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## THE FUNCTION OF THE THALER IN DETERMINING THE EXCHANGE RATES OF EUROPEAN CURRENCIES IN THE SECOND HALF OF THE 16<sup>TH</sup> CENTURY

**ABSTRACT:** The author summarizes the origin and development of the thaler since its emergence in Central Europe in the 1520s to the general spread of the term “thaler” for large silver coins in the 1540s as well as the attempts to replace the thaler with another type of coin in the Roman-German Empire under the Second and Third Imperial Coin Order. The year 1566 was a major turning point. The “imperial thaler” was redefined in metrological terms and the collection of custom duties in the North Sea straits was regulated, which (instead of gold coins) continued to be collected in silver thalers. This move spurred the expansion of the thaler coins in those countries of continental Europe that used the North Sea trade route. At that time, the thaler also became the equivalent for mutual conversions of the most important monetary systems. This is evidenced by the exchange rates from the end of the 16<sup>th</sup> century from Hamburg. In them, the “imperial thaler” serves as a tool for the mutual conversion the seven major currencies used in the North Sea and Baltic trade areas (the Lübeck mark, the Hamburg pound, the Antwerp pound, the Amsterdam pound, the imperial Rhine gulden, the Lisbon milreis and the Polish gulden).

**ABSTRAKT:** Autor zwięźle podsumowuje genezę i rozwój talara od jego pojawienia się w Europie Środkowej w latach 20. XVI w. po powszechne rozprzestrzenienie się terminu „talar” na określenie dużej, srebrnej monety w latach 40. XVI stulecia, jak też próby zastąpienia w cesarstwie rzymsko-niemieckim talara monetą innego typu Drugą i Trzecią Cesarską Ordynacją Menniczą. Najważniejszym punktem zwrotnym był rok 1566. „Talar imperialny” został na nowo zdefiniowany pod względem metrologii, jak też uregulowano pobór ceł w cieśninach Morza Północnego, które (zamiast monet złotych) nadal pobierano w srebrnych talarach. To posunięcie pobudziło ekspansję monety talarowej w krajach Europy kontynentalnej korzystających ze szlaku handlowego Morza Północnego. W tym czasie, talar stał się także jednostką obrachunkową najważniejszych systemów monetarnych. Świadczą o tym kursy walut z końca XVI w. z Hamburga. „Talar imperialny” służy w nich jako narzędzie do przeliczania siedmiu najważniejszych walut używanych na obszarach handlowych Mórz Północnego i Bałtyckiego (marka lubecka, funt hamburski, funt antwerpski, funt amsterdamski, cesarski gulden reński, lizboński milreis i polski złoty).

**KEYWORDS:** coin, thaler, currency, 16<sup>th</sup> century, Europe

**SŁOWA KLUCZOWE:** moneta, talar, pieniądz, XVI w., Europa

The thaler was the principal circulating silver coin of early modern Europe. The basis for its emergence and spread lay originally in the silver resources of Central Europe in the first half of the 16<sup>th</sup> century: the Habsburg Tyrol, the Saxon and Bohemian side of the Ore Mountains (Erzgebirge) and the ore-bearing Harz mountains in central Germany.<sup>1</sup> However, the thaler retained its position as the main European silver coin even later, when, from the second half of the 16<sup>th</sup> century, the European financial system began to be influenced by the large-scale supply of Spanish colonial silver from the newly established mines in the area of present-day Bolivia and Mexico,<sup>2</sup> and when the European silver mining industry itself ceased to be profitable due to low cost-effectiveness.

This fact is seemingly illogical. Why did the silver thaler become the universal means of payment in early modern Europe, when the most important powers of the second half of the 16<sup>th</sup> century (Spain, France and England) chose different metrological parameters and completely different names for their heavier silver coins (peso, piastra, écu, crown)? The thaler was not supposed to fulfil this role in the Roman-German Empire either. The two Habsburg brothers, emperor Charles V (1519–1556) and Ferdinand I (1556–1564), had completely different intentions for the imperial monetary system, and the silver thaler was not to play a part in them. How is it then possible that by the end of the 16<sup>th</sup> century, the silver thaler was the pillar of international exchange rates, and that in the commercial world, it simplified the transfer of financial assets from the Portuguese currency to the imperial Rhenish guilder or the Polish currency?

Not even the most detailed collector catalogues recording contemporary thaler minting can answer these questions; only a broad, interdisciplinary analysis can, taking into account the wider economic and political context. Even though the thaler originated in Central Europe, its use in the Baltic maritime trade, i.e. in the area of Scandinavia, northern Germany and Poland, was crucial for its later functioning.

The circumstances of the origin of the large silver coins of the thaler type are, of course, well known. The first large-scale issue of these coins was made in 1486 by Archduke Sigismund of Habsburg, using silver from the Tyrol. This was a major innovation, and it aimed to supply the money market with coins containing enough silver to equal the market price of the then-dominant imperial gold coin, the so-called Goldgulden. This simplified the accounting of debt repayments that the Archduke was obliged to pay to Italian merchants in Goldgulden. For this reason, these silver coins were called “guldiners”, even though they did not contain any gold.

But this was the fundamental problem of all the silver predecessors of the thaler, whether minted in Tyrol, Switzerland or Saxony. All of these silver coins were linked by their silver content to the imperial Goldgulden, as the

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<sup>1</sup> Vorel 2013, pp. 5–26.

<sup>2</sup> Pieper 1992, pp. 77–98.

regulations for their production clearly state. Therefore, the silver content of these coins varied, as it depended on the current exchange rate of gold to silver. This was slightly different in each country and, moreover, at that time it was changing quite rapidly (in favour of silver) in connection with the beginning of Spain's massive importation of gold from Latin America. This is why none of these older versions of silver guldiners from the late 15<sup>th</sup> and early 16<sup>th</sup> centuries became the metrological standard, and did not influence European money circulation on a wider scale.

