoret (National Debt Office), which started to issue riksgälds notes in 1789. These notes quickly came to dominate trade, and replaced the Riksbank notes, the banco riksdaler, which were still convertible into specie (and the riksdaler banco was therefore equal in value to the riksdaler specie coin), as the main notes in circulation. The legal status of riksgälds notes was initially somewhat unclear.[167] The riksdaler riksgälds began to fall in value compared to the riksdaler banco. The silver standard was de facto replaced by a multi-currency, fiat and silver standard in 1789, which lasted until 1803.

In the present study, the monthly premium on banco notes relative riksgälds notes is estimated as an average of Stockholm and Gothenburg notations.[168] The premium was 1-7 percent in 1789 and the first half of 1790. Except for 1794 and early 1795 (when it increased to above 20 percent), it was around 10-12 percent up to 1797. In 1798 and 1799 it increased continually until it reached around 50 percent. See Table 7, Table 8 and Figure 8.

[167] Ahlström (1974), pp. 32-38.

[168] Based on Ahlström (1972), pp. 133 and 134, for Stockholm and Mårtensson (1958) for Gothenburg. Ahlström presents two series, one which is the reported agio (premium) from July 1789 to November 1798, and one based on the exchange rates on Hamburg, London and Amsterdam expressed in banco and riksgälds notes, covering the period May 1797 to August 1803. Mårtensson's series cover the whole period March 1790 to December 1802. The reported agio in Stockholm corresponds quite well to the premium in Gothenburg. However, the premium based on exchange rates in Stockholm is substantially underestimated in comparison to the reported agio in Stockholm and Gothenburg up to November 1798. From December 1798, the premium based on foreign exchange seem to correspond quite well to the premium in Gothenburg. The calculated premium of the present study is an arithmetic average of the reported agio in Stockholm and Gothenburg up to November 1798, and from December 1798 an arithmetic average of the premiums based on foreign exchange and the Gothenburg premium, with some smaller adjustments for the months when data was missing in one of the series.

The existence of two different currencies created some confusion, in which currency various prices and exchange rates were recorded.

The foreign exchange rates presented in this study are based on Sveriges Riksbank (1931) and the background material to this work (see Edvinsson, 2009b). From 19th of May 1797 the exchange rate is expressed both in riksdaler riksgälds and riksdaler banco. For the period 1789-1796 it is unclear if the exchange rates on foreign currencies are expressed in riksdaler banco or riksdaler riksgälds. In Sveriges Riksbank (1931) it is claimed that the exchange rates for this period was in riksdaler riksgälds.[169] Göran Ahlström questions this assumption, and argues that the exchange rate was most probably in riksdaler riksgälds up to 1796.[170] Following daily exchange rates during May 1797, which can be found in the unpublished primary tables underpinning the work of Sveriges Riksbank (1931), no certain conclusion can be drawn.[171] In Sandbergska samlingen there is one table presenting the exchange rate on Hamburg both in riksdaler banco och riksgälds.[172] The exchange rate in riksdaler banco in the period 1789-1796 seems to follow the exchange rate presented in Sveriges Riksbank (1931), while the exchange rate in riksdaler riksgälds is significantly above the level of the latter.[173] Ahlström, therefore, seems to be correct.

In this study, the data presented in Sveriges Riksbank (1931) is assumed to be expressed in riksdaler banco for the period 1789-1796, while the premium calculated from the foreign

[169] Sveriges Riksbank (1931), p. 158.
[170] Ahlström (1972), p. 137.
[171] ”Växelkurser å Stockholms börs. Primärtabeller (1705-)/1740-1803” (Riksbankens arkiv). Online at: http://www.historia.se/exchangerates1705_1803.pdf [070201]. Furthermore, there is a possibility that the reported exchange rates during parts of the period 1789-1797 could be a mixture of payments in riksdaler banco and riksdaler riksgälds. This is particularly the case for the periods March to September 1791 and August 1793 to January 1794. For example, on the 8th November 1793, one Hamburg reichstaler banco was paid 52.75, 53 and 57 skillings, respectively. The difference between on the one hand 52.75 and 53 skillings and on the other hand 57 skillings seems to be quite large for the same day of transaction. The same large difference is reported for the exchange rate on Amsterdam for various time periods.
[172] Sandbergska samlingen (Riksarkivet), O:1, folio 364.
[173] The exchange rate in riksdaler banco in the period 1789-1796 presented in Sandbergska samlingen was, on average (here geometric average), 0.9 percent above the level in Sveriges Riksbank (1931), while the exchange rate in riksdaler riksgälds was, on average, 7.5 percent above the level in Sveriges Riksbank (1931).

exchange rates (which is different from the noted premium) in Sandbergska samlingen is used to estimate rates in riksdaler riksgälds.

The difference between the foreign exchange rate in riksgälds and banco was quite small in 1797. The exchange rate in riksgälds partly included the premium on banco notes. For example, according to Sandbergska samlingen, the premium based on foreign exchange rates was 2.9 percent in 1797, but the "noted agio" (noted premium) was 10 percent.

The opposite situation prevailed in domestic trade when prices were quoted both in riksdaler riksgälds and riksdaler banco. For example, the calculated premium for 1797 based on the prices of grain at Kungsåra Church was 18.7 percent, which was much higher than the noted premium. Ahlström argues that the type of transaction must be taken account of, and "that the agio was used for purposes of price adjustment, i.e. that the stronger part in a transaction took out a higher agio instead of putting pressure on the prices".[174]

According to Sandbergska samlingen, the noted premium was, on average, 13.4 percent in 1793-1796, and the premium based on exchange rates of Hamburg 9.1 percent. The premium calculated from price differences in Kungsåra Church was 17.5 percent in the same period. In 1799-1802, the average premium calculated from the exchange rates noted in Stockholm was 44 percent, while the premium calculated from the price differences in Kungsåra Church was 57 percent. The noted premium presented by Sture Mårtensson for Gothenburg was in the same period 49 percent, but the premium calculated from the exchange rate on Hamburg 51 percent. Henceforth, in Gothenburg the exchange rate premium was higher than the noted premium, the opposite of the situation in Stockholm. See Table 7.

[174] Ahlström (1972), p. 140.

From 1799 the premium converged at around 50 percent, although it still fluctuated sharply. In Gothenburg, the premium was as high as 66.7 percent in December 1801.[175]

Since the riksdaler banco was convertible up to 1808, this study assumes that 1 riksdaler specie = 1 riksdaler banco = 48 skillings banco for the whole period 1777-1808, despite the fact that the Hamburger reichstaler banco was noted above 48 skillings (see Edvinsson, 2009b).

In 1803 the relation between banco och riksgälds notes was fixed, and the mono-currency, silver specie standard briefly reintroduced. From then on one riksdaler banco was equal to 1.5 riksdaler riksgälds. However, the exchange rate of the Hamburg reichstaler banco refused to bounce back to its par value, making it profitable to exchange notes for silver from the Riksbank. With the war in 1808-1810 there was a massive increase of the Riksbank notes in circulation. In 1809, the banco notes were finally made inconvertible.[176] The fiat standard prevailed until 1834. The banco notes fell drastically in value relative to the riksdaler specie, and since the riksdaler riksgälds was fixed to the riksdaler banco it also fell in value. Henceforth, a difference occurred between riksdaler banco and the riksdaler specie, and from then on there were three different riksdaler units. There were also three different skillings, which followed these three riksdaler units.[177] In 1834, when the mono-currency, silver specie standard was reintroduced, the relation between the riksdaler specie and riksdaler banco was fixed, so that: 1 riksdaler specie = 2⅔ riksdaler banco = 4 riksdaler riksgälds. In 1855 the riksdaler riksgälds was replaced by the riksdaler riksmynt, and the latter was replaced by the krona (SEK) in 1873.

[175] Mårtensson (1958), p. 25. See also Ahlström (1974), p. 28.
[176] Brisman (1931), pp. 9-15. The inconvertibility was de facto introduced in early 1809, but sanctioned first in 1810.
[177] The skilling specie was rather a unit of account. No coins were ever minted in the denomination of skilling specie.

Transforming historical prices into a common currency unit

One problem when comparisons are made over time is that the currency unit has changed. In some studies the krona (SEK) is also used as a unit of account for the period before 1873. Within numismatic and economic-historical research at least two different methods have been applied.

Lennart Jörberg chooses to follow the nominal unit back to 1732. One krona is set equal to one riksdaler riksmynt 1855-1873, one riksdaler riksgälds 1789-1855 and one riksdaler specie 1776-1789. Henceforth one riksdaler specie was equal to one SEK in 1776, but 4 SEK in 1873. Based on the relation 1 riksdaler = 6 daler silvermynt, Lennart Jörberg makes the assumption that in 1732-1776:

1 krona = 6 daler silvermynt = 18 daler kopparmynt = 72 mark (kopparmynt)

This, however, can only be applied to the round copper coins and the Riksbank notes. Since the Riksbank notes were de facto the main means of payment, Jörberg's assumption seems reasonable. Jörberg's procedure is also advocated in Fregert and Gustafsson (2005).

Wallroth chooses another method, which follows the riksdaler specie unit backwards in time. In contrast to Jörberg, Wallroth follows not the main currency actually used in trade, but the coin of a stable silver content (the silver content of riksdaler specie only changed slightly through time). It is based on assumption that one riksdaler specie de facto became 4 kronor. Henceforth, one riksdaler specie was always equal to 4 kronor. To estimate other currencies in SEK, Wallroth uses both the officially fixed and market exchange rates of the riksdaler in those currencies.

