

TOMASZ MARKIEWICZ

COPPER SHILLINGS OF KING JOHN CASIMIR FROM 1659–1666 IN THE CONTEXT OF HOARDS

ABSTRACT: This article deals with the issue of King John Casimir's copper shillings struck in 1659–1666, emerging from the analysis of the structure of large shilling hoards in relation to the contents of mint reports. It was conducted on the basis of representative, newly-described finds from Idźki-Wykno and Rokitno, as well as previously published deposits, encompassing more than 59,000 coins. On this basis, the global production volume of shillings was estimated along with the share of individual mints. These values prompt a response to the accusations of mintage abuse levelled against Tytus Livius Boratini. However, another premise emerged from the initial analysis of false shillings that helps to date hoards of copper shillings.

ABSTRAKT: Artykuł podejmuje problematykę miedzianych szelągów Jana Kazimierza z lat 1659–1666, która wyłania się z analizy struktury dużych szelężnych skarbów skonfrontowanych z treścią sprawozdań menniczych. Dokonano jej w oparciu o reprezentatywne, nowo opracowane znaleziska – z Idziek-Wykna i Rokitna oraz wcześniej publikowane zespoły, które gromadzą łącznie ponad 59 tys. monet. Na tej podstawie oszacowano globalne rozmiary produkcji szelągów wraz z udziałem w niej poszczególnych mennic. Wartości te skłoniły do ustosunkowania się wobec kierowanych pod adresem Tytusa Liwiusza Boratinię oskarżeń o nadużycia mennicze. Natomiast ze wstępnej analizy fałszywych szelągów wyłoniła się kolejna przesłanka pomocna w datowaniu skarbów tych monet.

KEYWORDS: copper shillings, *boratynki*, coin hoard, John Casimir

SŁOWA KLUCZOWE: szelągi miedziane, boratynki, skarby monet, Jan Kazimierz

The disasters that fell upon the Commonwealth of Poland and Lithuania, including the Chmielnicki's Uprising (1648–1658), the conflict with Russia (1654–1667) and the Swedish invasion (1655–1660), resulted in the economic ruin of the state. Left unpaid for a long time, a rebellious army soon demanded the payment of the overdue millions in soldier's wages. However, the treasury was empty, and, in view of the impoverish-

ment and depopulation of the country, the attempt to collect an appropriate amount from taxes was doomed to fail. Under these circumstances, in the late 1650s, the circles of power became convinced that the Commonwealth of Poland and Lithuania could only be saved from looming catastrophe by the production of undervalued copper shillings, counted in millions of zlotys. The official exchange rate given to them – 90 shillings = 1 *złoty* – made their production the primary source of state income.¹

The author and the most important implementer of this project was an outstanding scientist in the field of mathematical and physical sciences, experienced in monetary matters, distinguished in service to the court and Commonwealth of Poland and Lithuania: Tytus Liviusz Boratini (1617–1681), The Grand Treasurer of the Crown, Jan Kazimierz Krasieński, signed a contract with Boratini for the issuance of 1 million *złoty* in crown shillings on 2 July 1659.² This was soon followed by a contract for the production of 1 million *złoty* in Lithuanian shillings authorised by the administrator of the Lithuanian Treasury, Adam Maciej Sakowicz.³

The place of production for the Polish (Crown) and Lithuanian coins was Boratini's mint at the castle in Ujazdów near Warsaw. The first crown shillings were struck there on 19 November 1659⁴, while Lithuanian ones were most probably struck in May 1660.⁵ It is possible that the mint in Kraków, where some of the contracted amount of crown shillings were struck, also started its activity in 1659. Production ceased in Ujazdów after the completion of the mintage on 2 June 1661, and most probably ceased in Kraków during the same month.⁶ However, it soon turned out that the lease fee paid by Boratini in the amount of 720,000 *złoty* was not enough to meet the financial needs of the state, and above all to pay the overdue soldier's pay.⁷ Unable to find another means of generating the necessary income in a short time, Boratini was again asked to multiply the wealth of the Crown treasury. At the same time, Andrzej Jerzy Horn from Gdańsk offered his services to Lithuania area. Following a one-year break, the activity of the Crown and Lithuanian mints began in 1663 and lasted until 1666, overshadowed the achievements of previous years.⁸

¹ Szelągowski 1902, p. 246; Rybarski 1939, pp. 390–391; Niemirycz 1979, pp. 6–7; Stefańczyk 2010, pp. 67–73; Dziewanowski-Stefańczyk 2020, pp. 5, 77–78.

² Hniłko 1909, pp. 178–179; Hniłko 1921; Wojtulewicz 2006, p. 18; Wolski 2016, pp. 12–13, 18–21; Dziewanowski-Stefańczyk 2020, pp. 52–53.

³ Janušonis 1975, pp. 98–99.

⁴ Rybarski 1939, pp. 392–393; Janušonis 1975, pp. 97–99; Wolski 2016, pp. 24–25.

⁵ This date is given by Cezary Wolski, referring to the royal rescripts cited by Tadeusz Korzon – Wolski 2016, p. 25, footnote 41, pp. 329–330.

⁶ Wolski 2016, pp. 161, 317.

⁷ Janušonis 1975, pp. 98–99.

⁸ More on this subject: Zagórski 1854, p. 55; Szelągowski 1902, p. 258; Rybarski 1939, pp. 395–397; Janušonis 1975, pp. 101–104, 113–115; Dziewanowski-Stefańczyk 2010, pp. 81–86; Wolski 2016, pp. 44, 49–52, 54–58, 61, 162.

According to official accounts and minting reports, between 1659 and 1666 more than 17,477,000 *złoty* in Crown and Lithuanian shillings were struck, which in practice meant the introduction of over 1 billion 570 million 92 thousand copper coins into circulation. This issue is summarised in the table below, in which the mints managed by Andrzej Jerzy Horn are highlighted in italics.⁹

Table 1. The mintage of the Crown and Lithuanian shilling, taking into account the mints and the periods of their operation. Based on Janušonis 1975 and Wolski 2016

Minting period 1659–1661					
Mint	Amount	Number of coins	% of total		
Crown shillings					
Ujazdów (19.11.1659–30.06.1661)	817,708 zł 20 gr	73,593,780	4.69	5.73	
Kraków (1659–09.1661)	182,291 zł 20 gr	16,406,250	1.04		
Lithuanian shillings					
Ujazdów (1660–06.1661)	1,000,000 zł	90,000,000	5.73	11.46	
Minting period 1663–1666					
Crown shillings					
Ujazdów (7.04.1663–7.11.1665)	6,691,882 zł 25 gr 14 denarii	602,269,458	38.36	88.54	
Lithuanian shillings					
Vilnius 4.06.1664–30.12.1666	4,492,719 zł 5 gr	404,344,725	25.75		
Brest 4.12.1665–16.12.1666	2,674,135 zł	240,672,150	15.33		
<i>Oliwa</i> 19.07–10.11.1663	460,391 zł 6 gr	41,435,208	2.64		
<i>Kaunas</i> 17.10.1665–15.01.1667	448,648 zł 6 gr 1 den.	40,378,338	2.57		
<i>Malbork</i> 5.03.1666–8.10.1666	677,700 zł 14 gr 11 den.	60,993,042	3.88		
In total	17,445,477 zł 7 gr 8 den.	1,570,092,951	100.00		

⁹ During the preparation of the table, I used the list prepared by Grzegorz Śnieżko in his unpublished master's thesis, for which I would like to sincerely thank the Author – Śnieżko 2011, p. 14. A slight difference in between the issued amounts in the work of G. Śnieżko and this statement requires a brief explanation. It results from the adjustment of the Ujazdów mint's mintage from 1663–1666 (1,000 *złoty* in plus), resulting from the aggregation of the amounts of contact *ex Senatus Consulto* from 13 X 1664 quoted by R. Rybarski (it should be 2,132,618 *złoty* 24 groschen 13.5 den. [denarii]) – Rybarski 1939, p. 526, Tabl. V; See. Wolski 2016, p. 162; In turn, I considered the value given in two of the three reports published by S. Janušonis as more probable – Janušonis 1975, pp. 109–111. However, these are minor changes, which do not affect the analysis.

According to official data, 44.1% of output was in Crown coins, while 55.9% was in Lithuanian coins. Coins from 1663–1666 (88.54%) clearly predominate over the coins from 1659–1661 (11.46%). At the same time, it is not difficult to notice that the output of Horn's mints – 9.1% – is definitely lower than Boratini's workshops' output – 90.9%.