Things changed only in the second decade of the 16<sup>th</sup> century, when the highly profitable mining of newly-discovered silver resources began on the Bohemian side of the Ore Mountains, in the area of the present-day city of Jáchymov. This was such a profitable business activity that the mining of silver in Jáchymov became the subject of a power struggle in the wider political arena between the Wettins of Saxony (who made considerable initial investments to initiate silver mining and metallurgical processing), Emperor Maximilian I (who was the guardian of the minor Bohemian king Louis Jagiello and claimed decision-making powers in these matters on his behalf) and the Bohemian Estates, who sought to gain control over the mining and export of metallurgical silver so that the proceeds of these activities could be used to pay the debts of the Bohemian king.<sup>3</sup>

The situation was resolved only by the death of Emperor Maximilian I (†1519). The Bohemian Diet then very quickly adopted a resolution (on January 9, 1520), which permitted the export of newly-mined Jáchymov silver in coined form only. The reasons were fiscal. Monetization enabled basic control over the amount of silver processed, and ensured its taxation in favour of the Bohemian Chamber (that is, the repaying of sovereign debts). Since most of these exports went directly across the border to Saxony (as investment repayments and business profits), the Saxon silver guldiner, produced according to the metrological standards of 1505, was approved by the Bohemian Estate's Diet as the metrological model for the new Bohemian coin. This link naturally made it easier to integrate the new Bohemian coins into the wider European precious metals market, for which Leipzig in Saxony was an important centre.<sup>4</sup> For the new coins supplied to the market from Bohemia's Jáchymov, the merchants in Leipzig used the term "guldiner-groat from Jáchymov" (German: *Joachimsthaler Guldengroschen*), shortened as "Thaler" or "tolar". However, this was originally only a designation for a specific type of silver coins supplied to the market, not a general designation for large silver coins. In this German environment, the coins were still called guldiner.

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<sup>3</sup> Vorel 2019a, pp. 49–60.

<sup>4</sup> Nemeškal, Vorel 2010, pp. 33–46.

However, the Bohemian thaler had two major advantages:<sup>5</sup>

It was metrologically stable for several decades, and maintained its silver content at the level set by the Bohemian Estate's Diet in 1520. It was the first coin of this type that did not depend on fluctuations in the price of gold against silver. While the Saxon silver guldiner, which was originally a metrological model for the Bohemian thaler, saw its silver content decrease, no change of parameters was possible in Bohemian mints without the consent of the Diet. Therefore, not even Habsburg King Ferdinand I, after his election to the Bohemian throne in 1526, could reduce the silver content of the Jáchymov thalers, although he sought to do so to unify the Bohemian and Austrian currencies. The Bohemian estate community insisted on adhering to the original metrological parameters of the thalers, as decided by the Bohemian Diet in 1520: They were to retain their fineness (14 lots 16 grains = 93.055% Ag) and their weight (1/8 Erfurt mark = 29.3275 g). This did not change for more than a quarter of a century, until 1547. This long-term metrological stability was a quality that no other silver coins could compete with in the commercial world of the time.

The second advantage of the new Bohemian coin was its availability on the market. The Jáchymov miners and associated foreign trading companies, which dealt with transactions with precious and non-ferrous metals (including the Augsburg Fuggers), could not export silver from Bohemia in any other physical form than minted coins. Therefore, the vast majority of the newly mined Jáchymov silver was monetarized into the physical form of thalers, which were then exported in large quantities to foreign markets. As a result, the term "thaler" (Czech: *tolar*), originally referring only to a specific Bohemian coin, gradually over the course of two decades became a general term for all large silver coins of high purity, around 4 cm in diameter and weighing approximately 30 grams.<sup>6</sup>

The use of the general term "thaler" for large silver coins is documented in the records of various estates or thesaurized cash from the second half of the 1530s. However, it does not first appear in this form in official imperial documents until the early 1540s, when it is used to describe a coinage privilege for the city of Bremen in 1541.<sup>7</sup> On an imperial level, during the failed negotiations that were to lead to the creation of a general imperial currency, large silver coins were still called "guldiner". However, when the exchange rates of the local currencies of territorial imperial princes were negotiated in advance of the Grand Imperial Army's Hungarian campaign in 1542,<sup>8</sup> there are already explicit mentions of thalers as general silver coins, regardless of their issuers. The only exception were the

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<sup>5</sup> Vorel 2011, pp. 1778–1782.

<sup>6</sup> Vorel 2020, pp. 193–188.

<sup>7</sup> Hirsch 1754, no. 200, pp. 301–302.

<sup>8</sup> Vorel 2019b, pp. 935–991.

“genuine” Jáchymov thalers (Fig. 1) which, due to their higher silver content, were granted a higher purchasing power (70 kreutzers) than all other “German” thalers (68 kreutzers) in May 1542.<sup>9</sup>



Fig. 1. *Kingdom of Bohemia*, Ferdinand I, undated thaler from beginning of 1540s, Jáchymov mint. Silver; 38.0 mm; 28.949 g. Numismatic Collection of East Bohemia Museum Pardubice ([www.vcm.cz](http://www.vcm.cz)), inv. no. N241.73, photo by author

By this time, “thaler” meant any large silver coin in Central Europe, thus creating a three-tiered system of marking coins by their approximate value, i.e. small coins (penny, pfennig); medium value coins (groat, Groschen) and large silver coins (thaler). The exact value was then specified by their description, i.e. what kind of penny or groschen it was. This meant it was possible to determine whether or not the coin was valid at all and, if so, what its purchasing power was in a given country.

On the other hand, small coins and, at that time, even groschen coins, had their purchasing power determined by legal provision, bringing their issuers a certain profit derived from the difference between the price of their precious content and their officially determined purchasing power. This procedure was the prerogative of the holder to the right of coinage, usually the ruler. Silver thaler coins, however, were a so-called “common” coin – that is, a commercial coinages, whose face value corresponded with their intrinsic precious metal content. In Central Europe at that time, the group of “common coins” included the traditional medieval coins with a standardised gold content (Ducats and Goldgulden) and, newly, silver thalers.