Table 7: *The premium (agio) on banco notes (in percent) relative riksgälds notes in 1789-1803 according to various sources.*

Year	Noted premium (agio):				Premium based on foreign exchange rate quotations				Price differences	The present study**
	Wallroth (1918), p. 149	Mårtensson (1958), pp. 20-25	Ahlström (1972), p. 133	Ss, O:1, f. 364-365	Ahlström (1972), p. 134 (on Hamburg)	Ahlström (1972), p. 134 (on 3 currencies*)	Ss, O:1, f. 364-365 (on Hamburg)	Mårtensson (1958), p. 26, (on Hamburg)	von Schwerin (1903), p. 43	
1789			1.5				7.1			1.5
1790	6	5.5	8.8				0.9		8.3	7.9
1791	6	12.1	10.2				4.9		8.4	11.4
1792	10	10.1					3.4		7.9	10.6
1793	14	11.4	12.1	12.5			5.5		18.8	11.4
1794	22	21.1	21.1	16.5			8.6		18.8	20.9
1795	10	11.6	11.8	14			11.6		16.3	12.1
1796	10	10.3	10.3	10.5			10.9		16.3	10.2
1797	14	11.4	10	10	4.4	4.8	2.9		18.7	10.5
1798	23.5	20.9	20.3	18.5	10.2	10.8	30.1		56.3	21.8
1799	50	44.0			41.8	41.1	45.8	46.1	56.1	41.8
1800	47	43.4			38.9	40.5	47.4	44.4	56.2	44.5
1801	48	55.2			44.9	46.8	42.9	56.0	58.3	49.1
1802	50	53.5			48.3	49.6	48.8	56.9	56.3	51.3
1803	50				49.7	50.8	55.4			50.9

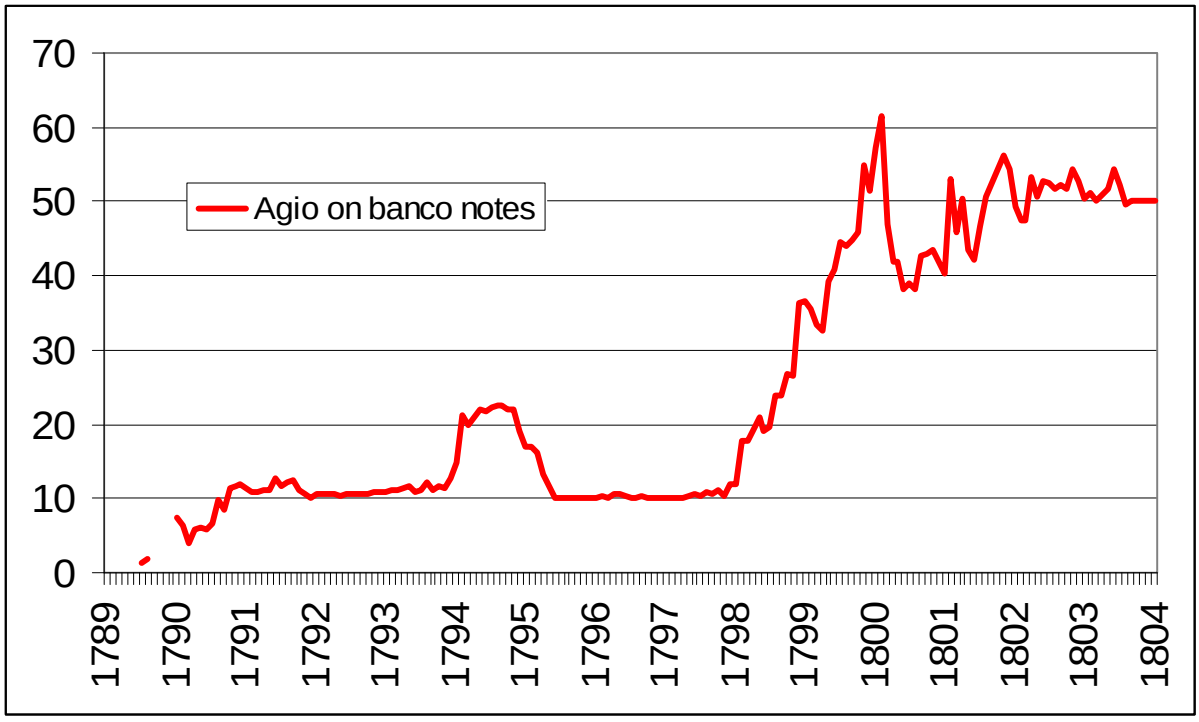
* Average of the premiums calculated according to exchange rate quotations on Hamburg, London and Amsterdam.
** See Table 8.
Abbreviation: Ss – Sandbergska samlingen (Riksarkivet).

Table 8: *Monthly premium (agio) on banco notes (in percent) relative riksgälds notes 1789-1803.*

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual geometric average[178]
1789							1.2	1.8					1.5
1790	7.3	6.3	4.0	5.9	6.0	5.8	6.6	9.9	8.5	11.5	11.7	12.0	7.9
1791	11.5	10.9	11.0	11.1	11.1	12.7	11.6	12.2	12.6	11.2	10.6	10.2	11.4
1792	10.5	10.5	10.5	10.5	10.3	10.6	10.5	10.5	10.6	10.5	10.8	10.7	10.6
1793	10.7	11.2	11.3	11.4	11.6	11.0	11.2	12.2	11.2	11.7	11.4	12.8	11.4
1794	14.9	21.3	19.8	21.0	22.0	21.8	22.2	22.6	22.7	22.1	22.1	19.1	20.9
1795	17.1	17.1	16.2	13.3	11.6	10.2	10.2	10.1	10.1	10.0	10.1	10.1	12.1
1796	10.0	10.3	10.0	10.6	10.7	10.4	10.2	10.2	10.3	10.2	10.1	10.2	10.2
1797	10.0	10.1	10.1	10.0	10.3	10.6	10.5	10.9	10.7	11.2	10.3	12.0	10.5
1798	12.0	17.8	17.7	19.3	20.9	19.1	19.7	23.9	23.8	26.7	26.6	36.4	21.8
1799	36.6	35.7	33.5	32.6	39.2	40.9	44.5	44.0	44.8	45.8	55.0	51.3	41.8
1800	57.3	61.5	46.9	42.0	42.0	38.1	39.1	38.3	42.6	43.0	43.5	41.9	44.5
1801	40.3	53.0	46.0	50.4	43.5	42.2	46.7	50.7	52.6	54.4	56.1	54.3	49.1
1802	49.5	47.5	47.4	53.2	50.8	52.8	52.5	51.7	52.3	51.6	54.3	52.7	51.3
1803	50.4	51.2	50.1	51.0	51.8	54.4	52.3	49.5	50*	50*	50*	50*	50.9

Sources: See footnote 168.
* As of 29th of August 1803, the premium was fixed at 50 percent.

Figure 8: *Premium (agio) on banco notes (in percent) relative riksgälds notes 1789-1803, market rate based on monthly data.*



Sources: See Table 8.

[178] See footnote 5.

Table 9: *The official rates of conversion for various domestic currencies 1777 onwards.*

Date	Official rates of conversion	Assumption in this study
1/1 1777	1 riksdaler = 48 skillings 1 skilling = 12 runstycken 1 skilling = 4 öre k.m. (i.e. twice the old par value, valid to 29/8 1803) 1 riksdaler exchanged for 6 d.s.m. in paper notes (i.e. twice the old par value) 1 riksdaler exchanged for 3 d.s.m. in courant silver coins (i.e. in accordance with old par value) 1 riksdaler exchanged for 1.92 daler carolins (i.e. in accordance with old par value) 1 ducat = 94 skillings (specie) = 1 11/12 riksdaler (valid to 7/4 1830)	
7/10 1777	1 riksdaler exchanged for 4 d.s.m. in copper plates	
29/8 1803	1 riksdaler banco = 1.5 riksdaler riksgälds = 72 skillings riksgälds 1 skilling banco = 1.5 skilling riksgälds Öre s.m. in copper coins seized to be legal means of payment	
19/6 1816	1 skilling (banco) = 2 öre s.m. in copper coins of 2- and 1-öre s.m. denomination minted up to 1778	
7/4 1830	1 ducat = 2.125 riksdaler specie (valid to 1855)	
1/10 1834	1 riksdaler specie = 2⅔ riksdalers banco = 4 riksdalers riksgälds	
1855	1 riksdaler riksmynt = 100 öre = 32 skillings banco 1 riksdaler riksmynt = 1 riksdaler riksgälds 1 ducat = 8.25 riksdaler riksmynt = 2.0625 riksdaler specie	
29/12 1871	1 carolin (gold coin) = 7.1 riksdaler riksmynt	
30/5 1873	1 krona = 1 riksdaler riksmynt =100 öre	

Sources: Wallroth (1918)

6. Summary

This paper deals with the history of currencies and exchange rates in Sweden-Finland in 1534-1803, a period most notable and perplexing for its multiple domestic currencies. Since Finland belonged to the Swedish Kingdom up to 1809, the two areas had the same monetary system during the studied time span.

In 1534-1624 Sweden-Finland was on a mono-metallic silver standard. Although gold coins circulated as well, they played quite a marginal role. The main currency unit was the mark, equal to 8 öre or 192 penningar (pennies). At some times in the 16th and early 17th centuries the monetary system approached a mono-currency standard, but there were also currencies of minor or temporary importance in domestic trade that circulated alongside the main currency, most importantly the silver daler. The first silver daler coins were first minted in 1534. The fine silver content of the silver daler or riksdaler (specie) coin was stable (with only minor adjustments) throughout the period 1534-1873, when it was in use. In contrast, the fine silver content of the mark decreased over time.

In the 1570s the silver daler was officially fixed at 4 marks or 32 öre, but the market exchange rate of the silver daler was somewhat higher. From then on a bifurcation occurred between the silver daler and the daler as a unit of account equal to 4 marks or 32 öre. The silver daler was later called riksdaler. When the fine silver content of the mark silver coin was lowered in the 17th century, the exchange rate of the riksdaler in marks increased.