The introduction into circulation of hundreds of millions of copper shillings and undervalued silver *złoty* (1663–1667), with a real value of 12 instead of 30 groschen, together with a concurrently reduced content of silver in low and medium denominations by about 30%, resulted in profound transformations in the structure of the currency.¹⁰ Hoards hidden in the 1660s and on the verge of the 1670s illustrate the disappearance of Sigismund III Vasa's money (1587–1632).¹¹ The percentage of coins of this ruler usually reaches several or a dozen percent.¹² However, the deposits of this period, in which the coins of the first Vasa predominate, were most likely shaped by the thesaurisation of money of a recognized specie standard by the population.¹³ After 1670, coins of this ruler practically dropped out of circulation, and the role of the Polish silver coin was overtaken by the money of John Casimir and John III Sobieski (1674–1696) until the end of the century. Dictated by economic rules, and contrary to the intentions of the legislators, the division into bad and good money created two parallel and separate trends of circulation for copper and silver,¹⁴ the remnants of which are numerous but essentially specie-homogeneous hoards of silver or copper coins.

¹⁰ Mikołajczyk 1980, pp. 32–35.

¹¹ Mikołajczyk 1975, pp. 231, 234–235.

¹² Pomeranian Voivodeship: Gdańsk IV (after 1668) – 8%; Kujawsko-Pomorskie Voivodeship: Radziejów (after 1671) – 5.9%; Wielkopolskie Voivodeship: Kalisz – surroundings (after 1668) – 1.4%; Rybka (after 1662) – 1.6%; Opolskie Voivodeship: Kowale (after 1663) – 12.1%; Łódzkie Voivodeship: Masłowice (after 1663) – 5.3%; Świętokrzyskie Voivodeship: Kielce II (after 1666) – 1%; Podkarpackie Voivodeship: Tarnów I (after 1663) – 4.7%; Krzemienica (after 1667) – 7%; Zbydniów (after 1672) – 0.7%; Lubelskie Voivodeship: Górka Lubartowska (after 1667) – 2.1%; Niebrzegów (after 1660) – 14.5%; Czemierniki II (after 1661) – 18.7%; Sitnik (after 1666) – 9%; Mazowieckie Voivodeship: Węgrów (after 1666 or half of the 18th century) – 5.7%; Jadów (after 1660) – 6.3%; Białe Figle (after 1666) – 5.1%; Kawęczyn (after 1666?) – 21.5%; Ślubowo (after 1668) – 4.3%; Podlaskie Voivodeship: Sejny (after 1666?) – 3.7%. The calculations were based on: Męcłewska, Mikołajczyk 1991.

¹³ A significant percentage of Sigmund III Vasa's coins is recorded, among others, in several hoards stored in the National Museum in Lublin: Zaliszcze (after 1661) – 75%, Puchaczów (after 1662) – 76.4% and Milejów (after 1664) – 88.2%.

¹⁴ Żabiński 1983, pp. 57–58.

THE SIGNIFICANCE OF FINDS

Previous analyses of the structure of finds of John Casimir's copper shillings in the light of contemporary reports and mint accounts have drawn some conclusions, and identified new problems, relating to these coins.¹⁵ In this context, insights from newly-recorded representative hoards are of particular importance: the Idźki-Wykno find,¹⁶ and two recently published finds from Rokitno.¹⁷ The significance of these hoards reflects the progress of knowledge since the publication of finds from Przasnysz¹⁸ and Terespol,¹⁹ which means that we are now able to more precisely explore the meaning of the finds in relation to contemporary reports and mint accounts. Establishing a relationship between these sources forms the basis for a broader attempt to estimate the scale of shilling production, both globally and in relation to individual mints and years. It also makes it possible to form an opinion on the malpractices that Tytus Liviusz Boratini was alleged to have committed in the mints. In addition, analysis of false shillings from these finds offers new insights into the dating of hoards.

Before comparing the official output of shilling mints with hoard evidence, it is necessary to stress that the following calculations are based only on coins deemed authentic. Shillings from the hoards Rokitno I and Rokitno II, with illegible mint markings or dates, were identified on the basis of the characteristic features of the dies. This principle was applied, for example, to the products from the Vilnius mint, whose date (1666) was indicated on the basis of a horizontally located shield with a double cross in *Pogoń*²⁰. It should be noted that the results were estimated by considering shillings with unidentified mints and/or issue dates, which were divided according to the calculated probability principle,²¹ since relying solely on fully recognized copies would lead to misrepresentations. The legitimacy of this assumption is demonstrated by the example of the Crown shillings issued in 1659–1665. There were 223 specimens of these coins in Rokitno I and 530 in Rokitno II, the exclusion of which would result in a significant underestimation of the Ujazdów mint – a particular problem, since problems of chronological identification, at least in relation to the minting periods 1660–1661 and 1663–1666, do

¹⁵ Mikołajczyk 1979; Mikołajczyk 1983; Sinchuk 1998; Sinchuk 2010.

¹⁶ Śnieżko 2011.

¹⁷ Markiewicz 2020.

¹⁸ Niemiryecz 1973a.

¹⁹ Lewczuk 1983.

²⁰ Coat of arms of Lithuania.

²¹ A similar principle was also adopted by Ivan Sinchuk (1990, p. 62).

not concern the less legible Lithuanian shillings. On the basis of these assumptions, calculations of already published hoards were carried out.²²

Table 2. Authentic Crown and Lithuanian shillings from 1659–1666 in hoards*

Hoard/Study	Crown shillings		Lithuanian shillings	
	Number of copies	%	Number of copies	%
Idźki-Wykno	2,322	41.0	3,332	59.0
Rokitno I	1,487	43.4	1,936	56.6
Rokitno II	4,014	41.9	5,553	58.1
Przasnysz	6,757	42.6	9,128	57.4
Terespol	3,152	42.1	4,330	57.9
Sinchuk 2010	7,681	44.0	9,774	56.0
In total	25,413	42.7	34,053	57.3

* Author's own calculations based on hoards: Idźki-Wykno – Śnieżko 2011; Przasnysz – Niemiryż 1973a; Terespol – Lewczuk 1983; Sinchuk 2010a – a summarised list of 17 hoards, from which we omit the hoard from Przasnysz (Niemiryż 1973a), estimated separately. I. Sinchuk took the statistical material about the 12 hoards from publications in *Wiadomości Numizmatyczno-Archeologiczne* and *Wiadomości Numizmatyczne*, and the calculations of the five remaining finds from unpublished studies by Zenon Duksa (2) and own research (3). Significant deviations in the percentage of Crown and Lithuanian coins are sometimes noted in the statements. This applies primarily to several seemingly representative deposits published before World War II. The table prepared by I. Sinchuk contains some inaccuracies that do not affect the overall summary. They concern: the hoard from Przasnysz (no. 11), where 345 Crown shillings from the 1659–1661 are mentioned, when there should be 945 of them; the unpublished find of Zenon Duksa from the town of “Аланчай” (no. 14) – there are 390 shillings from the 1659–1661, and there should be 30. On the other hand, in the summary of hoards nos 11, 12, 14, 15, 17, the number of crown shillings from 1659–1661 and 1664 is inconsistent – in the first case 60 *in plus*, in the second 60 *in minus*, which was repeated in the summary list of 17 finds.

Comparing the percentage of shillings in individual hoards, Lithuanian coins seem to predominate over the Crown coins, within the range 56.0:44.0–59.0:41.0%. In the total collection of 59,466 shillings it is 57.3:42.7%, which leads to the conclusion that the finds record more Lithuanian coins than written sources provide – 55.9:44.1%. This observation cannot be associated with the time of deposition of hoards, as it applies to both 17th-century sets and those hidden in the 18th century. This issue is also evident in the context of the proportion of shillings from 1659–1661 and 1663–1666, which are summarised in Table 3.

²² In turn, Ivan Sinchuk (2010a) in the tabular list of 17 hoards included only coins with a specific minting date. The adoption of this principle – although not deprived of justification in the study by I. Sinchuk – sometimes results in outcome not falling within the limits of statistical error. This applies, for example, to coins from the mint in Oliwa in the hoard from Przasnysz, which constitute 2.84% of the list of I. Sinchuk – 27 to 36% more than in other representative sets (2.23–2.49%; see Table 4).], than in other representative sets – 2.23–2.49% (see Table 4). According to the calculation method adopted here, shillings from mint in Oliwa in the hoard from Przasnysz constitute 2.46%.