In the local currencies of the imperial territorial princes and in other European countries, the thaler became an increasingly popular means of payment. It gradually came into use in ordinary payments, widening its original remit as a silver trade coin. While in the early 1520s, the purchasing power of the silver thaler was still too great for everyday money circulation, within two decades the thaler coinages became more and more accessible for urban and rural areas due to their mass production, which was still provided by Europe’s own silver metallurgical production, and the gradual increase in prices.

<sup>9</sup> Becher 1838, vol. II, no. 15, pp. 22–14; Vorel 2014, pp. 379–401.

The fundamental economic impetus for the significant rise in the prices of real estate and landed property, which in Central Europe is documented in the early 1540s (i.e. before the mass importation of overseas silver, which is traditionally associated with the beginning of the so-called “price revolution”), was the general political pressure to reduce the maximum interest rate on Christian credit. This step was taken gradually by most countries in the region with the apparent aim of reducing the cost of servicing sovereign debts. Within the Habsburg realms, this step was taken in 1543, when the maximum interest rate was reduced from 10% to 6% by political decision.<sup>10</sup> This move brought about a temporary collapse of the credit market (few were willing to lend at low interest) and a subsequent rapid rise in the price of aristocratic dominions, serf farms and any other productive facilities, as the standard market price of this type of property was derived from its profits. A one-off significant reduction in the interest rate therefore decreased people’s interest in bond investments, increased demand for real estate and created strong pressure on the development of business activities of the landed gentry. The coincidence of these economic trends also brought an increased demand for higher-value currency, which the silver thaler matched perfectly.

The period of continuous economic development in Central Europe, where thaler-type silver coins gradually assumed an important place in European monetary circulation, ended in the second half of the 1540s. A political milestone was the so-called Schmalkaldic War of 1546–1547 between the imperial-papal alliance on the one hand and the German Lutheran opposition united in the so-called Schmalkaldic League, on the other. The economic milestone was the discovery of highly-metallic silver ores in Potosí, Bolivia, and the technological mastery of its extraction and processing into metallurgical silver<sup>11</sup> that could be exported to Europe (1545). Although Emperor Charles V himself did not have significant silver mining resources in Europe, during the second half of the 1540s, he had the majority of this precious metal available in Europe, thanks to overseas imports.<sup>12</sup> Thus, he also had (unlike in previous decades) the raw materials to carry out a major coinage reform, which could have had a great economic impact thanks to the existence of the Spanish-Imperial personal union. Silver thalers were to be replaced by another type of coinage.

Emperor Charles V won the first phase of the long-lasting conflict with the Lutheran opposition and for five years (1547–1552) became (as he believed) the unlimited ruler of the Roman-German Empire. His power, however, was not as great as he had anticipated. In northern Germany, the war continued after the Battle of Mühlberg, where the Saxon Elector John Frederick II, leader of the opposition Schmalkaldic League, was captured. Even on the political level, Emperor

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<sup>10</sup> Vorel 2021a, pp. 177–187.

<sup>11</sup> Szaszdi 1981, p. 167, tab. VII *Gold and Silver Production – America 1501–1610 per weight and value (official rate)*.

<sup>12</sup> Cipolla 1996, p. 54; Walter 2003, pp. 241–256.

Charles V did not manage to enforce the major reforms he had sought at the two Imperial Diets held at Augsburg in 1547–1548 and 1550–1551.<sup>13</sup>

However, during these Diets, the Emperor succeeded in temporarily implementing his idea of a new common imperial currency. The preparatory assemblies provide a good illustration of the extent to which thaler coins were already in circulation at that time. A fairly detailed overview is given in a report drawn up for Emperor Charles V in Nuremberg in 1551 by representatives of the various German regions. Here, they are discussed directly in the preamble, "...thalers are the largest silver coins circulating in the territory of the Roman-German Empire..." ("...die Thaler alß die höchste silber Münzen in Reich teutscher Nation gangbahr...").<sup>14</sup> In fact, this document gives the first general definition of what should be understood as a "normal" thaler: Coins with a purity of at least 14 lots (87.5% Ag) and of such a weight that eight pieces weigh just under one Cologne mark (233.856 g)

This relatively loose definition covered most thaler coins that were being produced in the Roman-German Empire and in other countries ruled by the Habsburgs. They had a value of 68 kreutzer. The Commission then named four cases of thalers minted in Germany that were of lower purity. They were given a value ranging from just 53 to 63 kreutzer. Swedish, Danish, Polish and Swiss coinages were described as "foreign". Nonetheless, they were also called thalers as they were "...silver pieces that compares in size to the thaler..." ("...Silberen Stuck, welche den thalern in ihrer Größ gleich...").<sup>15</sup> The purity of Scandinavian and Polish thalers had not been ascertained, so no value was proposed in the imperial currency; Swiss thalers (Schaffhausen, Basel and coins minted jointly by the cantons of Uri, Schwyz and Unterwalden) were valued at 64 or 65 kreutzer.

The Emperor, however, had a different idea of the form of the new imperial currency, into which the silver thaler (i.e. the "common" coin with variable purchasing power) did not fit. Charles V wanted to transform the Roman-German Empire into a centrally controlled state, and for this he needed a monetary instrument that he could control himself. The Second Imperial Minting Ordinance of 1551, proposed by the Emperor (Fig. 2), was designed to do away with the then common two-tier monetary system ("current" coins with local validity and the generally accepted "common" thaler coins) and to unify the silver coinages into a single and unchanging denominational series. The new main imperial silver coin was thus to be the "Imperial Guldiner" with a fixed face value of 72 kreutzers, which was embossed directly on the coin (Fig. 3). The already produced silver thalers were to circulate for some time with their original purchasing power (68 kreutzers), but new ones were not to be produced on imperial territory any longer.