In 1624, a copper standard was introduced, which was not abolished until 1777. The silver standard continued to exist alongside the copper standard. In this period, at least five or six domestic currencies were in use, three based on silver, one or two based on copper and one based on gold. In addition, fiat currency circulated in mid-1660s, 1716-1719 and 1745-1776. Since attempts were made to fix the relations between various metallic currencies, the

monetary system could be described as a bi- or trimetallic one. However, at periods there were floating market exchange rates between these currencies, and the official value relations had to change at numerous occasions.

Since the price of copper fluctuated relative to silver, there was a tendency to debase copper coins when copper prices stood high, which later caused the silver coins to be overvalued when copper prices fell back. Initially, one daler in copper coins was supposed to be equal to one daler in silver coins. However, in expectation of rising copper prices, which already stood high, the copper content of the copper coins was set too low in 1624. The market value of copper coins relative silver coins fell quickly already in the late 1620s and early 1630s. A multi-currency standard arose. One daler silvermynt was set equal to 2 daler silvermynt in 1633-1643, 2.5 daler silvermynt in 1643-1665 and 3 daler silvermynt in 1665-1776. Initially the daler kopparmynt was a unit for copper coins, and daler silvermynt for silver coins, but later copper coins were denominated both in daler kopparmynt and in daler silvermynt.

The relation 1 mark = 8 öre was upheld as an accounting equality, but the value relations between the actual silver coins were not always in accordance with this equality. The fine silver content per unit of value was normally lower for öre coins than for mark coins. A distinctive feature of the multi-currency standard in Sweden-Finland during the 17th and 18th centuries, was that there was not only a fluctuating market exchange rate between the copper and silver currencies, but also between various silver currencies.

From the 1660s the term carolin came to refer to silver coins in mark denomination and courant to silver coins in öre denomination. Carolins and öre courant were the main domestic silver currencies, while the riksdaler was, up to 1760s, mainly used in international trade. One carolin was equal to two marks in silver coins, and one daler carolin to two carolins. One öre courant was the same as one öre in silver coins, and one daler courant was equal to 32 öre courant. In 1681 and 1686 the carolins were officially revalued relative öre courant so that the

equality between one daler carolin and one daler courant definitely disappeared. The widening difference between the two main silver currencies from the 1680s was, in itself, a consequence of the bimetallic copper and silver standard, and the attempt to make one silver currency (courant) to follow the copper currency by lowering its fine silver content, while not debasing the other silver currency (carolins). Officially, one öre courant was equal to one öre silvermynt, but during the fiat standards of the 18th century this equality could not be upheld in the market.

The ducat, minted in gold, was also used as a currency unit, although mainly in international trade.

Stockholm Banco issued bank notes already in the 1660s. However, they mainly functioned as convertible fiduciary notes. Only briefly did they circulate as unconvertible fiat notes before being exchanged to their full value. These notes never dominated money supply.

The fiat standard in 1716-1719 was based on coin tokens, which circulated alongside the silver and copper currencies. A premium arose on these metallic currencies. The unit daler silvermynt could refer to either coin tokens or metallic currencies, and it is not always clear in what currency prices and foreign exchange rates were quoted. Prices expressed in coin tokens increased dramatically during the course of 1718 and early 1719. Later in 1719, coin tokens were devalued by 50 percent.

During the fiat standard of 1745-1776 the units daler kopparmynt and daler silvermynt followed the bank notes, but the metallic currencies continued their existence at a premium. The exchange rate of the riksdaler increased from 3 daler silvermynt in the early 1730s to 6 daler silvermynt in late 1776. In effect, the bank notes were devalued by 50 percent.

Although the value relations between copper coins were officially fixed in 1624-1776, during some periods there were two different copper currencies, one based on copper plates and one

on round copper coins (slantar). Most notably, this occurred during the fiat standard of 1745-1776. The round copper coins (with a lower copper content per unit of value than copper plates) then followed the value of the notes.

Table 10, Table 11, Table 12 and Table 13 present the exchange rates between various domestic currency units used in Sweden-Finland. Table 10 contains the exchange rate of the riksdaler in mark silver coins for the period 1534-1624 and in mark kopparmynt for 1624-1776. Table 11 presents the exchange rate of the ducat in mark kopparmynt and riksdaler specie for the period 1652-1776. Table 12 contains the exchange rate of daler carolin in daler kopparmynt and of the riksdaler in mark silver coins (half carolins) for the period 1624-1776. Table 13 presents the exchange rate of öre courant in öre kopparmynt and of riksdaler in öre courant.

The copper standard contained the seeds for its own destruction, even if it was surprisingly long-lived. The high transaction costs involved when payments were made in intrinsic copper coins, especially copper plates, encouraged the introduction of a fiat currency. Once paper notes came to dominate circulation, also in smaller denominations, the need for a copper currency decreased. In 1777 a mono-currency, silver standard was reintroduced, but with the riksdaler as the main unit. However, the existence of paper money in the form of convertible fiduciary notes also became a threat to the silver standard itself, especially during times of war.

The monetary uniformity only lasted to 1789. Riksgäldskontoret started to issue the riksgälds notes in 1789, which fell in value relative the riksdaler banco that continued to be convertible into silver coins (riksdaler specie) by the Riksbank. Henceforth, an unconvertible fiat standard was briefly combined with a convertible metallic one. The monthly premium of banco notes relative riksgälds notes is presented in Table 8. In 1803 the relation 1 riksdaler riksgälds = ⅔ riksdaler banco was fixed, which basically ended the period of multiple currencies. Even

though the riksdaler specie and the ducat were on floating exchange rates after 1803, these two currencies only played a minor role in domestic trade.

Summary tables

Table 10: *Riksdaler in marks 1534-1776.*

Year	Source	Official rate	Market rate	Lowest	Highest
1534	Based on silver content		3.169		
1535	Ss, O:1, f. 70 and 1784.		3.688	3.375	4
1536	Ss, O:1, f. 72, and OO, f. 35		3.5	3	4
1537	Median of previous and next year		3.25		
1538	Hallenberg (1798), p. 139		3		
1539	Median of previous and next year		3.5		
1540	Ss, O:1, f. 84		4		
1541	Ss, O:1, f. 74 and 1783, and OO, f. 173.		3.5	3	4
1542	Ss, O:1, f. 1774, and OO, f. 173.		3		
1543	Ss, O:1, f. 78, and OO, f. 173.		3		
1544	Median of previous and next year		3.5		
1545	Ss, O:1, f. 81, 83 and 1783, and OO, f. 170		4	3.5	4.125
1546	Ss, O:1, f. 83 and 1783, and OO, f. 170		4		
1547	Heckscher (1935), p. 211-212, *Sst 1544-1548* (1936), p. 266		4	4	4.25
1548	Ss, O:1, f. 84 and 1783, *Sst 1544-1548* (1936), p. 266	3.375	4		
1549	Ss, O:1, f. 85; RAs ämnessamlingar, Misc. 26 Myntväsen vol 4		4.125	4	4.25
1550	Heckscher (1935), p. 211-212, Ss, O:1, f. 87 and 1783, Hallenberg (1798), p. 284, Forssell (1872), p. 87.	3.5	3.875	3.5	4.5
1551	Heckscher (1935), p. 211-212		3.5		
1552	Median of previous and next year		3.5		
1553	Heckscher (1935), p. 211-212, Ss, O:1, f. 89, 90 and 1783		3.5		
1554	Heckscher (1935), p. 211-212		4		
1555	Heckscher (1935), p. 211-212, *Vsat 1577-1610* (1952), p. 70		3.5		
1556	Ss, O:1, f. 93 and 1783		3.5		
1557	Heckscher (1935), p. 211-212, Ss, O:1, f. 94, 95, 96, 98 and 1783, Hallenberg (1798), p. 313		3.5	3	3.75
1558	Heckscher (1935), p. 211-212, Hallenberg (1798), p. 313		3.625	3.5	3.75
1559	Heckscher (1935), p. 211-212, Ss, O:1, f. 99 and 1783, and OO 734, Hallenberg (1798), p. 313		3.750	3.5	3.75
1560	Ss, O:1, f. 100, 1774 and 1783, and OO, f. 176, Hallenberg (1798), pp. 313-314		3.750	3.5	4
1561	Hallenberg (1798), p. 314; Ss, OO, f. 743		4		
1562	Hallenberg (1798), p. 314		4		
1563	Riksarkivets ämnessamlingar. Misc. 26 Myntväsen vol 4		4.5		
1564	Ss, O:1, f. 100 and 102, and OO, f. 40		5	4	6.5
1565	Based on silver content		6.187		
1566	Based on silver content. See also Wallroth (1918), pp. 28-29		6.187		
1567	Wallroth (1918), pp. 28-29, Ss, O:1 , f. 102, 107 and 1783		6.5	5	8
1568	Wallroth (1918), pp. 28-29, 7 marks in Ss, O:1, f. 102		7.5	7	8
1569	Ss, O:1 , f. 107, and OO, f. 42		9	8	10
1570	Ss, O:1 , f. 107		10		
1571	Odén (1955), pp. 237 and 256, Ss, O:1, f. 104 and 107, and OO, f. 42		13.250	10	20
1572	Odén (1955), p. 237, and Ss, OO, f. 50		19.146	8	25