Table 3. Percentages of authentic Crown and Lithuanian shillings from 1659–1661 and 1663–1666 according to mint reports (A) and hoards: Idźki–Wykno (I-W), Rokitno I (RI), Rokitno II (RII), Przasnysz (P), Terespol (T) and studies by Ivan Sinchuk (2010a)*

Shillings	A	I-W	RI	RII	P	T	Sinchuk	In total**	
	%								
1659–1661									
Crown	5.73	6.68 (+0.95) ***	7.39 (+1.66)	6.39 (+0.66)	7.00 (+1.27)	6.17 (+0.44)	7.51 (+1.78)	6.94 (+1.21)	14.14
Lithuanian	5.73	6.96 (+1.23)	6.98 (+1.25)	6.69 (+0.96)	7.42 (+1.69)	6.95 (+1.22)	7.51 (+1.78)	7.20 (+1.47)	
1663–1666									
Crown	38.36	34.36 (-4.00)	36.05 (-2.31)	35.57 (-2.79)	35.54 (-2.82)	35.95 (-2.41)	36.50 (-1.86)	35.80 (-2.56)	85.86
Lithuanian	50.18	51.99 (+1.81)	49.58 (-0.6)	51.35 (+1.17)	50.05 (-0.13)	50.92 (+0.74)	48.49 (-1.69)	50.06 (-0.12)	

* See comment to the Table 1

** Based on 59,466 schillings

*** The difference between the percentage of coins in the find and the value from the reports and mint accounts

Written sources show that 11.46% of the total copper output left the mints in 1659–1661, while 86.54% were produced in 1663–1666. Table 3 shows that coins from 1659–1661 have a similar surplus in hoards in relation to the reporting indicators, where they constitute from 13.07 to 15.12% of coins. In turn, in the entire analysed collection, this relation is 14.14:85.86%. We can conclude, therefore, that on average the hoards contain 2.68% more coins from 1659–1661 than expected given contemporary reports. This surplus consists of 1.21% of Crown shillings (Fig. 1) and 1.47% of Lithuanian shillings (Fig. 2). In turn, for 1663–1666, we find an appropriate deficit of shillings, which consists primarily of Crown coins (Fig. 3) – -2.56%. This suggests that the surplus of coins with *Pogoń* in the hoards reflects their proportionally increased production, both with the dies from 1660–1661 and in the next period.²³ The over-representation of shillings from 1659–1661 may erroneously suggest that the practice of exceeding the reporting mintage took place mainly in the first minting period. Relationship between the amount of money put into circulation and its representation in hoards allows one to conclude that

²³ Ivan Sinchuk (2010a, pp. 175–176), in turn, formulated the assumption that the over-representation of shillings in the finds, struck until 1661, results from the secondary use of their dies after the launch of the Crown mint in Ujazdów in 1663 and the Lithuanian mint in Vilnius in 1664. While this assumption seems possible in case of Crown coins, authenticated with the same crest of the treasurer, it is more difficult to accept it in relation to the shilling with *Pogoń*, as I. Sinchuk pointed out. According to I. Sinchuk, verification of this thesis in case of Crown shillings can be expected after the identification of hoards hidden before 1663. We believe that the possible use of

there was a proportionally larger issue of coins from Ujazdów in 1659–1661 than suggested by written sources.

On the other hand, the sum of the Crown shillings from the Kraków mint is consistent with the accounting balance, but only on the doubtful assumption that other mints did not exceed the reporting amounts. The relatively evenly distributed malpractices in the statistical summary are balanced, showing apparent compliance with the mint bookkeeping. The summed-up surplus of the Crown and Lithuanian shillings from the Ujazdów mint (1659–1661), around 2.68%, does not therefore directly determine the level of overproduction.

Table 4. Percentage of John Casimir's copper shillings in the context of written sources (A) and in hoards: Idzki-Wykno (I-W), Rokitno I (RI) and Rokitno II (RII), Przasnysz (P), Terespol (T)

Mint	A	I-W	RI	RII	P	T		
	%							
1659–1661								
Crown shillings								
Ujazdów 1659–1661	4.69	6.68	6.22 (+1.54)	7.39	5.36 (+0.68)	6.39	7.00	6.17
Kraków 1659–1661	1.04	(+0.95)*	1.17 (+0.13)	(+1.67)	1.02 (-0.02)	(+0.66)	(+1.27)	(+0.44)
Lithuanian shillings								
Ujazdów 1660–1661	5.73	6.96 (+1.23)	6.98 (+1.25)	6.69 (+0.96)	7.42 (+1.69)	6.95 (+1.22)		
1663–1666								
Crown shillings								
Ujazdów 1663–1665	38.36	34.36 (-4.00)	36.05 (-2.31)	35.57 (-2.79)	35.54 (-2.82)	35.95 (-2.41)		
Lithuanian shillings								
<i>Oliwa</i> 1663**	2.64	2.23 (-0.41)	2.28 (-0.36)	2.49 (-0.15)	2.46 (-0.18)	2.09 (-0.55)		
Vilnius 1664–1666	25.75	31.04 (+5.29)	29.39 (+3.63)	30.27 (+4.52)	40.01 (-1.07)	48.84 (+1.31)		
Brest 1665– 1666	15.33	12.55 (-2.77)	12.24 (-3.09)	12.43 (-2.90)				
<i>Kaunas</i> 1665–1666	2.57	5.69 (+3.12)	5.32 (+2.75)	5.79 (+3.22)	7.21 (+4.64)			
<i>Malbork</i> 1666	3.88	0.48 (-3.40)	0.35 (-3.53)	0.38 (-3.50)	0.37 (-3.51)			

* Difference in the percentage of coins in the find and the value resulting from the reports and mint books

** In italics – mints led by Andrzej Jerzy Horn

old Crown dies from 1659–1661 does not explain the scale of the disproportion between the content of mint reports and the hoards.

In addition to the already stated surplus of coins from 1659–1661 and the deficit of Crown shillings from 1663–1665, Table 4 provides information on the structure of Lithuanian shillings. In case of mints managed by Tytus Liwiusz Boratini, we can observe the over-representation of coins of the Vilnius mint in hoards (Fig. 4) – 3.63–5.29%, as well as an under-representation of coins from the Brest mint (Fig. 5) – -2.77–3.09%.²⁴ It is worth noting that the surplus of coins from Vilnius are most pronounced in 1666, and clearly correlate with the deficiencies in Brest (see Tab. 5). This phenomenon was already noticed by Ivan Sinchuk, interpreting it as evidence of the use of Vilnius dies at the Brest mint. It is worth to remember that Sinchuk was the first researcher to assign the TLB subtype shillings with a small HKPL monogram to the Brest mint, stating that they account for 2/3 to 3/4 of its entire production.²⁵ The use of Vilnius dies in Brest was undoubtedly the result of the movement of the staff between Boratini's mints. These connections are indicated by the hybrid Vilnius-Brest minting, underlined by Cezary Wolski, and the reproduction at Brest of shilling designs known from the Ujazdów mint from 1660–1661 – especially the reverses. This was connected with the migration of part of the staff from the closed Ujazdów mint (7.11.1665) to the mint opened at Brest (4.12.1665).²⁶ The use in Brest of dies identical to the mint in Vilnius took place primarily in 1666. This is clearly demonstrated by the discrepancies, which are stated in Table 5, between the official mintage and the representation of coins in the last year of activity of these mints.

A similar correlation occurs between the shillings of the GFH–Deer subtype, attributed to the Kaunas mint, and GFH–HKPL, attributed to Malbork; the former shows a surplus – 2.75–4.64%, and the latter a deficit – -3.40–3.53%. Following Ivan Sinchuk, this correlation can be interpreted as evidence of the use of dies with GFH–Deer markings in Kaunas and Malbork.²⁷ Based on Table 5, it should be assumed that about 40% of these coins with the date of 1666 were created in Kaunas, and the remaining 60% in Malbork. Thus, they constitute about 90% of the total production of the latter mint. On the other hand, the over-representation in the finds of the GFH–Deer subtype with the date of 1665 may, in part, result from

²⁴ For the collection of shillings in hoards: Idźki-Wykno, Rokitno I and Rokitno II (37,294 copies): Vilnius Mint – 4.59% *in plus*, Brest Mint – 2.90% *in minus*. The nature of the studies of hoards from Przasnysz (Niemirycz 1973a) and Terespol (Lewczuk 1983) does not allow for this observation. Moreover, in the study of the find from Terespol, the Crown and Lithuanian shillings are ranked only according to the year of striking, so Lithuanian coins from 1665–1666 cannot be attributed to the mints.

²⁵ Sinchuk 1987b, p. 76; Sinchuk 1998, pp. 156–157. In turn, in Polish literature, Grzegorz Śnieżko, already on the basis of an analogy with the shillings from the Ujazdów mint (1660–1661) – Śnieżko 2011, p. 27.

²⁶ Wolski 2016, pp. 483–484.

²⁷ Sinchuk 1998, p. 157; Śnieżko 2011, p. 29; Niziołek 2016, p. 13.

using dies from the previous year in Kaunas and Malbork in 1666.²⁸ In the case of the GFH-HKPL subtype shillings dated 1666, it seems likely their relatively low mintage – about 6,930,000–7,315,000 copies – is the result of the production at the Malbork mint only.²⁹ This is suggested by the date on the coins, which coincides with the date of opening the mint in Malbork. We can assume that they were struck at the beginning of the operation of this mint, while it was still striving to distinguish its products from the Kaunas shillings. In summary: the GFH-Deer type with the date of 1665 can be attributed to Kaunas (Fig. 6), the GFH-Deer type with the date of 1666 to Kaunas and Malbork (Fig. 7), and the 1666 shillings with GFH-HKPL marking to Malbork (Fig. 8).

In turn, the clear surplus of coins from the Ujazdów mint dated 1659–1661 in the hoards (see Tab. 4) allows us to assume that the amount of the contract was significantly exceeded. This seems all the likely because of the deficit of the Crown shillings dated 1663–1665, as well as estimates of summed-up mints in Kaunas and Malbork and separately in Oliwa.