<sup>13</sup> Vorel 2021b, pp. 352–354.

<sup>14</sup> Hirsch 1754, p. 335.

<sup>15</sup> Hirsch 1754, p. 340.

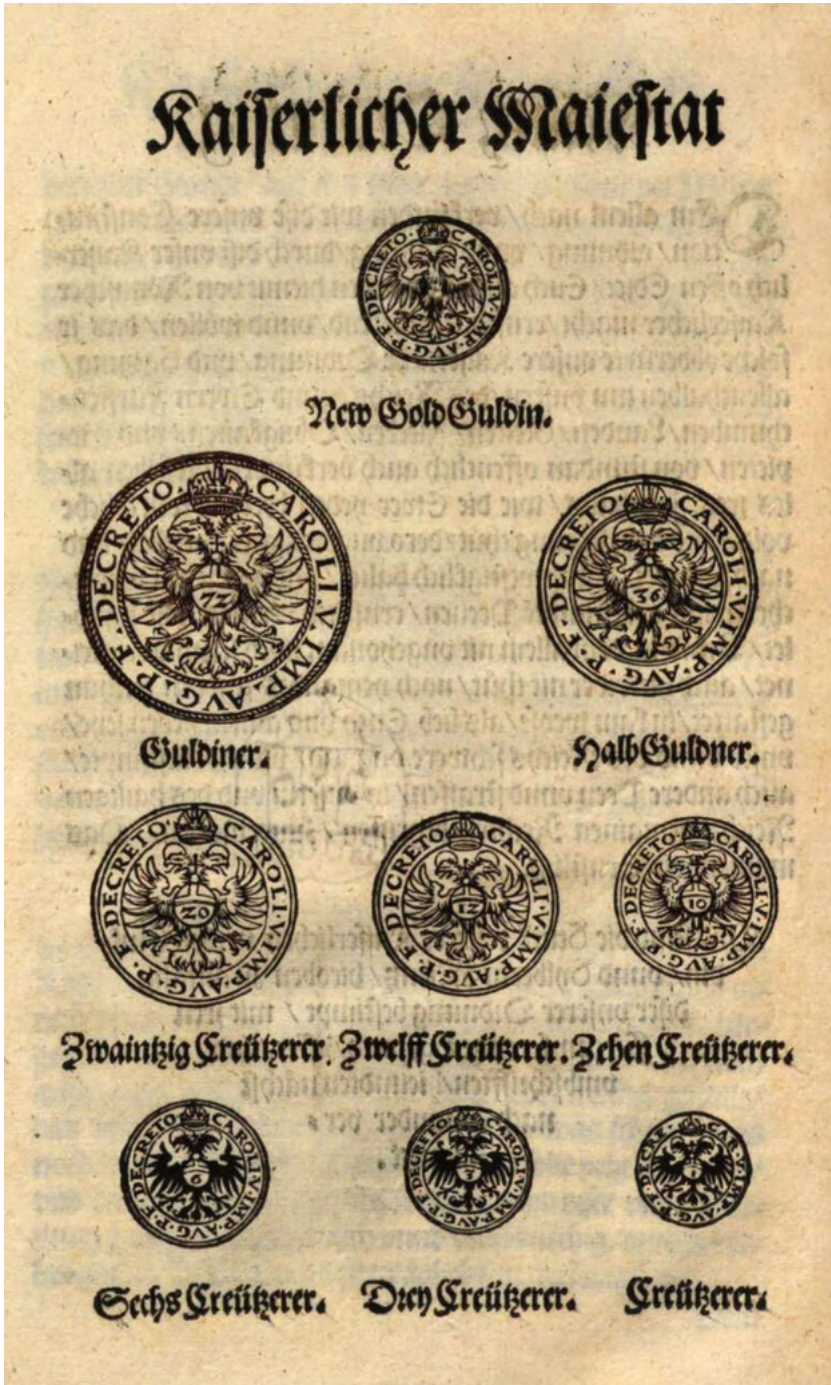


Fig. 2. Third Imperial Minting Ordinance from 1551: an appendix depicting the newly introduced imperial coins. Österreichische Nationalbibliothek Wien, sign. 28. E. 36





Fig. 3. *Tyrol*, Ferdinand I, Imperial Guldiner = 72-kreutzer, 1556, Hall in Tirol mint. Silver; 39.65 mm; 31.012 g. Numismatic Collection of East Bohemia Museum Pardubice ([www.vcm.cz](http://www.vcm.cz)), inv. no. N241.5726, photo by author

This unusual and, from an accountancy perspective, rather impractical value (72 kreutzers) was higher than the silver content of the older thalers would have indicated. The latter were “undervalued” by two kreutzers in relation to the newly introduced imperial coins, i.e. to 97.15% of the real price of silver. The difference was not too great, but if this imperial currency reform had been universally implemented (which it was not), the older and higher quality thalers would have quickly disappeared from circulation, replaced by imperial coins.

The “72” denomination would also have made it easier to gradually link the imperial currency with the Spanish monetary system, whose main thaler-type silver coin was the 8-real (real de a ocho, peso). The following interconnection of the two monetary systems was to create an easy conversion (Spanish real = 9 kreutzers of the imperial currency), which would be particularly advantageous to the Spanish Empire.<sup>16</sup> This would have greatly simplified the ability for Emperor Charles V to use Germany’s economic potential for its expansionary policy in the Mediterranean, where it repeatedly clashed with France and the Ottoman Empire.