Table 10: *Riksdaler in marks 1534-1776. Continued.*

Year	Source	Official rate	Market rate	Lowest	Highest
1573	Odén (1955), pp. 237-238, Ss, O:1 , f. 108 and 109		26	24	28.375
1574	Odén (1955), p. 238		32		
1575	Odén (1955), p. 240, Ss, O:1 , f. 110 and 111, *Sst 1568-1575* (1941), pp. 378, 544 and 615		28	26	32
1576	Odén (1955), p. 241, *Sst 1568-1575* (1941), pp. 378, 544 and 615	4	26* (4**)		
1577	Odén (1955), p. 241	4	4.250		
1578	Ss, O:1 , f. 119	4	4.460		
1579	Odén (1955), p. 241	4	4.250		
1580	Odén (1955), p. 241, Ss, O:1 , f. 126 and 1833	4	4.250		
1581	Odén (1955), p. 241 and Ss, O:1 , f. 1833	4	4.250		
1582	Odén (1955), p. 245	4	4.250		
1583	Odén (1955), p. 241	4	4.250		
1584	Odén (1955), p. 241	4	4.250		
1585	Odén (1955), p. 241	4	4.250		
1586	Ss, O:1 , f. 128 and 129	4	4.5		
1587	Odén (1960), p. 207, *Vsat 1577-1610* (1952), p. 127	4	4.5		
1588	Odén (1960), p. 207, *Vsat 1577-1610* (1952), p. 133	4	4.5		
1589	Ss, O:1 , f. 130	4	4.5		
1590	Median of previous and next year	4	4.65		
1591	Odén (1960), p. 210.	4	4.8		
1592	*Sst från år 1592* (1939), part I, 1592-1595, pp. 8, 25 and 51	4	15.75	10.125	18
1593	Wallroth (1918), pp. 24 and 50	4.5	18* (4.5**)		
1594	Ss, O:1 , f. 137	4.5	4.5		
1595	Odén (1960), p. 210	4.5	4.444		
1596	*Sst från år 1592* (1954), part II, 1596-1599, p. 90.	4.5	4.5		
1597	*Sst från år 1592* (1963), vol. VI, 1605-1608, p. 14.	4.5	4.5		
1598	*Sst från år 1592* (1954), vol. II, 1596-1599, p. 216.	4.5	4.5		
1599	Ss, O:1 , f. 1860	4.5	4.480		
1600	Wallroth (1918), p. 50	4.5	4.5		
1601	Ss, OO , f. 185, *Sst från år 1592* (1957), part II, 1601-1602, p. 149.	4.5	4.6875	4.5	4.875
1602	Ss, O:1 , f. 142	4.5	4.5		
1603	Wallroth (1918), p. 50	4.5	4.5		
1604	Ss, O:1 , f. 145 and 147, and OO, f. 593	4.5	4.550	4.5	4.75
1605	Ss, O:1 , f. 145 and 148	4.5	4.5		
1606	Ss, O:1 , f. 161 assumes 1 slagen daler = 4.5 as late as 1610	4.5	4.5		
1607	Ss, O:1 , f. 161 assumes 1 slagen daler = 4.5 as late as 1610. 1607 års myntplacat 13th of April 1 rdr = 4 1/2 mark according to Ss, O:1 , f. 1434.	4.5	4.5		
1608	*Sst från år 1592* (1963), vol. VI, 1605-1608, p. 302	4.5	5.250		
1609	Interpolation.	4.5	5.250		
1610	Interpolation.	4.5	5.250		
1611	Ss, O:1 , f. 162, and OO, f. 186	4.5	6		
1612	Ss, O:1 , f. 164, and OO, f. 595	4.5	6		
1613	Stierndstedt (1863), p. 12	4.5	7		

Table 10: *Riksdaler in marks 1534-1776. Continued.*

Year	Source for the exchange rate of the Swedish riksdaler	Official rate (marks koppar-mynt after 1624)	Market rate (marks koppar-mynt after 1624)	Lowest	Highest
1614	Ss, O:1 , f. 169, and OO, f. 595	4.5	6.250	6	6.5
1615	Ss, O:1 , f. 171 and 1434	4.5	6.5		
1616	Ss, O:1 , f. 172	4.5	6.5		
1617	Ss, O:1 , f. 173	4.5	6.375	6.25	6.5
1618	Ss, O:1 , f. 174 and 175	4.5	6.625	6.5	6.75
1619	Wallroth (1918), p. 61 and Ss, O:1 , f. 1434	4.5 (6.5)	6.5		
1620	Ss, O:1 , f. 182	6.5	6.5		
1621	Ss, O:1 , f. 1466, and OO, f. 595	6.5	6.5		
1622	Ss, O:1 , f. 189	6.5	6.583		
1623	Ss, O:1 , f. 599	6.5	6.5		
1624	Wolontis (1936), p. 68	6.5	6.5		
1625	Ss, O:1 , f. 197	6.5	6.667		
1626	Wolontis (1936), p. 66	6.5	7		
1627	Swenne (1933), p. 195	6.5	7		
1628	Swenne (1933), p. 196, Stiernstedt (1863), p. 97	6.5	9.5		
1629	Swenne (1933), p. 196	6.5	14.5		
1630	Swenne (1933), p. 196	6.5	15.750		
1631	Swenne (1933), p. 196	6.5	16.240	15.5	17
1632	Swenne (1933), p. 196	6.5	15.132	14	16.5
1633	Swenne (1933), p. 196	6.5 (12)	14.491	12	17.5
1634	Swenne (1933), p. 196	12	12.961	12	14
1635	Swenne (1933), p. 196	12	13.565	12	16
1636	Swenne (1933), p. 196	12	13		
1637	Swenne (1933), p. 196	12	13.491	13	14
1638	Swenne (1933), p. 196, *Vendels sockens dombok 1615-1645* (1925), p. 138	12	13		
1639	Swenne (1933), p. 196, Ss, OO, f. 612	12	14.5	14	15
1640	Wolontis (1936)	12	15	15	15
1641	Wolontis (1936)	12	15	15	15
1642	Wolontis (1936)	12	15	15	15
1643	Wolontis (1936)	12 (15)	15	15	15
1644	Wolontis (1936)	15	15.021	15	15.25
1645	Wolontis (1936)	15	16	16	16
1646	Wolontis (1936)	15	15.789	15	16
1647	Wolontis (1936)	15	15.041	15	15.5
1648	Wolontis (1936)	15	15.575	15	16
1649	Wolontis (1936)	15	16	16	16
1650	Wolontis (1936)	15	16	16	16
1651	Wolontis (1936)	15	16	16	16
1652	Wolontis (1936)	15	16	16	16
1653	Wolontis (1936)	15	16	16	16
1654	Wolontis (1936)	15	16	16	16
1655	Wolontis (1936)	15	16.301	16	16.75
1656	Wolontis (1936)	15	16.562	16.5	16.625

Table 10: *Riksdaler in marks 1534-1776. Continued.*

Year	Source for the exchange rate of the Swedish riksdaler	Official rate, marks koppar-mynt	Market rate, marks koppar-mynt	Lowest	Highest
1657	Wolontis (1936)	15	16.695	16	17
1658	Wolontis (1936)	15	17.031	17	17.25
1659	Wolontis (1936)	15	17.457	17.125	17.75
1660	Wolontis (1936)	15	17.726	17.25	18
1661	Wolontis (1936)	15	18.187	18	18.25
1662	Wolontis (1936)	15	18.25	18.25	18.25
1663	Wolontis (1936)	15	18.56	18.25	19
1664	Wolontis (1936)	15	19.907	19	21
1665	Wolontis (1936)	15 (19.5)	21.207	21	21.75
1666	Wolontis (1936)	19.5	21	21	21
1667	Wolontis (1936)	19.5	21	21	21
1668	Wolontis (1936)	19.5	21.047	21	21.25
1669	Wolontis (1936)	19.5	21.031	21	21.25
1670	Wolontis (1936)	19.5	21	21	21
1671	Wolontis (1936)	19.5	21	21	21
1672	Wolontis (1936)	19.5	21	21	21
1673	Wolontis (1936)	19.5	21.068	21	21.3125
1674	Wolontis (1936)	19.5	21.533	21	22
1675	Wolontis (1936)	19.5	23.398	22	26.375
1676	Wolontis (1936)	19.5	24.978	24	26
1677	Wolontis (1936)	19.5	26.164	25.75	26.75
1678	Wolontis (1936)	19.5	26.833	26.75	27
1679	Wolontis (1936)	19.5	27	27	27
1680	Wolontis (1936)	19.5	27.135	27	27.27
1681	Wolontis (1936)	19.5 (24)	24.884	22.56	27.27
1682	Wolontis (1936)	24	24.979	24.75	25
1683	Wolontis (1936)	24	25.14	25	25.4375
1684	Wolontis (1936)	24	25	25	25
1685	Wolontis (1936)	24	25.062	25	25.06242
1686	Wolontis (1936)	24	24.241	24	25.125
1687	Wolontis (1936), p. 174	24	25.25		
1688	Wolontis (1936), p. 174	24	25.25		
1689	Wolontis (1936), p. 174	24	25.25		
1690	Wolontis (1936), p. 174	24	25.25		
1691	Ss, O:1 , f. 328	24	24.749	24.5	25
1692	Ss, O:1 , f. 329	24	25		
1693	Ss, O:1 , f. 1780	24	24.75		
1694	Ss, O:1 , f. 1780	24	25		
1695	Ss, OO , f. 653	24	25		
1696	Based on Hamburger banco	24	27.016		
1697	Ss, O:1 , f. 335	24	27.187	27	27.375
1698	Based on Hamburger banco	24	26.535		
1699	Based on Hamburger banco	24	24.864		
1700	Based on Hamburger banco	24	25.747		