The issue of the credibility of mint reports is studied in Table 5, which compares the percentage of coins in hoards, from individual mints and years, with estimates taken from written sources. The ratio of these values, although not a precise measure, indicates the relationship between the declared and the actual mint output.³⁰

Some indications in Table 5 raise questions and require verification in hoards. This applies to Lithuanian shillings from the Kaunas mint dated 1665 in the Przasnysz hoard, as well as several estimates from the Terespol hoard: Crown shillings dated 1663 and 1664, Lithuanian shillings from the Oliwa mint dated 1663 (Fig. 9), and coins from the Vilnius mint dated 1664.

If the values in Table 5 reflected the actual proportions between the output of the shilling mints and the accounts and reports of their operations, it seems likely that in 1659–1661 Tytus Liwiusz Boratini had exceeded the contract for the Crown shillings by about 21% and for the Lithuanian shillings by 26%. The

²⁸ The problem is discussed by Ivan Sinchuk, although only in the context of the Kaunas mint – Sinchuk 1998, p. 157.

²⁹ Calculated on the basis of the percentage (0.385%) of GFH-HKPL shillings in the collection of 34,529 shillings in the hoards: Idźki-Wykno, Rokitno I, Rokitno II, Przasnysz and the estimate of global mintage, presented later in the article. Ivan Sinchuk admitted the possibility that the GFH-HKPL coins could be: a) the result of joint production of Kaunas and Malbork, b) the creation of one of the mentioned mints, c) counterfeiting – Sinchuk 1998, p. 158; Cezary Wolski, in turn, drew attention to the stylistic analogies between the GFH-Deer and GFH-HKPL shillings from 1666, which are “a visible confirmation of the travels of the engravers of dies and mintmasters’s between mints belonging to the same manager”. Wolski 2016, p. 84.

³⁰ We also provide our own calculations of the material collected by Ivan Sinchuk (Sinchuk 1998; Sinchuk 2010a). Crown shillings: 1659–1661 – 7.51%; 1663–1665 – 36.50%. Lithuanian shillings: 1660–1661 – 7.51%; Oliwa – 2.25%; Vilnius and Brest – 43.10%; Kaunas and Malbork – 3.15% [sic].

surplus in the Vilnius mint in 1664–1665,³¹ however, would amount to 4%, and in the combined Vilnius and Brest mints in 1666 it would reach 3%.³² In turn, the deficit in relation to the documented amounts is -12% in the case of Lithuanian shillings from the Oliwa mint, -7% in the case of Crown shillings from the Ujazdów mint (1663–1665), and -6% in the case of Lithuanian shillings from the combined Kaunas and Malbork mints.³³

There is no doubt, however, that the deficits of coins from Ujazdów, Oliwa, Kaunas and Malbork are only apparent, and are in fact an unbalanced reflection of significant excesses in output at the aforementioned mints. In other words, the number of shillings from the mints with the lowest indicators brings us closer to the point where the hoard evidence is consistent with mint bookkeeping. Such a possibility should be considered in the context of Lithuanian shillings from the Oliwa mint and the Crown shillings from Ujazdów from 1663–1665.³⁴

Shillings from Oliwa constitute 2.36% of coins in the hoards from Idźki-Wykno, Rokitno and Przasnysz, as well as in the hoards analysed by Ivan Sinchuk,³⁵ corresponding with 89.39% of the total indicated in contemporary reports (2.64%). The volume of coins put into circulation from this mint was influenced by the four-month period of its operation and the likely legitimacy of the objections levelled against Horn, which indicated his tardiness and inability to intensify production.³⁶ Given that the total number of 41,435,208 coins presented in the report corresponds to 2.36% of the coins put into circulation, we can estimate that the entire mintage

³¹ From the activity of the Vilnius Mint we omit the indications for the year 1666, when in Brest mint also used the same dies as in Vilnius. This practice in 1665 in Brest is not supported by data in Table 5.

³² On the basis of 18,647 shillings from the hoards: Idźki-Wykno, Rokitno I, Rokitno II and the already cited studies by I. Sinchuk.

³³ Own calculations based on the studies on the aforementioned hoards and the works by I. Sinchuk (Sinchuk 1998; Sinchuk 2010a), carried out on a sample of 34,529 to 59,566 shillings – depending on the substantive usefulness of the studies.

³⁴ We exclude the mints in Kaunas and Malbork from the considerations, because in our opinion the vast majority of Malbork's shillings were struck with the same dies as the coins in Kaunas. For this reason, we do not take into account the Brest mint, in which we assume the use of dies characteristic for the Vilnius factory in 1666.

³⁵ Sinchuk 1998; Sinchuk 2010a.

³⁶ The mint contract concluded on 23 May 1663 obliged Andrzej Jerzy Horn to struck, within two years, coins for the amount of 5,818,754 *złoty* 21 groschen. It was a huge challenge to generate 2 million *złoty* in income during the first six months of operation, necessary to settle the first instalment of the outstanding military debt. Horn did not meet these expectations, and the inspection of the mint carried out by the administrator of the Lithuanian treasury, the Vilnius bishop, Jerzy Białozor, pointed out his tardiness. The end of the mint's functioning was brought by accusations directed at Horn by Crown officials, especially the treasurer, Jan Kazimierz Krasieński. On 10 November 1663, the mint was closed, and its organiser was sentenced to 2 years in prison (Janušonis 1975, pp. 101–102; Wolski 2016, pp. 49–50).

Table 5. Percentage of copper shillings from 1659–1666 by mints and years in the light of written sources (A) and finds: Idźki-Wytkno (I-W), Rokitno I (RI) and Rokitno II (RII), Przasnysz (P), Terespol (T)

Mint	Year	A	I-W	RI	RII	P	T
		%					
1659–1661							
Crown shillings							
Ujazdów	1659	0.09	0.14	0.23 (263)	0.07 (82)	0.09	0.08
	1660	2.48	3.48	2.95 (119)	2.36 (95)	3.36	2.11
		1661	2.12	3.06	3.04 (143)		
	1659- 1661		1.04	**	1.17 (112)	1.02 (98)	**
Lithuanian shillings							
Ujazdów	1660	5.73	0.78	0.82	0.85	0.96	0.99
	1661		6.19	6.96 (121)	6.98 (122)	6.69 (117)	7.42 (129)
1663–1666							
Crown shillings							
Ujazdów	1663	9.12	8.03 (88)	8.21 (90)	9.14 (100)	7.78 (85)	5.33 (58)
	1664	15.23	15.15 (99)	16.13 (106)	36.05 (94)	17.42 (114)	19.07 (125)
		1665	14.01	11.19 (80)	11.71 (84)	11.71 (84)	10.34 (74)

Mint	Year	A	I-W	RI	RII	P	T
Lithuanian shillings							
Oliwa	1663	2.64	2.23 (84)	2.28 (86)	2.49 (94)	2.46 (94)	2.09 (79)
	1664	4.79	6.63 (138)	5.35 (112)	6.71 (140)	4.95 (103)	9.36 (195)
Vilnius	1665	11.83	11.03 (93)	11.80 (100)	10.56 (89)		
	1666	9.13	13.38 (147)	12.24 (134)	13.00 (142)	40.01 (97)	48.84 (103)
Brest	1665	1.38	1.11 (80)	1.26 (91)	1.43 (104)	35.06 (97)	39.48 (92)
	1666	13.95	11.44 (82)	10.98 (79)	11.00 (79)		
Kaunas	1665	0.47	1.56 (332)	1.14 (242)	1.61 (342)	3.31 (704)	
	1666	2.10	4.14 (197)	4.18 (199)	4.18 (199)	7.58 (117)	
Malbork	1666	3.89	0.48 (12)	0.35 (9)	0.38 (10)	0.37 (10)	

* Percentage of coins in hoards in relation to the value resulting from reports and mint accounts

** Included in the mint in Ujazdów

of copper shillings in 1659–1666 amounted to approximately 1,755,729,000 pieces.³⁷ In order to assess the accuracy of this calculation, it is necessary to prove that there were not significantly more shillings struck in Oliwa than were disclosed in contemporary reports.

However, the previously mentioned underestimation of the Crown shillings from 1663–1665 may be the effect of the lesson that Tytus Liwiusz Boratini received in the course of the court battle in 1661–1662, during which he was cleared of all the charges of embezzlement. However, he could not erase the bad fame that adhered to both him and the copper coinage. Boratini secured himself against repeated accusations with a provision in the contract of January 1663, which referred to the appointment of a controller in the Crown Mint responsible for supervision and preventing abuse, in the person of Krzysztof Michał Rupniowski – the Kraków tribune and the deputy speaker of the Lviv Mint Committee, who was obliged to submit an accounting report on the mint operation to the Sejm.³⁸

In the collection analysed by us, the Crown shillings from the Ujazdów mint from 1663–1665 constitute 35.40%, which corresponds to 92.28% of the value resulting from the reports (38.36%). This distribution for individual years is illustrated in Table 6.