However, the plans of Emperor Charles V for world domination soon came to nothing and after another, this time unsuccessful, military conflict with the Lutheran opposition in the Empire (1555), the Emperor was forced to abdicate the imperial throne and had to flee Germany. Thus Charles’ “Imperial Guldiner” of 72 kreutzers disappeared into the imaginary abyss of history as well. The agreement on the new internal confessional organization of the empire (the so-called “Peace of Augsburg” of 1555) had already been concluded with the Lutheran opposition by Charles’s younger brother, King Ferdinand I, who took over the government of the empire (as acting king of Rome and representative of the Emperor) immediately after the Emperor’s flight to Spain.

One of the first political measures taken by the new Roman Emperor immediately after his election by the Electoral College in 1558 was the approval of

<sup>16</sup> Eltz 2005, pp. 60–62, 859–884; Vorel 2009, pp. 175–178; Volckart 2017.

the Third Imperial Minting Ordinance of 1559.<sup>17</sup> The plans for this new imperial currency did not include the silver thaler either. The older kreutzer coins remained valid, but the main imperial coin was to be the silver guldiner with a denominated value of 60 kreutzers (Fig. 4). By this, Ferdinand I actually wanted to establish the Austrian monetary system as the general standard in the empire.<sup>18</sup> This model had at least the advantage that the new silver guldiner corresponded in its purchasing power to the main imperial monetary unit (Rhenish guilder = 60 kreutzers). Even the Third Imperial Minting Ordinance did not anticipate the long-term existence of silver thalers, which were to be gradually replaced in monetary circulation by the new kreutzer system.



Fig. 4. Tyrol, Ferdinand I, Rhenish guilder = 60-kreutzer, 1560, Hall in Tirol mint. Silver; 37.45 mm; 24.467 g. Coin Collection of East Bohemia Museum Pardubice ([www.vcm.cz](http://www.vcm.cz)), inv. no. N241.5715, photo by author

The problem, however, was that within the confessionally and politically fragmented Roman-German Empire, Emperor Ferdinand I had no instruments of power at his disposal to enforce compliance with the Third Imperial Minting Ordinance. Thus, even this imperial law was accepted after 1559 by only a relatively small group of issuers politically linked to the Habsburgs.<sup>19</sup> Even though the question of a common imperial currency became a regular item on the agenda of the Imperial Diets until the end of the 16<sup>th</sup> century, most of the imperial princes, cities and other issuers did not respect the imperial coinage regulations and continued to produce their own local coins and silver thalers of various metrological parameters.

But that was the weakness of the thaler coinages of the time: there was no fixed metrological standard, and for a long time no agreement was possible at the imperial level, when both emperors (Charles V and Ferdinand I) advocated a different

<sup>17</sup> Hirsch 1754, vol. I, no. 212, pp. 344–365.

<sup>18</sup> Newald 1883.

<sup>19</sup> Vorel 2006, p. 126, Map 7: *Issuers of silver coins minted in compliance with the Third minting order of 1559.*

model of a common imperial currency, which was advantageous particularly for the Habsburgs.

A fundamental change took place after the death of Emperor Ferdinand I. His son and successor Maximilian II was more accommodating in imperial affairs than his two predecessors, so more problems could be resolved during his reign. The resumption of war with the Ottoman Empire at the beginning of Maximilian's reign forced the monarch to seek financial support from the imperial estates, and he was basically indifferent to what physical form the money would have. He himself no longer actively sought to introduce an imperial currency.

In the end, economic criteria, not political will, decided which silver coin would be the main currency. This was decided by the trading networks operating in the North Sea and the Baltic Sea, which followed the tradition of the medieval Hanseatic League.

The Scandinavian countries and the coastal areas of northern Germany and Poland did not have their own sources of metallurgical silver, but obtained the precious metal through trade.<sup>20</sup> Their monetary development was not influenced by the Habsburgs' efforts to unify their monetary systems; northern Germany was not controlled by Charles V even after the Schmalkaldic War. Their monetary development therefore more closely reflected the real needs of the commercial world of the time. The traditional currency system of the medieval Hanseatic League still prevailed in the North German and Scandinavian areas at the beginning of the 16<sup>th</sup> century, with the silver mark being the largest denomination, containing about two-thirds of the precious metal compared to the thaler. However, the Lübische Mark could not compete for long with the rapid rise of the thaler as the trade coin in the early 1520s. The silver thaler gradually became the standard in this area as well, and individual issuers adapted the physical form of the newly introduced coins to it.

The demand for payment in silver thalers was particularly influenced by Denmark, which in 1566 made a radical change in the tariff rates in the Sunda Strait. This strategically important canal, connecting the North Sea and the Baltic Sea, was used by merchant ships of all companies (especially English and Dutch) wishing to conduct profitable business in the Baltic or Russia, or to import grain or industrial semi-finished products (crucial for ship-building) transported by the Elbe, Oder or Vistula rivers from the inland to port cities. Instead of the former payment in gold, based on the number and type of ships passing through, Denmark introduced a new system that considered the specific tonnage, and required payment in silver thalers.<sup>21</sup> This was also logical for commercial reasons, as the farther east one went, the greater the purchasing power of silver against gold. As a result of this measure,

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<sup>20</sup> North 1989, pp. 57–63.

<sup>21</sup> Krüger 1994, pp. 187–208.

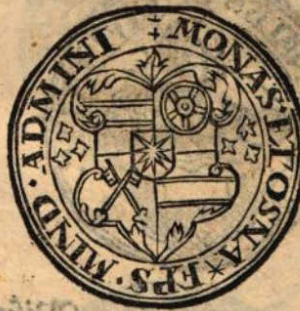


Fig. 5↑→. Saxon valuation table of 1572: example of evaluation of less valuable tolars. The standard Imperial Thaler had a higher value, i.e. 24 groats of Saxonian currency or 32 schillings of Lübeck currency. Stürmer 1572, pp. 30–31

Landtgraff zu Leuchtenberg,



Administrator des Stiftes Münster  
vnd Osnabruck.