Table 10: *Riksdaler in marks 1534-1776. Continued.*

Year	Source for the exchange rate of the Swedish riksdaler	Official rate, marks koppar-mynt	Market rate, marks koppar-mynt	Lowest	Highest
1701	Based on Hamburger banco	24	24.989		
1702	Based on Hamburger banco	24	24.611		
1703	Based on Hamburger banco	24	26.463		
1704	Based on silver content	24	26.244		
1705	Riksbankens arkiv	24	26.186	26	26.25
1706	Riksbankens arkiv	24	26.259	26	26.5
1707	Riksbankens arkiv	24	26.146	26	26.25
1708	Ss, O:1 , f. 335	24	26.25		
1709	Based on silver content	24	26.244		
1710	Based on silver content	24	26.244		
1711	Ss, O:1 , f. 344	24	26		
1712	Based on silver content	24	26.244		
1713	Based on silver content	24	26.244		
1714	Based on Hamburger banco	24	25.723		
1715	Ss, O:1 , f. 345	24	25		
1716	Ss, O:1 , f. 347	24	27.56* (26**)		
1717	Interpolation, based on Hamburger banco	24	38.386* (34.273**)		
1718	Interpolation, based on Hamburger banco	24 (36)	60.371* (52.625**)		
1719	Interpolation, based on Hamburger banco	36	41.405		
1720	Ss, O:1 , f. 580 and 1251	36	40.314	39	42
1721	Interpolation	36	37.775		
1722	Interpolation	36	38.103		
1723	Interpolation	36	36.576		
1724	Interpolation	36	36.44		
1725	Sjöstrand (1908), p. 17	36	34		
1726	Interpolation	36	34.712		
1727	Interpolation	36	35.696		
1728	Riksbankens arkiv	36	36		
1729	Riksbankens arkiv	36	36		
1730	Interpolation	36	36		
1731	Interpolation	36	36		
1732	Interpolation	36	36		
1733	Riksbankens arkiv	36	36	36	36
1734	Riksbankens arkiv	36	36.634	36.5	37
1735	Sjöstrand (1908), p. 17	36	36.75		
1736	Riksbankens arkiv	36	37.614	37.5	38
1737	Interpolation	36	37.234		
1738	Sjöstrand (1908), p. 48	36	37.25		
1739	Interpolation	36	37.161		
1740	Sveriges Riksbank (1931)	36	37.779	37.5	38
1741	Sveriges Riksbank (1931)	36	38.02	37.5	38.5
1742	Sveriges Riksbank (1931)	36	38.456	38	39

Table 10: *Riksdaler in marks 1534-1776. Continued.*

Year	Source for the exchange rate of the Swedish riksdaler	Official rate, marks koppar-mynt	Market rate, marks koppar-mynt	Lowest	Highest
1743	Sveriges Riksbank (1931)	36	40.025	38	42
1744	Sveriges Riksbank (1931)	36	41.531	41	42
1745	Sveriges Riksbank (1931)	36	40.949	40	43
1746	Sveriges Riksbank (1931)	36	40	40	40
1747	Sveriges Riksbank (1931)	36	44.384	40	47
1748	Sveriges Riksbank (1931)	36	46.258	46	47
1749	Sveriges Riksbank (1931)	36	46.497	46	47
1750	Sveriges Riksbank (1931)	36	45.389	42	47
1751	Sveriges Riksbank (1931)	36	41.55	40	44
1752	Sveriges Riksbank (1931)	36	41.643	40	45
1753	Sveriges Riksbank (1931)	36	40.411	40	42
1754	Sveriges Riksbank (1931)	36	40.795	39	44
1755	Sveriges Riksbank (1931)	36	40.759	38	43
1756	Sveriges Riksbank (1931)	36	42.97	42	44
1757	Sveriges Riksbank (1931)	36	44.572	42	47
1758	Sveriges Riksbank (1931)	36	52.618	49	56
1759	Sveriges Riksbank (1931)	36	56.754	52	61
1760	Sveriges Riksbank (1931)	36	64.067	61	68
1761	Sveriges Riksbank (1931)	36	71.654	70	74
1762	Sveriges Riksbank (1931)	36	84.994	74	108
1763	Sveriges Riksbank (1931)	36	87.701	76	100
1764	Sveriges Riksbank (1931)	36	91.702	88	96
1765	Sveriges Riksbank (1931)	36	87.461	72	92
1766	Sveriges Riksbank (1931)	36	76.417	68	86
1767	Sveriges Riksbank (1931)	36	59.894	47	69
1768	*Stockholms stads priscouranter*	36	50.172	48	56
1769	*Stockholms stads priscouranter*	36	60.692	54	68.5
1770	*Stockholms stads priscouranter*	36	68.916	64	72
1771	*Stockholms stads priscouranter*	36	67.371	64	71
1772	*Stockholms stads priscouranter*	36	72.614	68	78
1773	*Stockholms stads priscouranter*	36	82.143	77.5	86
1774	*Stockholms stads priscouranter*	36	78.584	74	86
1775	*Stockholms stads priscouranter*	36	72.478	70	75
1776	*Stockholms stads priscouranter*	36	71.594	70	75
1777	According to the mint reform of 1776	72	72		

*In debased coins (coin tokens 1716-1718)
** In proper coins
For abbreviations, see page 108.

Table 11: *The exchange rate of the ducat 1652-1776.*

Year	Source	1 ducat in mark koppar mynt, market rate	1 ducat in riks-daler specie, market rate	1 ducat in riks-daler specie, official rate	Gold-silver (value) ratio, Sweden	Gold-silver (value) ratio, "the world"*
1652	Ss, O:1 , f. 562	32	2		14.867	14.41
1653	Ss, OO , f. 628	32	2		14.867	14.44
1654	Ss, O:1 , f. 563	32	2		15.12	14.39
1655	Interpolation	32.601	2		15.12	14.44
1656	Interpolation	33.125	2		15.12	14.42
1657	Interpolation	33.391	2		15.12	14.42
1658	Interpolation	34.062	2		15.12	14.37
1659	Interpolation	34.914	2		15.12	14.33
1660	Interpolation	35.452	2		15.12	14.33
1661	Ss, O:1 , f. 255 and 566	39.846	2.191		16.563	14.52
1662	Ss, O:1 , f. 258 and 259	36.125	1.979		14.965	14.53
1663	Ss, O:1 , f. 1724	37.12	2		15.12	14.40
1664	Ss, O:1 , f. 262	39.815	2		15.12	14.44
1665	Interpolation	40.782	1.923	1.923	14.31	14.49
1666	Interpolation	40.385	1.923	1.923	14.31	14.80
1667	Hegardt (1975), p. 226	40.8	1.943	1.923	14.457	14.85
1668	Interpolation	40.474	1.923	1.923	14.31	14.90
1669	Ss, O:1 , f. 286	42	1.997	1.923	14.86	14.98
1670	Ss, O:1 , f. 570	42	2	1.923	14.882	15.09
1671	Interpolation	42	2	1.923	14.882	15.24
1672	Ss, OO , f. 659	42	2	1.923	14.882	15.30
1673	Ss, O:1 , f. 280	42.135	2	1.923	14.882	15.27
1674	Ss, O:1 , f. 295 and 298	44.43	2.063	1.923	15.353	15.16
1675	Interpolation	46.795	2	1.923	14.882	15.15
1676	Interpolation	49.956	2	1.923	14.882	15.20
1677	Ss, O:1 , f. 295	59.75	2.284	1.923	16.992	15.20
1678	Ss, O:1 , f. 295	59.75	2.227	1.923	16.569	15.08
1679	Ss, O:1 , f. 663 and 310	54	2	1.923	14.882	15.09
1680	Ss, O:1 , f. 1910	54.269	2	1.923	14.882	15.08
1681	Ss, O:1 , f. 315	49.5	1.989	1.923 (2)	14.801	15.02
1682	Interpolation	49.968	2	2	14.885	15.16
1683	Ss, O:1 , f. 577	52	2.068	2	15.391	15.12
1684	Ss, O:1 , f. 322	52	2.08	2	15.477	15.06
1685	Ss, O:1 , f. 322	48	1.915	2	14.251	15.02
1686	Wolontis (1936), p. 167	48.81	2.014	2	14.983	15.14
1687	Ss, O:1 , f. 322 and 578	46.989	1.861	2	13.847	14.94
1688	Interpolation	50.5	2	2	14.882	14.94
1689	Interpolation	50.5	2	2	14.882	15.02
1690	Interpolation	50.5	2	2	14.882	15.02
1691	Interpolation	49.497	2	2	14.882	14.98
1692	Interpolation	50	2	2	14.882	14.92
1693	Ss, O:1 , f. 330	52	2.101	2	15.633	14.83
1694	Interpolation	50	2	2	14.882	14.87
1695	Interpolation	50	2	2	14.882	15.02