Table 6. Percentage of Crown shillings from the Ujazdów mint from 1663–1665 in the reports and in the sets: Idźki-Wykno, Rokitno I, Rokitno II, Przasnysz

Date	Percentage of Crown shillings from 1663–1665	
	according to the reports	in hoards
1663	9.12	8.24 (90.35)*
1664	15.23	16.17 (106.16)
1665	14.01	10.99 (78.46)

* The ratio of the percentage of shillings in the analysed set and in the reports

We estimate the total mintage of copper shillings based on the indications of Crown coins from 1663 at almost 1,738,000,000 pieces. In turn, the inclusion of coins from 1665 shows that it could reach the level of 2,001,000,000.³⁹ This value indicates the upper limit of the possible mintage. At the same time, we can

³⁷ This value, taking into account the underestimated indication from Terespol, would be 2.32%, and the calculation of the mintage would amount to over 1,785,000,000 copies.

³⁸ Szelągowski 1902, pp. 53–55; Mikołajczyk 1979, p. 66; Wolski 2016, pp. 32, 43–44.

³⁹ According to the calculation: 1663 – $100 \times (143,191,500) / 8.24$; 1665 – $100 \times (219,915,628) / 10.99$. However, also taking into account the study by Ivan Sinchuk – Sinchuk 2010a (excluding the hoard from Przasnysz), the mintage calculated according to the indication of 1663 would amount to almost 1,755,000,000 and according to 1665 to 2,036,000,000.

admit the possibility, already expressed by Ivan Sinchuk, that some coins struck in 1665 were made using dies dated to the previous year.⁴⁰ At the same time, taking into account the percentage of shillings from the Oliwa mint and from the mint in Ujazdów from 1663, we can estimate that the entire production from 1659–1666 amounted from 1,800,000,000 to 1,900,000,000 pieces, leaning more towards the latter, higher value. Therefore, it would be 100,000,000 higher than the one calculated by Andrzej Mikołajczyk.⁴¹ We take this spread as the basis for an estimate of the output of mints producing the Crown and Lithuanian shillings (Table 7).

Table 7. The list of booked mintage with estimated number of coins struck in mints, based on hoards: Idźki-Wykno, Rokitno I, Rokitno II, Przasnysz

Mint	Mintage according to reports		Estimated actual mintage		Potential surplus of the mintage		
	number of coins	%	number of coins	%	number of coins	Amount of <i>złoty</i> *	%
1659–1661							
Crown shillings							
Ujazdów, Kraków	90,000,030	5.73	122,760,000– 129,580,000	6.82	32,759,970– 39,579,970	364,000 439,777	36.40– 43.98
Lithuanian shillings							
Ujazdów	90,000,000	5.73	127,800,000– 134,900,000	7.10	37,800,000– 44,900,000	420,000– 498,889	42.00– 49.89
1663–1666							
Crown shillings							
Ujazdów	602,269,458	38.36	637,200,000– 672,600,000	35.40	34,930,542– 70,330,542	388,117– 781,450	5.80– 11.68
Lithuanian shillings							
Oliwa	41,435,208	2.64	43,380,000– 45,790,000	2.41	1,944,792– 4,354,792	21,609– 48,387	4.69– 10.51
Vilnius, Brest	645,016,875	41.08	747,000,000– 788,500,000	41.50	101,983,125– 143,483,125	1,133,146– 1,594,257	15.81– 22.24
Kaunas, Malbork	101,371,380	6.46	121,860,000– 128,630,000	6.77	20,488,620– 27,258,620	227,651– 302,874	20.21– 26.89
In total	1,570,092,951	100	1,800,000,000– 1,900,000,000	100	229,907,049– 329,907,049	2,554,523– 3,665,634	-----

* Rounded to 1 *złoty*

⁴⁰ Sinchuk 2010a, p. 174.

⁴¹ Mikołajczyk 1979, pp. 66–67; Mikołajczyk 1983, p. 106.

As a result, in 1659–1666, about 230–330 million shillings above the norm were struck. The vast majority of these coins left the mints in 1663–1666 (69.31–74.39%). This sum is mainly formed by Lithuanian coins from the Vilnius and Brest mints (43.49–44.36%) and the Crown coins from the Ujazdów mint (15.19–21.32%), and to a much lesser extent by Lithuanian coins from Kaunas and Malbork (8.26–8.91%) and Oliwa (0.85–1.32%). The remaining part was minted in Ujazdów in 1659–1661 (25.61–30.69%), using Crown dies (12.00–14.25%) and Lithuanian dies (13.61–16.44%).

The calculations, therefore, show that the actual output of Crown and Lithuanian shillings from 1659–1666 ranged from 20,000,000 to 21,111,000 *złoty*, and was higher than the declared amount by 2,554,523–3,665,634 *złoty*.

The output of Crown and Lithuanian shilling mints was estimated by Andrzej Mikołajczyk more than 40 years ago. He based his estimations on a representative number of 30,229 legible coins, derived from individual finds and hoards – described in publications in a way that allows their use in statistical research. His findings have been accepted and frequently appear in the literature on the subject. For this reason, they merit attention and discussion. Mikołajczyk stated that 54.15% of his sample consisted of Lithuanian shillings, while 45.85% were Crown shillings. He also noted that 44.72% of all coins were made with Lithuanian dies from 1663–1666. Drawing on S. Janušonis's calculations for the Lithuanian coins dated 1663–1666, Mikołajczyk concluded that the amount of 8,942,662 *złoty* constitutes 44.72% of the total output. On the basis of this calculation, 1% corresponded to approximately 200,000 *złoty*. As a result, the percentage of 8.2% of Crown shillings and 9.4% of Lithuanian shillings from the years 1659–1661 in the analysed sample determined their mintage – 1,640,000 and 1,880,000 *złoty* respectively. This meant exceeding the limit in the first minting period by slightly more than 1,500,000 *złoty* (75%), and the introduction of an additional 137,000,000 coins into circulation. On the other hand, the mintage of Crown shillings from 1663–1665 (36.096%) was to reach 7,219,200 *złoty*, resulting in a surplus of 527,000 *złoty* (7.9%). On this basis, the total production of the Crown and Lithuanian mints was estimated at about 20,000,000 *złoty*, that is 1,800,000,000 coins.⁴²

These calculations raise concerns. They result from an incorrectly summed amount of output of the Lithuanian mints from 1663–1666, which in fact is higher by over 189,000 *złoty* and amounts to 8,753,594 *złoty*, and from the assumption that this sum constitutes 44.72% of the total mintage. This would be an appropriate measure if the reporting values corresponded to the actual situation, or the exceedances were proportional. No less doubts arise from the statistical data provided by Andrzej Mikołajczyk, concerning the proportion of Crown and Lithuanian shillings in chronological sequence, which are fundamentally different from our

⁴² Mikołajczyk 1979; Mikołajczyk 1983.

estimates. The credibility of the latter is supported by a considerable statistical sample – nearly 60,000 coins – and relatively small deviations in value.

Table 8. Comparison of calculations by Andrzej Mikołajczyk with the content of hoards

Shillings	Mikołajczyk	I-W	RI	RII	P	T	Sinchuk *
	%						
Crown	45.9 (45.0)**	41.0	43.4	41.9	42.6	42.1	44.0
Lithuanian	54.1 (55.0)	59.0	56.6	58.1	57.4	57.9	56.0
Crown 1659–1661	8.2 (8.3)	6.7	7.4	6.4	7.0	6.2	7.5
Lithuanian 1660–1661	9.4 (9.6)	7.0	7.0	6.7	7.4	7.0	7.5
Crown 1663–1665	37.6 (36.7)	34.4	36.1	35.6	35.5	36.0	36.5
Lithuanian 1663–1666	44.7 (45.3)	52.0	49.6	51.4	50.1	50.9	48.5

* Excluding the isolated hoard from Przasnysz

** Author's own calculations on the basis of the study by A. Mikołajczyk – excluding the Crown shillings dated 1662, 1666 and the Crown and Lithuanian shillings dated 1667 and 1668

The greatest consistencies with A. Mikołajczyk's calculations occur in the representation of Crown shillings from 1663–1665, while deviations in other categories are unlikely to be related to the numismatic material.⁴³

The excess output of Boratini's mints in 1659–1661 were therefore lower (39.20–46.93%) than previously thought (75%). This does not change the fact that, in the light of the material analysed, the court's decision to acquit Boratini were not entirely just. Abuse is unlikely to occur without the knowledge of such an efficient administrator and entrepreneur, and even if that held true, we must remember that Boratini was responsible for fulfilling the terms of the contracts.⁴⁴

So far, these abuses have been considered only in the context of Boratini's activity in the first minting period, for which he was officially accused by 24 members of the Chamber of Deputies. This reflects the assumption, reinforced by the results of A. Mikołajczyk, that most of the overproduction of shillings occurred in 1659–1661. The excesses in the later period were expected to be insignificant, especially in terms of output (7.8%). This picture needs correcting. We need to also note that abuses took

⁴³ Especially that the list of A. Mikołajczyk also includes the hoard from Przasnysz.