Mansfeldisch.



the demand for silver thaler coins increased.<sup>22</sup> Moreover, as additional coins came into circulation, the “northern route” assumed an increasingly important role in the distribution of export silver to Eastern Europe<sup>23</sup> and onwards on to Asia.<sup>24</sup>

The growth in the supply of silver on the European precious metals market was also significantly affected by the financial problems of Spain, which was the most important importer of precious metal at that time.<sup>25</sup> Despite the ever-increasing supply of silver, Spain maintained for a long time a formal gold/silver exchange rate of 1:10.61.<sup>26</sup> Maritime imports were, however, no longer completely under Spanish control, and a significant proportion of Spanish colonial silver entered the European market through other channels at much lower prices. After the outbreak of the Spanish-Dutch War in 1566, it was no longer realistic to artificially keeping the price of silver high on the Spanish side, and its official price was reduced by 14%. This impulse also significantly contributed to the expansion of the production of thaler-type coins. The two parts of the former Habsburg Netherlands, divided since 1566 into a Spanish part and rebel provinces, gradually became the main area for the production of silver thaler coins in Europe.<sup>27</sup> The long war in the Netherlands also created an increased demand for the supply of military goods, for which both sides in the conflict were able to pay with silver thalers, produced in large quantities from imported silver.<sup>28</sup>

Germany quickly responded to these changes by adopting the so-called Amendment to the Third Imperial Minting Ordinance in 1566. It was only this document that set the metrological standard, as it introduced the “imperial thaler” as a silver coin with a silver purity of 14 lots 4 grains (88.9% Ag) and a weight of 1/8 of a Cologne mark (29.232 g).<sup>29</sup> This was an important step, as only such a clear definition allowed the “imperial thaler” to express the purchasing power of other silver coins in circulation. For this purpose, the various local monetary circuits within the empire produced so-called “valuation tables”, which were also published in print as an aid to merchants and accountants. The Saxon valuation table of 1572,<sup>30</sup> for example (Fig. 5), achieved considerable popularity and spread, as the main route for the export of grain and other goods from Central Europe to the coastal trading centres was through Saxony along the Elbe.

<sup>22</sup> Nathorst-Böös 1976, pp. 128–129.

<sup>23</sup> North 1998, pp. 403–413; Dmitrieva 2006, pp. 12–35.

<sup>24</sup> Prakash 2004, pp. 167–168; Mathee 2006, p. XX (Map 4).

<sup>25</sup> Hamilton 1970, p. 42, tab. 3 *Total Decennial Imports of Fine Gold and Silver*; Menzel 2004, pp. 5–14; TePaske 2007, p. 266.

<sup>26</sup> Hamilton 1970, p. 71.

<sup>27</sup> Vorel 2009, pp. 223–228.

<sup>28</sup> North 1989, pp. 57–63.

<sup>29</sup> Hirsch 1754, vol. II, no. 18, pp. 25–30.

<sup>30</sup> Stürmer 1572, pp. C3–D4.



market counted on the “imperial thaler” as a normative unit with a certain silver content. According to this monetary standard, the current market price of the “imperial thaler” was converted in the various currencies and compared with each other. The older printed valuation surveys, which were a very practical tool for traders immediately after 1566, had lost their informational value by the end of the 16<sup>th</sup> century. Their issuers were unable to respond quickly to changes in the commercial world of the time. The widespread valuation table, repeatedly published by Adam Berg in Munich, resembles more of a precursor to collector's catalogues of 16<sup>th</sup>-century German thaler coins rather than an up-to-date trade manual.<sup>32</sup>

On the other hand, it is clear that the creator of the Hamburg exchange rate sheet (Fig. 7a–b) did not work with the “thaler” as a virtual monetary unit of account, as this term was commonly used in accounting documentation in the Habsburg Empire and in the surrounding countries at that time (1 thaler = 70 kreutzer of imperial currency = 35 groats of Polish currency = 30 white groats of Bohemian currency). The Hamburg Stock Exchange assessed the fair market value of the physically circulating silver coins, which (to distinguish them from the monetary numerical unit of the same name) were referred to as “broad thalers”.

From these accounting sources, we can also deduce why the Polish-Lithuanian Commonwealth did not proceed to mass-produce its own silver thalers during the last third of the 16<sup>th</sup> century,<sup>33</sup> even though the raw material (silver obtained through trade) was abundant in the country.<sup>34</sup> The reasons were mainly economic. While the other monetary systems of the region gradually weakened (in the imperial currency the thaler strengthened from 68 kreutzers in 1566 to 74 kreutzers in 1595), the Polish currency maintained a stable exchange rate of 35 groats for a thaler. Why was Poland able to buy silver thalers relatively cheaper (in terms of domestic currency) than neighbouring countries on the European market at the end of the 16<sup>th</sup> century?

The explanation for this seemingly illogical development is found in the broader context of export links.<sup>35</sup> At the end of the 16<sup>th</sup> century, silver thaler coins were exported in large quantities to the territory of Russia and the Ottoman Empire, where silver had a higher purchasing power than in Western and Central Europe. Silver thalers, however, did not circulate in these countries, but were imported under a state-controlled forced buyout scheme.<sup>36</sup> The silver thus obtained was remonetized at a profit into small silver government coins (Russian kopecks and Turkish akçe).<sup>37</sup> However, both Russia and the Ottoman Empire accepted as do-

<sup>32</sup> Berg 1597.

<sup>33</sup> Dutkowski 2005, pp. 182–196.

<sup>34</sup> Mączak 1972, p. 39.

<sup>35</sup> Samsonowicz 2004, pp. 135–153.

<sup>36</sup> Öztürk 2002, pp. 692–704.

<sup>37</sup> Spasskij 1962, p. 56; Pamuk 2004, p. 234.