Table 11: *The exchange rate of the ducat. Continued.*

Year	Source	1 ducat in mark koppar-mynt, market rate	1 ducat in riks-daler specie, market rate	1 ducat in riks-daler specie, official rate	Gold-silver (value) ratio, Sweden	Gold-silver (value) ratio, "the world"*
1696	Interpolation	54.033	2	2	14.882	15.00
1697	Ss, O:1 , f. 335	55.759	2.061	2	15.333	15.20
1698	Interpolation	53.07	2	2	14.882	15.07
1699	Interpolation	49.728	2	2	14.882	14.94
1700	Ss, O:1 , f. 1922	54	2.097	2	15.606	14.81
1701	Interpolation	49.978	2	2	14.882	15.07
1702	Interpolation	49.223	2	2	14.882	15.52
1703	Interpolation	52.927	2	2	14.882	15.17
1704	Interpolation	52.488	2	2	14.882	15.22
1705	Riksbankens arkiv.	53.791	2.054	2	15.285	15.11
1706	Riksbankens arkiv.	54.502	2.076	2	15.444	15.27
1707	Riksbankens arkiv.	54.082	2.068	2	15.392	15.44
1708	Ss, O:1 , f. 335	55.749	2.124	2	15.803	15.41
1709	Interpolation based world gold-silver ratio	53.998	2.058	2	15.31	15.31
1710	Ss, OO , f. 677	60	2.286	2	17.012	15.22
1711	Ss, O:1 , f. 344	56.25	2.163	2	16.098	15.29
1712	Interpolation based world gold-silver ratio	53.998	2.058	2	15.31	15.31
1713	Interpolation based world gold-silver ratio	53.751	2.048	2	15.24	15.24
1714	Interpolation based world gold-silver ratio	52.304	2.033	2	15.13	15.13
1715	Interpolation based world gold-silver ratio	50.766	2.031	2	15.11	15.11
1716	Interpolation based world gold-silver ratio	55.891** (52.727***)	2.028	2	15.09	15.09
1717	Ss, O:1 , f. 350	76.772** (68.547***)	2	2	14.882	15.13
1718	Stiernstedt (1863), p. 270	122.82** (107.06***)	2.034	2	15.138	15.11
1719	Interpolation based world gold-silver ratio	82.585	1.995	2	15.09	15.09
1720	Stiernstedt (1863), p. 580 and Ss, O:1 , f. 580	80.628	2	2	15.131	15.04
1721	Interpolation based world gold-silver ratio	75.145	1.989	2	15.05	15.05
1722	Interpolation based world gold-silver ratio	76.401	2.005	2	15.17	15.17
1723	Interpolation based world gold-silver ratio	73.484	2.009	2	15.2	15.20
1724	Interpolation based world gold-silver ratio	72.881	2	2	15.11	15.11
1725	Interpolation based world gold-silver ratio	68	2	2	15.11	15.11
1726	Interpolation based world gold-silver ratio	69.424	2	2	15.15	15.15
1727	Interpolation based world gold-silver ratio	71.392	2	2	15.24	15.24
1728	Riksbankens arkiv	74	2.056	2	15.552	15.11
1729	Riksbankens arkiv	73.125	2.031	2	15.368	14.92
1730	Interpolation based world gold-silver ratio	72	2	2	14.81	14.81
1731	Interpolation based world gold-silver ratio	72	2	2	14.94	14.94
1732	Interpolation based world gold-silver ratio	72	2	2	15.09	15.09
1733	Riksbankens arkiv	72.069	2.002	2	15.146	15.18
1734	Riksbankens arkiv	72.706	1.985	2	15.015	15.39
1735	Interpolation based world gold-silver ratio	74.854	2.037	2	15.41	15.41
1736	Riksbankens arkiv	75.181	1.999	2	15.122	15.18
1737	Interpolation based world gold-silver ratio	73.92	1.985	2	15.02	15.02

Table 11: *The exchange rate of the ducat. Continued.*

Year	Source	1 ducat in mark koppar mynt, market rate	1 ducat in riks-daler specie, market rate	1 ducat in riks-daler specie, official rate	Gold-silver (value) ratio, Sweden	Gold-silver (value) ratio, "the world"*
1738	Interpolation based world gold-silver ratio	73.411	1.971	2	14.91	14.91
1739	Interpolation based world gold-silver ratio	73.723	1.971	2	14.91	14.91
1740	Sveriges Riksbank (1931)	74.613	1.975	2	14.942	14.94
1741	Sveriges Riksbank (1931)	75.645	1.99	2	15.053	14.92
1742	Sveriges Riksbank (1931)	79.331	2.063	2	15.607	14.85
1743	Sveriges Riksbank (1931)	80.852	2.02	2	15.283	14.85
1744	Sveriges Riksbank (1931)	84.27	2.029	2	15.351	14.87
1745	Sveriges Riksbank (1931)	82.297	2.01	2	15.205	14.98
1746	Sveriges Riksbank (1931)	80	2	2	15.131	15.13
1747	Sveriges Riksbank (1931)	87.912	1.975	2	14.939	15.26
1748	Sveriges Riksbank (1931)	90.931	1.966	2	14.872	15.11
1749	Sveriges Riksbank (1931)	90.286	1.942	2	14.69	14.80
1750	Sveriges Riksbank (1931)	84.057	1.852	2	14.011	14.55
1751	Sveriges Riksbank (1931)	79.164	1.905	2	14.415	14.39
1752	Sveriges Riksbank (1931)	77.562	1.863	2	14.091	14.54
1753	Sveriges Riksbank (1931)	76.975	1.905	2	14.411	14.54
1754	Sveriges Riksbank (1931)	78.032	1.913	2	14.471	14.48
1755	Sveriges Riksbank (1931)	78.669	1.93	2	14.602	14.68
1756	Sveriges Riksbank (1931)	81.675	1.901	2	14.38	14.94
1757	Sveriges Riksbank (1931)	90.742	2.036	2	15.402	14.87
1758	Sveriges Riksbank (1931)	104.73	1.99	2	15.059	14.85
1759	Sveriges Riksbank (1931)	106.18	1.871	2	14.155	14.15
1760	Sveriges Riksbank (1931)	120.69	1.884	2	14.252	14.14
1761	Sveriges Riksbank (1931)	142.2	1.985	2	15.014	14.54
1762	Sveriges Riksbank (1931)	167.41	1.97	2	14.902	15.27
1763	Sveriges Riksbank (1931)	170.1	1.94	2	14.674	14.99
1764	Sveriges Riksbank (1931)	176.38	1.923	2	14.551	14.70
1765	Sveriges Riksbank (1931)	177.79	2.033	2	15.379	14.83
1766	Sveriges Riksbank (1931)	152.99	2.002	2	15.147	14.80
1767	Sveriges Riksbank (1931)	120.32	2.009	2	15.198	14.85
1768	Stockholms stads priscourant	95.94	1.912	2	14.467	14.80
1769	Stockholms stads priscourant	114.13	1.881	2	14.227	14.72
1770	Stockholms stads priscourant	127.22	1.846	2	13.966	14.62
1771	Stockholms stads priscourant	132.11	1.961	2	14.836	14.66
1772	Stockholms stads priscourant	137.55	1.894	2	14.332	14.52
1773	Stockholms stads priscourant	156.14	1.901	2	14.381	14.62
1774	Stockholms stads priscourant	152.47	1.94	2	14.679	14.62
1775	Stockholms stads priscourant	143.6	1.981	2	14.99	14.72
1776	Stockholms stads priscourant	141.32	1.974	2	14.933	14.55

* Average of England, France, Kraków, Luzern and Austria in 1652-1686. Hamburg in 1687-1776. Source: http://sccweb.scc-net.rutgers.edu/memdb.
** In coin tokens
*** In proper coins
Ss – Sandbergska samlingen.

Table 12: *The exchange rate of carolins 1624-1777.*

Year	Source	Daler carolin in daler koppar-mynt, market rate	Daler carolin in daler koppar-mynt, official rate	Riks-daler in half carolins (marks), market rate	Riks-daler in half carolins (marks), official rate
1624	Wallroth (1918)	1	1	6.5	6.5
1625	Ss, O:1 , f. 197	1	1	6.667	6.5
1626	Wallroth (1918)	1.077	1	6.5	6.5
1627	Wallroth (1918)	1.077	1	6.5	6.5
1628	Wolontis (1936), p. 94, Stiernstedt (1863), p. 97	1.462	1	6.5	6.5
1629	Wolontis (1936), p. 94, Swenne (1933), p. 189	2.071	1	7	6.5
1630	Wolontis (1936), p. 94	2.1	1	7.5	6.5
1631	Wolontis (1936), p. 94	2.165	1	7.5	6.5
1632	Wolontis (1936), p. 94	2.018	1	7.5	6.5
1633	Swenne (1933), pp. 189-190	2.07* (1.811**)	1 (2)	7* (8**)	6.321
1634	Swenne (1933), pp. 189-190	2* (1.949**)	2	6.481* (6.65**)	6
1635	Swenne (1933), pp. 189-190	2* (1.809**)	2	6.782* (7.5**)	6
1636	Swenne (1933), p. 190	2	2	6.5	6
1637	Swenne (1933), p. 190	2	2	6.745	6
1638	Swenne (1933), p. 190	2	2	6.5	6
1639	Swenne (1933), p. 190, Ss, OO, f. 612	2	2	7.25	6
1640	Interpolation	2.105	2	7.125	6
1641	Wolontis (1936), p. 102	2.143	2	7	6
1642	Interpolation	2.308	2	6.5	6
1643	Wolontis (1936), p. 102	2.5	2 (2.5)	6	6
1644	Interpolation	2.5	2.5	6.008	6
1645	Interpolation	2.5	2.5	6.4	6
1646	Interpolation	2.5	2.5	6.316	6
1647	Interpolation	2.5	2.5	6.016	6
1648	Interpolation	2.5	2.5	6.23	6
1649	Swenne (1933), p. 190	2.5	2.5	6.4	6
1650	Interpolation	2.5	2.5	6.4	6
1651	Swenne (1933), p. 190	2.5	2.5	6.4	6
1652	Interpolation	2.5	2.5	6.4	6
1653	Interpolation	2.5	2.5	6.4	6
1654	Interpolation	2.5	2.5	6.4	6
1655	Interpolation	2.547	2.5	6.4	6
1656	Interpolation	2.588	2.5	6.4	6
1657	Interpolation	2.609	2.5	6.4	6
1658	Interpolation	2.661	2.5	6.4	6
1659	Interpolation	2.728	2.5	6.4	6
1660	Interpolation	2.77	2.5	6.4	6
1661	Interpolation	2.842	2.5	6.4	6
1662	Ss, O:1 , f. 262	2.875	2.5	6.348	6
1663	Interpolation	2.855	2.5	6.5	6
1664	Wolontis (1936), p. 144	3.063	2.5	6.5	6