⁴⁴ In the context of political and economic reality of the Polish-Lithuanian Commonwealth, this issue is discussed by Bartosz Dziewanowski-Stefańczyk – Stefańczyk 2010, pp. 89–95; Dziewanowski-Stefańczyk 2020, pp. 86–105.

place in Andrzej Jerzy Horn's mints, where about 10% (9.11–10.23%) of excessively minted shillings were produced. This value, corresponding to the share of Horn's mints in global production (9.18%), is more-or-less proportional to the excess production recorded at Boratini's mints.

A separate issue is the legitimacy of the accusations made against Boratini for non-compliance with the mint rate, which required minting 300 copper shillings from the Kraków pound (403.72 g). This was achieved on the basis of the *al marco* rule, which allowed for differences in weight between individual coins. Therefore, the average arithmetic weight of shillings struck from the weight unit should be 1.345 g.

As Ivan Sinchuk noted, the actual average mint rate of Lithuanian shillings from 1663–1666 can be determined with great precision thanks to preserved documents, in the form of reports and mint accounts, and especially the report of the Grand Treasurer of Lithuania, Hieronim Kirszensztejn.⁴⁵ Its usefulness results from the fact that it records the volume of over-produced shillings, over-struck from pounds of copper flans, which are omitted in Boratini's reports. These are termed *zbysz* and *przybysz* in the source. On this basis, I. Sinchuk calculated that the average weight of Lithuanian shillings of the TLB–HKPL subtype from 1664–1666 was 1.304 g, while the average weight of the GFH–Deer subtype was 1.279 g. However, Sinchuk gave an unreliable weight for the GFH–Wieniawa variant (1.182 g) on the basis of the Oliwa mint report,⁴⁶ which is negated by coin evidence. The correct weight can be calculated at 1.320 g.⁴⁷ Stasys Janušonis has also discussed the issue of *zbysz*, indicating the percentage of coins in individual mints that were minted above the standards permitted by the ordinances. In this manner, Oliwa produced between 1.25 and 3.6% above the norm, in Vilnius – 2.8%, in Brest – 2.6%, in Kaunas – 5.4%, and in Malbork – 4.2%. S. Janušonis drew an interesting conclusion that “A. J. Horn was twice as dishonest as T. L. Boratini”.⁴⁸

Verification of metrological extrapolations from written sources can be undertaken on the basis of shillings gathered in hoards. This analysis must be undertaken with the reservations expressed by I. Sinchuk concerning the non-combination of coins from hoards that vary in the degree of preservation, or were buried at different times, or were subject to different physical conditions after deposition.⁴⁹

⁴⁵ Documents were published by Stasys Janušonis – Janušonis 1975.

⁴⁶ Sinchuk 1987a, pp. 29–30.

⁴⁷ Similar results of Author's own calculations: Vilnius – 1.309 g, Brest – 1.310 g, Kaunas – 1.278 g, Malbork – 1.291 g.

⁴⁸ Janušonis 1975, p. 104. Similar results of Author's own calculations: Vilnius – 2.7%, Brest – 2.6%, Kaunas – 5.2%, Malbork – 4.1%.

⁴⁹ Sinchuk 1987a, p. 29.

Table 9. Mean weight of shillings in hoards (grams)

Mint	Idźki-Wykno	Rokitno I	Rokitno II
1659–1661			
Crown shillings			
Ujazdów and Kraków 1659–1661	1.29 (345)*	1.252 (220)	1.249 (542)
Lithuanian shillings			
Ujazdów 1660–1661	1.30 (381)	1.245 (239)	1.242 (640)
1663–1666			
Crown shillings			
Ujazdów 1663–1665	1.27 (1774)	1.234 (1044)	1.223 (2940)
Lithuanian shillings			
Oliwa 1663	1.27 (126)	1.260 (78)	1.223 (238)
Vilnius 1664–1666	1.27 (1066)	1.243 (1006)	1.220 (2883)
Brest 1665–1666	1.28 (599)	1.271 (421)	1.240 (1182)
Kaunas 1665–1666	1.25 (286)	1.222 (182)	1.223 (534)
Malbork 1666 (GFH–HKPL)	1.29 (27)	1.245 (12)	1.134 (36)

* Number of coins

The visible weight discrepancies of shillings in hoards result from the chronology of deposits, to which we will return. At this point, we can only say that Rokitno II was hidden shortly after 1695, Rokitno I at the beginning of the fourth quarter of the 17th century, and Idźki-Wykno in the 1670s, the latter's coins surviving in an intact condition until their discovery in 1969.⁵⁰ For these reasons, the hoard from Idźki-Wykno offers particularly valuable evidence for the actual minting rate of the shillings, especially in relation to the Crown mints, which were not included in the report of treasurer Kirszensztein. As for the remaining hoards, the average weight of the coins confirm the general pattern. From this evidence, it is apparent that the heaviest coins are the Crown and Lithuanian shillings from the first minting period (1659–1661) and Lithuanian shillings from the mint in Brest. The hoards from Idźki-Wykno and Rokitno I also included Oliwa shillings and the GFH–HKPL variant attributed to Malbork. However, the small number of these coins in the hoards does not give a representative sample. The coin from Kaunas are the lightest, although

⁵⁰ Śnieżko 2011, pp. 2–3.

this is also a common feature for coins struck at Ujazdów (1663–1665), Oliwa and Vilnius in Rokitno II.

The weight of Lithuanian shillings in the hoard from Idźki-Wykno is slightly lower than the reported values described by treasurer Kirszensztein and the Oliwa mint documents. For individual mints, these relations are as follows: Vilnius – 1.27:1.309 g; Brest – 1.28–1.310 g; Kaunas and Malbork – 1.26:1.285 g; Oliwa – 1.27:1.320 g. Assuming that the actual mint rate of Lithuanian shillings presented in the treasurer's report are correct, it is difficult to solve the question of whether the loss in weight of coins in the hoard from Idźki-Wykno should not be greater than by 2.0–3.8%.

While *zbysz* is included in the reports on the activities of mints managed by Andrzej Jerzy Horn, the amount of money struck above the norm is not mentioned in the reports of the mints run by Boratini in Vilnius and Brest. Meanwhile, the conversion of overstruck copper pounds into a monetary amount implies that the minting regulations were followed there. However, both the aforementioned report of the Lithuanian treasurer and the metrology of the coins themselves contradict this. In addition, based on the report on the activities of the Crown mints in Kraków and Ujazdów in 1659–1661 quoted by Roman Rybarski, it can be suggested that coins produced there were struck according to the prescribed rate of 300 shillings from the Kraków pound. Certainly, the potential exceedances there were among the lowest, which can no longer be said about the mint in Ujazdów in 1663–1666. Based on the coins, the mintage rate applied there was the same as in Vilnius. We assume that the amount of mintage in Ujazdów reported by Boratini does not include *zbysz*, as is the case in Vilnius and Brest.

Therefore, we can conclude that about 302 shillings in 1659–1661, 308 in Ujazdów (1663–1665) and in Vilnius, and 306 in Brest and Oliwa were minted from the Kraków copper pound, while the highest number was 314 shillings in Kaunas and Malbork.

The reports on the activity of mints, supplemented with the calculated amounts of *zbysz* in the mints of Tytus Liwiusz Boratini, are significantly balanced in the statistical summary and therefore do not affect the findings above.⁵¹

COUNTERFEITING IN THE CONTEXT OF HOARD CHRONOLOGY

The problem of counterfeits of John Casimir's copper shillings in hoards requires further in-depth research.⁵² At this point, we will limit ourselves to only a few observations concerning the chronology of hoard finds.

⁵¹ Estimated *zbysz* in the years 1659–1661: Lithuanian shillings – 6,666 *złoty* (0.67%), Crown shillings – 6,666 *złoty* (0.67%); in 1663–1665: Crown shillings – 178,450 *złoty* (2.67%). From the report of treasurer Hieronim Kirszensztein: mint in Vilnius (1664–1666) – 125,864 and 0.24 *zł* (2.80%); mint in Brest (1665–1666) – 72,430 and 0.27 *zł* (2.71%).

⁵² Currently, the only known study that focuses on this issue and is not of a contributory nature is the work of Grzegorz Śnieżko – Śnieżko 2012.

It is well-known that counterfeiters working out of specialist workshops and primitive factories did not abandon their activities after the shilling mints ceased operating in 1666. Over time, therefore, the share of counterfeit shillings in currency gradually increased, as evidenced by the contents of coin hoards. This phenomenon was noticed by Wojciech Niemirycz, who observed that hoards hidden before 1666 do not contain counterfeits, while in slightly younger sets the percentage of products from illegal workshops does not exceed 2%.⁵³ In the Idźki-Wykno hoard, deposited in the 1670s, 2.24% of shillings were false.⁵⁴ However, counterfeits respectively made up 8.0 and 9.8% of coins in two hoards buried several decades after the 1670s at Przasnysz (after 1703, approx. 1710) and Terespol (after 1711).⁵⁵ For this reason, the 2.72% of false shillings in the Rokitno I hoard and 5.75% in the Rokitno II hoard⁵⁶ allow us to assume that the first hoard was formed in the last quarter of the 17th century, while the second hoard was assembled at the turn of the 17th and 18th centuries. Given the percentage of false coins, it seems likely that Rokitno I, which closes with shillings dated 1666, was deposited a little later than the hoard from Idźki-Wykno. In the case of the Rokitno II find, the very good state of preservation of three Leopold I kreuzers dated 1695 suggests that the hoard was hidden shortly after that date. Indirectly, this is also suggested by a lower percentage of false coins than in the finds from Przasnysz and Terespol. The shillings gathered in the first hoard from Rokitno seem to be less worn out, and the calculated average weight slightly exceeds the coins in the Rokitno II set – 1.242 g compared to 1.226 g. Therefore, we can conclude that Rokitno I was deposited about 20 years earlier than Rokitno II.