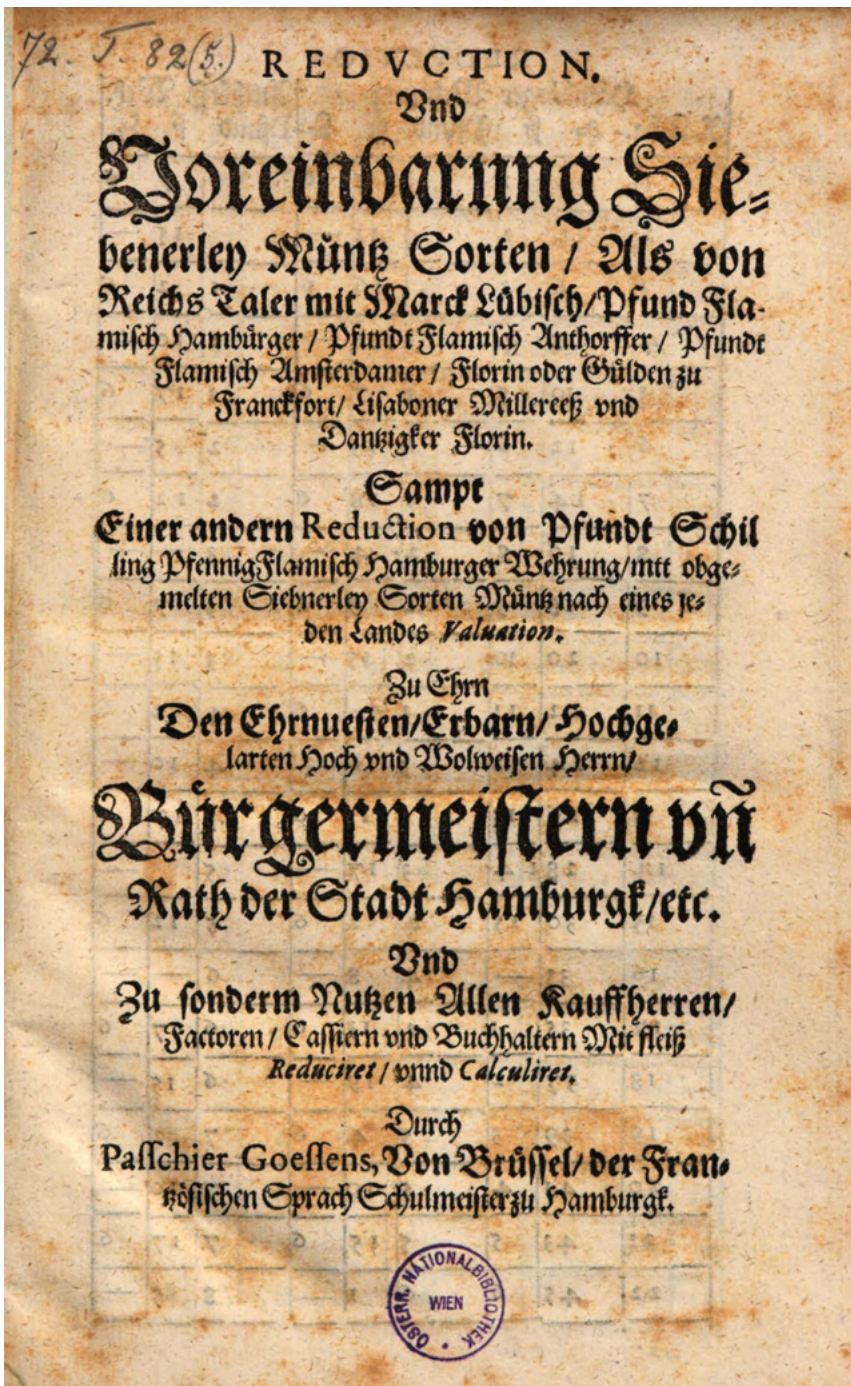


Fig. 7a. Front page of Hamburg exchange rate sheet from 1595. Österreichische Nationalbibliothek Wien, sign. 72. T. 82. (5)

REDUCTIO						PRIMA.											
Hamburgr Wehrung			Antwerff. Weh.			Amsterd. Wehr.		Franck. W. Lysff. Weh.		Dantck. W.							
N. Tha.	q	ß	Pfund	ß	q	Pfund	ß	q	R	Kreuz.	Wille	Kopf.	R	Groß			
1	2	1		5	6		7	6		1	14		330	1	5		
2	4	2		11			15			2	28		660	2	10		
3	6	3		16	6		1	2	6		3	42		3	15		
4	8	4		1	2		1	10			4	56		1	320	4	20
5	10	5		1	7	6		1	17	6		6	10	1	650	5	25
6	12	6		1	13			2	9			7	14	1	980	7	
7	14	7		1	18	6		2	12	6		8	38	2	310	8	5
8	16	8		2	4			3				9	52	2	640	9	10
9	18	9		2	9	6		3	7	6		11	6	2	970	10	15
10	20	10		2	15			3	15			12	20	3	300	11	20
11	22	11		3		6		4	2	6		13	34	3	630	12	25
12	24	12		3	6			4	10			14	48	3	960	14	
13	26	13		3	11	6		4	17	6		16	2	4	290	15	5
14	28	14		3	17			5	5			17	16	4	620	16	10
15	30	15		4	2	6		5	12	6		18	30	4	950	17	15
16	33			4	8			6				19	44	5	280	18	20
17	35	1		4	13	6		6	7	6		20	58	5	510	19	25
18	37	2		4	19			6	15			22	12	6	940	21	
19	39	3		5	4	6		7	2	6		23	26	6	270	22	5
20	41	4		5	10			7	10			24	40	6	500	23	10
21	43	5		5	15	6		7	17	6		25	54	6	330	24	15
22	45	6		6	1			8	5			27	8	7	60	25	20

Fig. 7b. Hamburg exchange rate sheet from 1595, p. AIV-AII. Österreichische Nationalbibliothek Wien, sign. 72. T. 82. (5)

mestic legal tender even some foreign coins of medium value which they did not produce themselves. The Polish silver triple groat belonged to this group.<sup>38</sup>