Table 12: *The exchange rate of carolins 1624-1777, continued.*

Year	Source	Daler carolin in daler koppar-mynt, market rate	Daler carolin in daler koppar-mynt, official rate	Riks-daler in half carolins (marks), market rate	Riks-daler in half carolins (marks), official rate
1665	Wolontis (1936), p. 144	3.138	2.5 (3)	6.757	6.113
1666	Wolontis (1936), p. 144	3.108	3	6.757	6.5
1667	Wolontis (1936), p. 144	3.108	3	6.757	6.5
1668	Wolontis (1936), p. 144	3.115	3	6.757	6.5
1669	Ss, O:1 , f. 286	3.112	3	6.757	6.5
1670	Wolontis (1936)	3.167	3	6.632	6.5
1671	Wolontis (1936)	3.167	3	6.632	6.5
1672	Wolontis (1936)	3.167	3	6.632	6.5
1673	Wolontis (1936)	3.167	3	6.653	6.5
1674	Wolontis (1936)	3.244	3	6.638	6.5
1675	Wolontis (1936)	3.431	3	6.819	6.5
1676	Wolontis (1936)	3.572	3	6.993	6.5
1677	Wolontis (1936)	3.701	3	7.069	6.5
1678	Wolontis (1936)	3.842	3	6.984	6.5
1679	Wolontis (1936)	3.833	3	7.043	6.5
1680	Wolontis (1936)	3.847	3	7.054	6.5
1681	Wolontis (1936)	3.583	3 (3.5)	6.945	6.779
1682	Interpolation	3.5	3.5	7.137	6.857
1683	Interpolation	3.6	3.5	6.983	6.857
1684	Interpolation	3.6	3.5	6.944	6.857
1685	Interpolation	3.667	3.5	6.835	6.857
1686	Wolontis (1936)	3.658	3.5 (3.75)	6.626	6.566
1687	Interpolation	3.75	3.75	6.733	6.4
1688	Interpolation	3.75	3.75	6.733	6.4
1689	Ss, O:1 , f. 676	3.75	3.75	6.733	6.4
1690	Ss, O:1 , f. 677	3.75	3.75	6.733	6.4
1691	Ss, O:1 , f. 679	3.75	3.75	6.6	6.4
1692	Interpolation	3.75	3.75	6.667	6.4
1693	Interpolation	3.75	3.75	6.6	6.4
1694	Interpolation	3.75	3.75	6.667	6.4
1695	Wolontis (1936), p. 176	3.75	3.75	6.667	6.4
1696	Wolontis (1936), p. 176	3.75	3.75	7.204	6.4
1697	Wolontis (1936), p. 176	3.75	3.75	7.216	6.4
1698	Wolontis (1936), p. 176	3.75	3.75	7.076	6.4
1699	Wolontis (1936), p. 176	3.75	3.75	6.63	6.4
1700	Wolontis (1936), p. 176	3.75	3.75	6.866	6.4
1701	Wolontis (1936), p. 176	3.75	3.75	6.664	6.4
1702	Wolontis (1936), p. 176	3.75	3.75	6.563	6.4
1703	Wolontis (1936), p. 176	3.75	3.75	7.057	6.4
1704	Wolontis (1936), p. 176	3.75	3.75	6.998	6.4
1705	Wolontis (1936), p. 176	3.75	3.75	6.983	6.4
1706	Wolontis (1936), p. 176	3.75	3.75	7.002	6.4
1707	Wolontis (1936), p. 176	3.75	3.75	6.972	6.4

Table 12: *The exchange rate of carolins 1624-1777, continued.*

Year	Source	Daler carolin in daler koppar-mynt, market rate	Daler carolin in daler koppar-mynt, official rate	Riks-daler in half carolins (marks), market rate	Riks-daler in half carolins (marks), official rate
1708	Wolontis (1936), p. 176	3.75	3.75	7	6.4
1709	Wolontis (1936), p. 176	3.75	3.75	6.998	6.4
1710	Interpolation	3.75	3.75	6.998	6.4
1711	Interpolation	3.75	3.75	6.933	6.4
1712	Interpolation	3.75	3.75	6.998	6.4
1713	Ss, O:1 , f. 687	3.75	3.75	6.998	6.4
1714	Interpolation	3.75	3.75	6.859	6.4
1715	Interpolation	3.75	3.75	6.667	6.4
1716	Interpolation	4.969*** (4.6875 ****)	4.6875	5.547	5.12
1717	Interpolation	5.25*** (4.6875 ****)	4.6875	7.312	5.12
1718	Not legal tender				
1719	Interpolation	5.457	4.6875	7.538	7.68
1720	Interpolation	5.348	4.6875	7.538	7.68
1721	Interpolation	4.978	4.6875	7.538	7.68
1722	Interpolation	5.021	4.6875	7.538	7.68
1723	Interpolation	4.82	4.6875	7.538	7.68
1724	Interpolation	4.802	4.6875	7.538	7.68
1725	Interpolation	4.511	4.6875	7.538	7.68
1726	Interpolation	4.575	4.6875	7.538	7.68
1727	Interpolation	4.704	4.6875	7.538	7.68
1728	Ss, O:1 , f. 357	4.781	4.6875	7.529	7.68
1729	Interpolation	4.776	4.6875	7.538	7.68
1730	Interpolation	4.776	4.6875	7.538	7.68
1731	Interpolation	4.776	4.6875	7.538	7.68
1732	Interpolation	4.776	4.6875	7.538	7.68
1733	Interpolation	4.776	4.6875	7.538	7.68
1734	Riksbankens arkiv	4.854	4.6875	7.546	7.68
1735	Interpolation	4.996	4.6875	7.355	7.68
1736	Riksbankens arkiv	5.262	4.6875	7.149	7.68
1737	Interpolation	5.029	4.6875	7.355	7.68
1738	Sjöstrand (1908), p. 48	4.781	4.6875	7.791	7.68
1739	Interpolation	5.052	4.6875	7.355	7.68
1740	Stockholms stads priscourant	5.122	4.6875	7.376	7.68
1741	Stockholms stads priscourant	5.154	4.6875	7.376	7.68
1742	Stockholms stads priscourant	5.257	4.6875	7.315	7.68
1743	Stockholms stads priscourant	5.541	4.6875	7.223	7.68
1744	Stockholms stads priscourant	5.649	4.6875	7.352	7.68
1745	Stockholms stads priscourant	5.713	4.6875	7.167	7.68
1746	Stockholms stads priscourant	5.806	4.6875	6.89	7.68

Table 12: *The exchange rate of carolins 1624-1777, continued.*

Year	Source	Daler carolin in daler koppar-mynt, market rate	Daler carolin in daler koppar-mynt, official rate	Riks-daler in half carolins (marks), market rate	Riks-daler in half carolins (marks), official rate
1747	Stockholms stads priscourant	6.018	4.6875	7.398	7.68
1748	Stockholms stads priscourant	6.065	4.6875	7.627	7.68
1749	Stockholms stads priscourant	6.167	4.6875	7.539	7.68
1750	Stockholms stads priscourant	6.193	4.6875	7.329	7.68
1751	Stockholms stads priscourant	6.123	4.6875	6.786	7.68
1752	Stockholms stads priscourant	5.931	4.6875	7.022	7.68
1753	Stockholms stads priscourant	5.564	4.6875	7.263	7.68
1754	Stockholms stads priscourant	5.601	4.6875	7.284	7.68
1755	Stockholms stads priscourant	5.624	4.6875	7.248	7.68
1756	Stockholms stads priscourant	5.774	4.6875	7.442	7.68
1757	Stockholms stads priscourant	6.045	4.6875	7.374	7.68
1758	Stockholms stads priscourant	6.757	4.6875	7.787	7.68
1759	Stockholms stads priscourant	7.262	4.6875	7.815	7.68
1760	Stockholms stads priscourant	8.433	4.6875	7.597	7.68
1761	Stockholms stads priscourant	9.336	4.6875	7.675	7.68
1762	Stockholms stads priscourant	9.744	4.6875	8.722	7.68
1763	Stockholms stads priscourant	10.529	4.6875	8.33	7.68
1764	Stockholms stads priscourant	10.313	4.6875	8.892	7.68
1765	Stockholms stads priscourant	10.313	4.6875	8.481	7.68
1766	Interpolation	9.516	4.6875	8.031	7.68
1767	Interpolation	7.380	4.6875	8.116	7.68
1768	Stockholms stads priscourant	5.858	4.6875	8.565	7.68
1769	Stockholms stads priscourant	6.581	4.6875	9.222	7.68
1770	Interpolation	8.066	4.6875	8.544	7.68
1771	Interpolation	8.000	4.6875	8.421	7.68
1772	Interpolation	8.336	4.6875	8.711	7.68
1773	Interpolation	9.753	4.6875	8.423	7.68
1774	Interpolation	9.662	4.6875	8.133	7.68
1775	Interpolation	9.302	4.6875	7.792	7.68
1776	Interpolation	8.957	4.6875	7.993	7.68
1777	According to the mint reform of 1776	9.375	9.375	7.68	7.68

* In marks minted from 1633 onwards
** In marks minted before 1633
*** In coin tokens
**** In proper coins
Ss – Sandbergska samlingen.