In addition to the key elements dating these aforementioned hoards, we can identify another factor that has not yet been mentioned in the literature. It stems from the structure of false shillings in the hoards, or more precisely the occurrence in their group of a separate type of false coins, most likely created in Berzaune near Riga in 1667–1669 under the initiative of Hans Dreiling. Crown and Lithuanian shillings were falsified there. The most frequently reproduced pattern of these shillings is Lithuanian, with the letters TLB under the king's head and the

⁵³ Niemirycz 1973a, p. 110; Niemirycz 1973b, p. 104; Niemirycz 1983, pp. 87–88. Ivan Sinchuk also noticed that – Sinchuk 2010b, p. 21.

⁵⁴ Among the 5,804 John Casimir's shillings, there are 130 false ones – Śnieżko 2011, pp. 33, 39; Śnieżko 2012, pp. 199, 206.

⁵⁵ Przasnysz – Niemirycz 1973a, pp. 109–110. I added 96 copies of so-called *horse with long legs* type (incl. *king with prominent lips*) to the 1,286 false shillings found by W. Niemirycz – see Śnieżko 2011, pp. 40–41) – hence the result of 8.0%; Terespol – Lewczuk 1983, without page numbering. A similar percentage of counterfeits (8.93%) was also found by Ivan Sinchuk in a representative hoard of copper shillings (6,635 copies) in the town of Likówka in the district of Grodno – Sinchuk 1990, p. 62.

⁵⁶ Markiewicz 2020, tab.3, pp. 274, 277.

monogram HKPL on the reverse (Fig. 10–13).⁵⁷ In well-identified and catalogued hoards from Idźki-Wykno (0.96%) and Rokitno (0.74 and 1.00%), *the king with prominent lips* type accounts for 0.94% of shillings.⁵⁸ We can estimate the total mintage of these coins at about 18,700,000 copies.⁵⁹ The introduction of approximately 19,000,000 false coins into circulation at the end of the 1660s, a context in which other illegal centres started their activity, ensured that the products from Riga had a significant share in the total number of false shillings for some time. This variant constitutes 43.1% of all false shillings in the Idźki-Wykno hoard, 27.1% in the Rokitno I hoard, and 16.8% in the Rokitno II hoard. This is another indication of the early dating of the Idźki-Wykno hoard, and supports the relative chronology of the two Rokitno hoards. At the same time, the frequency of these coins in hoards buried in the third and fourth quarters of the 17th century proves the relatively early activity of this workshop, and supports its identification with Hans Dreiling’s Riga workshop.



Fig. 1⁶⁰. *Polish Crown*, John Casimir, shilling, 1660, Ujazdów Mint. Copper; 15.3–16.0 mm; 1.370 g; Inv. No. N/11194/ML

⁵⁷ The author of the allegation about the false origin of these coins, connected with the scandal of Hans Dreiling, Riga councillor, is Ivan Sinchuk – Sinchuk 1988, pp. 19–20; Sinchuk 2010b, p. 21; Sinchuk 2017–2018, p. 66. See Śnieżko 2012, pp. 209–210; Wnęk 2013, pp. 174–177; Niziołek 2016, p. 15.

⁵⁸ 96 copies of these coins were found in the hoard from Przasnysz – only Lithuanian TLB-HKPL coins, defined by Wojciech Niemirydz as “a horse with long legs”. I suppose that in the Przasnysz some part of them were not recognised. It is impossible that such a large deposit would not include the less frequent fakes of Crown or Lithuanian shillings of Ujazdów or Kaunas type. In this context, the small hoard of 292 copper shillings from the Połock district in the Vitebsk region in Belarus (hidden after 1754), described by Ivan Sinchuk, in which 25 fakes were found, including eight of the *king with a prominent mouth* type – 2.74% of the team and 32% of the false ones is different – Grimalauskaite, Sinchuk 2019, pp. 66–68.

⁵⁹ Assuming that the mintage of the official shilling mints reached 1,900,000,000 coins.

⁶⁰ Author of photographs no. 1–2, 4–13: Bartłomiej Lenard, no. 3 – Piotr Maciuk.



Fig. 2. *Grand Duchy of Lithuania*, John Casimir, shilling, 1661, Ujazdów Mint. Copper; 15.8–16.2 mm; 1.520 g; Inv. No. N/71123/ML



Fig. 3. *Polish Crown*, John Casimir, shilling, 1664, Ujazdów Mint. Copper; 15.4–15.9 mm; 1.002 g. Inv. No. 3435



Fig. 4. *Grand Duchy of Lithuania*, John Casimir, shilling, 1664, Vilnius Mint. Copper; 15.9–16.2 mm; 1.430 g; Inv. No. N/11194/ML



Fig. 5. *Grand Duchy of Lithuania*, John Casimir, shilling, 1666, Brest Mint. Copper; 15.1–15.6 mm; 1.409 g; Inv. No. N/71123/ML



Fig. 6. *Grand Duchy of Lithuania*, John Casimir, shilling, 1665, Kaunas Mint. Copper; 15.6–16.0 mm; 1.307 g; Inv. No. N/11194/ML



Fig. 7. *Grand Duchy of Lithuania*, John Casimir, shilling, 1666, Kaunas or Malbork Mint. Copper; 15.8 mm; 1.701 g; Inv. No. N/71123/ML



Fig. 8. *Grand Duchy of Lithuania*, John Casimir, shilling, 1666, Malbork Mint. Copper; 15.6–16.0 mm; 1.335 g; Inv. No. N/71123/ML



Fig. 9. *Grand Duchy of Lithuania*, John Casimir, shilling, 1663, Oliwa Mint. Copper; 16.0–16.5 mm; 1.345 g; Inv. No. N/11194/ML



Fig. 10. Counterfeited Lithuanian shilling, type *king with prominent lips* TLB-HKPL, with date 1666. Copper; 15.3–15.6 mm; 1.405 g; Inv. No. N/71123/ML



Fig. 11. Counterfeited Lithuanian shilling, type *king with prominent lips* TLB-Korwin, with date 1666. Copper; 15.2–15.5 mm; 1.125 g; Inv. No. N/11194/ML



Fig. 12. Counterfeited Lithuanian shilling, type *king with prominent lips* TLB-Jeleń, with date 1666. Copper; 15.2 mm; 1.308 g; Inv. No. N/11194/ML



Fig. 13. Counterfeited Crown shilling, type *king with prominent lips*, with date 1666. Copper; 15.5 mm; 1.117 g; Inv. No. N/11194/ML

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MIEDZIANE SZELĄGI JANA KAZIMIERZA Z LAT 1659–1666 W KONTEKŚCIE SKARBÓW

(Streszczenie)

Postęp badań nad małymi miedzianymi szelągami Jana Kazimierza z lat 1659–1666 odsłonił perspektywę rozwiązania i nowego spojrzenia na szereg zagadnień związanych z tymi monetami. Trudna do przecenienia w tym jest zasługa litewskiego badacza Stasysa Janušonisa, który w połowie lat 70. XX w. opublikował nieznane rachunki i sprawozdania z działalności litewskich mennic szelężnych z lat 1663–1667. Materiał ten, wraz z upowszechnionymi jeszcze przed II wojną światową przez Romana Rybarskiego rachunkami mennic koronnych z lat 1659–1665, posłużył Andrzejowi Mikołajczykowi w 1979 r. do przeprowadzenia analizy porównawczej 30 229 szelągów z treścią źródeł pisanych. Wykazała ona, że Tytus Liwiusz Boratini w latach 1659–1661 przekroczył kontrakty o około 76% , wybijając tym samym ponad normę szelągów na kwotę około 1 520 000 zł. Suma ta, wraz z proporcjonalnie mniejszym przekroczeniem w latach 1663–1666, upoważniła Andrzeja Mikołajczyka do wyznaczenia globalnego nakładu szelągów na kwotę około 20 000 000 zł, czyli 1 800 000 000 tych monet. Na osobną uwagę zasługują prowadzone od lat 80. badania Iwana Sinczuka. Skonfrontował on wymowę sprawozdań mennicznych z 29 200 szelągami, zgromadzonymi w 17 skarbach. Stwierdzoną nadwyżkę monet z lat 1659–1661 próbował tłumaczyć używaniem starych stempli w drugiej kampanii menniczej (1663–1666). Tak też wyjaśniał rozbieżności w ramach roczników koronnych i litewskich szelągów. Stwierdził chociażby, że nadwyżka szelągów koronnych z 1664 r. wynika z wybijania monet z tą datą zarówno w 1663, jak i w 1665 r. Tezy te są dyskusyjne. Do najważniejszych i podzielanych obecnie ustaleń Iwana Sinczuka należy wyodrębnienie spośród szelągów litewskich grupy monet bitych przez Boratiniego w Brześciu (1665–1666). Charakteryzuje je mały monogram HKPL pod Pogonią. Wariant ten wyróżnia stylistyczna zależność rewersu z szelągami z mennicy ujazdowskiej (1660–1661), na którą zwrócił uwagę Grzegorz Śnieżko, przypisując te monety do mennicy brzeskiej. Jednocześnie analiza struktury skarbów doprowadziła Iwana Sinczuka do wniosku, że część szelągów wybito w Brześciu takimi samymi stemplami, jak w Wilnie. Badacz ten ustalił również fakt, że szelągi podtypu GFH–Jeleń z datą 1666 produkowane były zarówno w Kownie jak i w Malborku. Podtypu GFH–HKPL z datą 1666 nie zdecydował się on jednoznacznie przypisać do którejś z wymienionych mennic, dopuszczając nawet ewentualność fałszerstwa.