During this period, it was more profitable for European trading companies to import current Polish coins directly to the territory of Russia and the Ottoman Empire (in the latter's case, this mainly concerned the regions in the Balkans), which increased demand and maintained a strong exchange rate of the Polish currency against silver thalers. This was also helped by the specific economic model that operated in some Polish mints. In addition to the direct purchase of silver for the production of government coinages, they also allowed for the "custom" production of coins. In this

<sup>38</sup> Mikołajczyk 1986, p. 69, fig. 3: *Flow of the Polish silver coins to the South and East onto the lands of the Ottoman Empire and Ottoman allies*; Sahillikoğlu 2004, pp. 115–142; Vorel 2018, pp. 29–42.

process, silver supplied by the customer was monetised into the desired form for a set fee (derived from the weight of the processed metal). It is then logical that in view of the specifics of the Russian and Turkish markets, Dutch merchants had their silver minted in Polish coastal mints (in Gdańsk, for example)<sup>39</sup> not into commercial thalers, but into triple groat coins, as they made major profit by exporting them directly to Russia and the Balkans.

The silver “imperial thaler” continued to play its role as a general measure of value in the 17<sup>th</sup> century as well.<sup>40</sup> As with all precious-metal trade coins, the market price of silver thalers rose gradually as local currencies depreciated over time. It is this relationship between the market price of metrologically stable commercial “common” coins and local monetary systems that allows us to analyse long-term inflationary trends as well as singular financial crises, whether they involved a general rise in the price level (so-called price revolution) or were the result of wartime conflicts.

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<sup>39</sup> Kizik 2004, pp. 51–76.

<sup>40</sup> Vorel 2013, pp. 82–94.

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## FUNKCJA TALARÓW W USTALANIU KURSÓW WALUT EUROPEJSKICH W 2. POŁOWIE XVI WIEKU

(Streszczenie)

Autor pokrótce podsumowuje genezę i rozwój talara od jego powstania w Europie Środkowej w latach 20. XVI w. do ogólnego rozszerzenia terminu „talar” na duże srebrne monety w latach 40. XVI w. Wyjaśnia to, dlaczego lokalne określenie srebrnych monet czeskich, bitych od 1520 r. w Jáchymovie (talary), było później używane jako ogólne oznaczenie wszystkich dużych srebrnych monet o wysokiej czystości. Starsze monety typu talarowego z przełomu XV i XVI w. nie mogły mieć znaczącego wpływu na obieg pieniądza, ponieważ były niestabilne metrologicznie. W połowie lat 40. XVI w. srebrne talary były już powszechnym składnikiem obiegu pieniężnego w Europie Środkowej i Północnej. Jednak cesarz Karol V i jego brat Ferdynand I promowali inny model wspólnej waluty cesarskiej. Na mocy cesarskich ordynacji menniczych z 1551 i 1559 r. guldiner cesarski (72-krajcarowy), a później guldiner reński (60-krajcarowy) wprowadzono jako powszechną cesarską srebrną monetę. Te srebrne monety o stałej sile miały zastąpić starsze talary w obiegu. Ich siła nabywcza, wynikająca z zawartości srebra, była zmienna, ponieważ odzwierciedlała zarówno stopniową inflację, jak i zmiany ceny złota w stosunku do srebra. Habsburgowie nie byli jednak w stanie wymusić politycznie centralnie regulowanej ogólnokrajowej waluty. Na dużych obszarach północnej Europy i Skandynawii, gdzie skuteczność cesarskich ordynacji menniczych nie sięgała, talary stały się standardową formą handlu srebrem. Ważnym kamieniem milowym dla dalszego rozwoju talara srebrnego jako powszechnie akceptowanej waluty był rok 1566, kiedy Dania wprowadziła nowy system poboru ceł w Cieśninie Sundajskiej. Miały one być nadal opłacane nie złotymi monetami, lecz srebrnymi talarami. W tym samym czasie cena rynkowa srebra w Hiszpanii gwałtownie spadła, więc na rynku było mnóstwo monet. Cesarstwo rzymsko-niemieckie również zareagowało na ten rozwój, uchwalając w 1566 r. poprawkę do ordynacji menniczej, która określała srebrnego „talara cesarskiego” o ściśle określonych parametrach metrologicznych. Choć krok ten nie ujednolicił zawartości srebra we wszystkich typach monet talarowych, „cesarski talar” (jako precyzyjnie wyrażona ilość srebra) służył jako ekwiwalent wartości przy ustalaniu kursów walutowych na międzynarodowym rynku walutowym. Autor dokumentuje to wynikami badań kursów walut z Hamburga z 1595 r., które zawierają wzajemne przeliczenia siedmiu walut używanych w szerokim obszarze handlowym Morza Północnego i Bałtyckiego (marka lubecka, funt hamburski, funt antwerpski, funt amsterdamski, cesarski gulden reński, lizboński milreis i polski złoty). Pod koniec XVI w. polski pieniądz była główną walutą w handlu międzynarodowym, chociaż Rzeczpospolita Obojga Narodów nie była wówczas wiodącym producentem srebrnych monet talarowych. Specyficzna pozycja ówczesnego pieniądza polskiego wynikała z faktu, że mała polska srebrna moneta trzygroszowa (trojak) została w pełnej wartości przyjęta jako wspólna waluta w Imperium Osmańskim i Rosji. Dla międzynarodowych firm handlowych korzystniej było więc eksportować polskie trojaki do Europy Wschodniej i na Bałkany, co

zwiększyło popyt na monety polskie. W związku z tym srebrne talary jako towar handlowy można było pod koniec XVI w. kupić na rynku europejskim za polskie monety taniej niż za inne waluty używane na obszarze handlowym Morza Bałtyckiego.

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