Table 13: *The exchange rate of öre courant ("vitt mynt") 1624-1777.*

Year	Source	Öre courant ("vitt mynt") in öre kopparmynt, market rate	Daler silvermynt in daler koppar-mynt	Riksdaler in öre courant, market rate	Riksdaler in öre courant, official rate
1624	Wolontis (1936), p. 68	1	1	52	52
1625	Ss, O:1 , f. 197	1	1	53.6	52
1626	Interpolation	1	1	56	52
1627	Interpolation	1	1	56	52
1628	Swenne (1933), p. 193	1	1	76	52
1629	Swenne (1933), p. 193	1.318	1	88	52
1630	Swenne (1933), p. 193	1.428	1	88	52
1631	Swenne (1933), p. 193	1.353	1	96	52
1632	Swenne (1933), p. 193	1.681	1	72	52
1633	Swenne (1933), p. 193	2.07* (1.61**)	1 (2)	56* (72**)	50.4
1634	Swenne (1933), p. 193	2* (1.525**)	2	51.8* (68**)	48
1635	Swenne (1933), p. 193	2* (1.428**)	2	54.3* (76**)	48
1636	Interpolation	2	2	52	48
1637	Interpolation	2	2	53.6	48
1638	Interpolation	2	2	52	48
1639	Interpolation	2	2	58	48
1640	Interpolation	2.105	2	57	48
1641	Wolontis (1936), p. 102	2.143	2	56	48
1642	Interpolation	2.308	2	52	48
1643	Wolontis (1936), p. 102	2.5	2 (2.5)	48	48
1644	Interpolation	2.5	2.5	48	48
1645	Interpolation	2.5	2.5	51.2	48
1646	Interpolation	2.5	2.5	50.4	48
1647	Interpolation	2.5	2.5	48	48
1648	Interpolation	2.5	2.5	49.6	48
1649	Interpolation	2.5	2.5	51.2	48
1650	Interpolation	2.5	2.5	51.2	48
1651	Interpolation	2.5	2.5	51.2	48
1652	Interpolation	2.5	2.5	51.2	48
1653	Interpolation	2.5	2.5	51.2	48
1654	Interpolation	2.5	2.5	51.2	48
1655	Interpolation	2.51	2.5	52	48
1656	Interpolation	2.55	2.5	52	48
1657	Interpolation	2.571	2.5	52	48
1658	Interpolation	2.623	2.5	52	48
1659	Interpolation	2.688	2.5	52	48
1660	Interpolation	2.73	2.5	52	48
1661	Interpolation	2.801	2.5	52	48
1662	Ss, O:1 , f. 262	2.833	2.5	51.2	48
1663	Interpolation	2.814	2.5	52.8	48
1664	Wolontis (1936), p. 144	3	2.5	52.8	48
1665	Wolontis (1936), p. 144	3	2.5 (3)	56.8	48.8
1666	Wolontis (1936), p. 144	3	3	56	52

Table 13: *The exchange rate of öre courant ("vitt mynt") 1624-1777. Continued.*

Year	Source	Öre courant ("vitt mynt") in öre koppar-mynt, market rate	Daler silvermynt in daler koppar-mynt	Riksdaler in öre courant, market rate	Riksdaler in öre courant, official rate
1667	Wolontis (1936), p. 144	3	3	56	52
1668	Wolontis (1936), p. 144	3	3	56.12	52
1669	Wolontis (1936), p. 144	3	3	56.08	52
1670	Wolontis (1936)	3	3	56	52
1671	Wolontis (1936)	3	3	56	52
1672	Wolontis (1936)	3	3	56	52
1673	Wolontis (1936)	3	3	56.18	52
1674	Wolontis (1936)	3.027	3	56.91	52
1675	Wolontis (1936)	3.096	3	60.47	52
1676	Wolontis (1936)	3.28	3	60.93	52
1677	Wolontis (1936)	3.466	3	60.39	52
1678	Wolontis (1936)	3.518	3	61.03	52
1679	Wolontis (1936)	3.495	3	61.81	52
1680	Wolontis (1936)	3.388	3	64.08	52
1681	Wolontis (1936)	3.102	3	64.18	61.6
1682	Interpolation	3.06	3	65.3	64
1683	Interpolation	3.06	3	65.73	64
1684	Interpolation	3.06	3	65.36	64
1685	Interpolation	3.06	3	65.52	64
1686	Wolontis (1936)	3.048	3	63.63	64
1687	Interpolation	3	3	67.33	64
1688	Interpolation	3	3	67.33	64
1689	Interpolation	3	3	67.33	64
1690	Interpolation	3	3	67.33	64
1691	Interpolation	3	3	66	64
1692	Interpolation	3	3	66.67	64
1693	Interpolation	3	3	66	64
1694	Interpolation	3	3	66.67	64
1695	Interpolation	3	3	66.67	64
1696	Interpolation	3	3	72.04	64
1697	Interpolation	3	3	72.16	64
1698	Interpolation	3	3	70.76	64
1699	Interpolation	3	3	66.3	64
1700	Interpolation	3	3	68.66	64
1701	Interpolation	3	3	66.64	64
1702	Interpolation	3	3	65.63	64
1703	Interpolation	3	3	70.57	64
1704	Interpolation	3	3	69.98	64
1705	Interpolation	3	3	69.83	64
1706	Interpolation	3	3	70.02	64
1707	Interpolation	3	3	69.72	64
1708	Interpolation	3	3	70	64
1709	Interpolation	3	3	69.98	64
1710	Interpolation	3	3	69.98	64

Table 13: *The exchange rate of öre courant ("vitt mynt") 1624-1777. Continued.*

Year	Source	Öre courant ("vitt mynt") in öre koppar-mynt, market rate	Daler silvermynt in daler koppar-mynt	Riksdaler in öre courant, market rate	Riksdaler in öre courant, official rate
1711	Interpolation	3	3	69.33	64
1712	Interpolation	3	3	69.98	64
1713	Interpolation	3	3	69.98	64
1714	Interpolation	3	3	68.59	64
1715	Interpolation	3	3	66.67	64
1716	Interpolation	3.18*** (3****)	3	73.49	64
1717	Interpolation	3.36*** (3****)	3	102.4	64
1718	Interpolation	3.442*** (3****)	3	161	64
1719	Interpolation	3	3	110.4	96
1720	Interpolation	3	3	107.5	96
1721	Interpolation	3	3	100.7	96
1722	Interpolation	3	3	101.6	96
1723	Interpolation	3	3	97.53	96
1724	Interpolation	3	3	97.17	96
1725	Interpolation	3	3	90.67	96
1726	Interpolation	3	3	92.57	96
1727	Interpolation	3	3	95.19	96
1728	Interpolation	3	3	96	96
1729	Interpolation	3	3	96	96
1730	Interpolation	3	3	96	96
1731	Interpolation	3	3	96	96
1732	Interpolation	3	3	96	96
1733	Interpolation	3	3	96	96
1734	Riksbankens arkiv	3.051	3	96.05	96
1735	Interpolation	3.043	3	96.62	96
1736	Riksbankens arkiv	3.096	3	97.19	96
1737	Interpolation	3.043	3	97.25	96
1738	Interpolation	3.064	3	97.25	96
1739	Interpolation	3.057	3	97.25	96
1740	Stockholms stads priscourant	3.106	3	97.32	96
1741	Stockholms stads priscourant	3.135	3	97.03	96
1742	Stockholms stads priscourant	3.191	3	96.41	96
1743	Stockholms stads priscourant	3.222	3	99.38	96
1744	Stockholms stads priscourant	3.305	3	100.5	96
1745	Stockholms stads priscourant	3.347	3	97.87	96
1746	Stockholms stads priscourant	3.418	3	93.63	96
1747	Stockholms stads priscourant	3.469	3	102.7	96
1748	Stockholms stads priscourant	3.518	3	105.2	96
1749	Stockholms stads priscourant	3.533	3	105.3	96
1750	Stockholms stads priscourant	3.449	3	105.3	96
1751	Stockholms stads priscourant	3.234	3	102.8	96

Table 13: *The exchange rate of öre courant ("vitt mynt") 1624-1777. Continued.*

Year	Source	Öre courant ("vitt mynt") in öre koppar-mynt, market rate	Daler silvermynt in daler koppar-mynt	Riksdaler in öre courant, market rate	Riksdaler in öre courant, official rate
1752	Stockholms stads priscourant	3.199	3	104.1	96
1753	Stockholms stads priscourant	3.151	3	102.6	96
1754	Stockholms stads priscourant	3.159	3	103.3	96
1755	Stockholms stads priscourant	3.165	3	103	96
1756	Stockholms stads priscourant	3.187	3	107.9	96
1757	Stockholms stads priscourant	3.319	3	107.4	96
1758	Stockholms stads priscourant	3.814	3	110.4	96
1759	Stockholms stads priscourant	4.045	3	112.3	96
1760	Stockholms stads priscourant	4.47	3	114.7	96
1761	Stockholms stads priscourant	4.896	3	117.1	96
1762	Stockholms stads priscourant	5.623	3	120.9	96
1763	Stockholms stads priscourant	6.064	3	115.7	96
1764	Stockholms stads priscourant	6.216	3	118	96
1765	Stockholms stads priscourant	6.064	3	115.4	96
1766	Stockholms stads priscourant	5.944	3	102.9	96
1767	Stockholms stads priscourant	4.561	3	105.1	96
1768	Stockholms stads priscourant	3.608	3	111.2	96
1769	Stockholms stads priscourant	4.159	3	116.7	96
1770	Ss, O:1 , f. 1263 and 1969	4.735	3	116.4	96
1771	Stockholms stads priscourant	4.765	3	118.7	96
1772	Stockholms stads priscourant	4.8	3	121	96
1773	Stockholms stads priscourant	5.808	3	113.1	96
1774	Stockholms stads priscourant	5.959	3	105.5	96
1775	Stockholms stads priscourant	5.988	3	96.83	96
1776	Stockholms stads priscourant	5.621	3	101.9	96
1777	According to the mint reform of 1776	6	6	96	96

* In öre minted from 1633 onwards
** In öre minted before 1633
*** In coin tokens
**** In proper coins
Ss – Sandbergska samlingen.

Abbreviations

d.k.m. – daler kopparmynt

d.s.m. – daler silvermynt

k.m. – kopparmynt

RA – Riksarkivet

RBA – Riksbankens arkiv

RD – riksdaler

rdr – riksdaler

s.m. – silvermynt

SEK – Swedish krona

Ss – Sanderbergska samlingen

Sst – Stockholms stads tänkeböcker

USD – US dollar

Vsät – Vadstena stads äldsta tänkeböcker

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