Do ponownego spojrzenia na miedziane szelągi przez pryzmat sprawozdań i rachunków menniczych skłania nowo opracowany materiał w postaci reprezentatywnych skarbów, rozpoznanych w oparciu o aktualny stan badań. Mowa o znalezisku z Idziek-Wykna i dwóch skarbach z Rokitna, które uzupełnione o zespoły z Przasnysza i Terespoła oraz zgromadzony przez Iwana Sinczuka materiał z 16 skarbów (bez Przasnysza) tworzą zbiór ponad 59 tys. monet. Ze względu na merytoryczną wartość opracowań jego pełne wykorzystanie nie zawsze było możliwe. Warto też dodać, że znaleziska poddaliśmy przeliczeniom, aby jak najbardziej przybliżyły stan faktyczny.

Już wstępne rozpoznanie materiału numizmatycznego wykazuje, że wszystkie znaleziska notują więcej szelągów litewskich, aniżeli podają źródła pisane. W całym analizowanym zbiorze jest to różnica 1,4% (tabela 2). Kolejnym istotnym stwierdzeniem jest fakt nadwyżki szelągów z lat 1659–1661 o 2,68%, na którą składa się 1,21% monet z Orłem i 1,47% z Pogonią. Równolegle na lata 1663–1666 notujemy deficyt, który tworzą przede wszystkim monety koronne – 2,56% (tabela 3). Stąd wniosek, że nadwyżka monet z Pogonią w znaleziskach jest pochodną proporcjonalnie zwiększonej ich produkcji zarówno stemplami z lat 1660–1661, jak i w okresie następnym. Natomiast fakt nadreprezentacji monet z lat 1659–1661 w skarbach wskazuje na proporcjonalnie większą, w stosunku do deklarowanego nakładu, emisję w tych latach. Uważamy, że ewentualnego przekroczenia nakładu w pierwszym okresie menniczym o ponad 40% (tabela 7) nie można wytłumaczyć ewentualnym eksploataowaniem starych stempli podczas drugiej kampanii menniczej (1663–1666).

Dalsze zestawienia wymowy źródeł pisanych z reprezentacją monet z poszczególnych mennic w skarbach wykazały dodatnie i ujemne różnice od sprawozdawczego nakładu (tabele 4 i 5). W przypadku zakładów litewskich prowadzonych przez Boratiniego w Wilnie (+2,75–3,22%) i Brześciu (-3,40–3,53%), naprowadziły nas one do wypowiedzianego wcześniej przez Iwana Sinczuka twierdzenia, że część szelągów w mennicy brzeskiej wybito takimi samymi stemplami jak w Wilnie. Z kolei korelacja pomiędzy szelągami podtypu GFH–Jeleń – przypisywanego mennicy kowieńskiej (+2,75–3,22%), i GFH–HKPL – atrybuowanego do Malborka (-3,40–3,53%), dowodzi, zgodnie z twierdzeniem Iwana Sinczuka, używania w Kownie i Malborku w 1666 r. stempli GFH–Jeleń. Uważamy, że około 40% tych monet z datą 1666 powstało w Kownie, a pozostałe 60% w Malborku. Stanowią one tym samym około 90% całej produkcji tej mennicy. Szelągi podtypu GFH–HKPL przypisujemy jednoznacznie do Malborka. Podpowiada to data na monetach, zbieżna z czasem uruchomienia mennicy. Przypuszczamy, że wybito je na początku funkcjonowania tej wytwórni, gdy dążono jeszcze do wyróżniania jej produktów od szelągów z Kowna. Uznaniu tych monet za wytwory zarówno Kowna i Malborka przeczy stosunkowo nieznaczny nakład – w granicach 6 930 000–7 315 000 egzemplarzy, który był najprawdopodobniej efektem produkcji jednego zakładu.

Dodatnie odchylenia reprezentacji w skarbach koronnych i litewskich szelągów z mennicy ujazdowskiej (1659–1661) – odpowiednio 21 i 26%, wileńskiej (1664–1665) – 4%, wileńskiej i brzeskiej (1666)–3%, nie oznaczają wprost skali przekroczeń oficjalnego nakładu, tak samo, jak stwierdzone deficyty szelągów litewskich z mennicy oliwskiej – 12%, szelągów koronnych z mennicy ujazdowskiej (1663–1665) – 7% oraz szelągów litewskich w zsumowanych zakładach w Kownie i Malborku – 6%, nie świadczą o wybiciu mniejszej kwoty od tej stwierdzonej w dokumentach menniczych. Wychodząc

z tego założenia przyjęliśmy, że niedobory są tylko pozorne i w rzeczywistości stanowią niebilansowane odbicie przekroczeń nakładów w innych mennicach. Przyjęliśmy, że mennice o najwyższych wskaźnikach deficytu przybliżają nas do punktu, w którym zachodzi zgodność wymowy skarbów z menniczą księgowością. Taką ewentualność rozpatrzyliśmy w kontekście litewskich szelągów z mennicy oliwskiej oraz koronnych z Ujazdowa (1663–1666). Na tej podstawie oszacowaliśmy globalny nakład mennic szelężnych w granicach od 1 800 000 000 do 1 900 000 000. Z wybitych ponad normę około 230–330 milionów szelągów zdecydowana większość opuściła mennice w latach 1663–1666 (69,31–74,39%). Składają się na nią przede wszystkim litewskie szelągi z mennicy wileńskiej i brzeskiej (43,49–44,36%) oraz koronne z Ujazdowa (15,19–21,32%), a w znacznie mniejszym stopniu – monety litewskie z Kowna i Malborka (8,26–8,91%) oraz z Oliwy (0,85–1,32%). Pozostała część wybito w Ujazdowie w latach 1659–1661 (25,61–30,69%), pod stemplem koronnym (12,00–14,25%) oraz litewskim (13,61–16,44%). Nadużycia te rozpatrywane były dotąd w kontekście działalności Boratiniego w pierwszym okresie mennicznym, za którą został postawiony w stan oskarżenia. Towarzyszyło temu domniemanie, wzmacnione wynikami badań Andrzeja Mikołajczyka, że przeważająca część nadprodukcji mennic szelężnych przypadła na lata 1659–1661.

Przekroczenia w mennicach dotyczyły także przepisanej ordynacją stopy menniczej, nakazującej wybijanie 300 szelągów z krakowskiego funta miedzi. Szacujemy, że z tej jednostki wagowej wybijano: 302 koronne i litewskie szelągi w Ujazdowie (1659–1661), 306 w Brześciu i Oliwie, 308 w Ujazdowie (1663–1665) i w Wilnie, a najwięcej – bo 314 szelągów, w Kownie i Malborku.

Procentowy udział w zbiorze fałszywych szelągów osobnego typu podrobionych monet w skarbach, określanych od charakterystycznego portretu Jana Kazimierza terminem *król z wydatnymi ustami*, wybitego w nakładzie około 19 000 000 egzemplarzy najprawdopodobniej z inicjatywy rajcy ryskiego Hansa Dreilinga w latach 1667–1669, stanowi dodatkowe kryterium wskazujące na czas ukrycia depozytów. W zespole z Idziek-Wykna – datowanym na lata 70. XVII w. – typ ten stanowi 43,1%, w ukrytym niedługo później Rokitno I 27,1%, a w zdeponowanym nieznacznie po 1695 r. Rokitno II tworzy on już tylko 16,8% całej populacji fałszywych szelągów.

Adres autora/The author's address:

dr Tomasz Markiewicz

National Museum in Lublin

Zamkowa 9, PL 20–117 Lublin, Poland

t.markiewicz@mnwl.pl

ORCID: 0000-0001-6813-947X