

VIKTORS DĀBOLIŅŠ

The Rise of the Riga Schillings
(1582–1621)



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UNIVERSITY OF TARTU

Press

Institute of History and Archaeology, Faculty of Arts and Humanities, University of Tartu, Estonia

The dissertation is accepted for the commencement of the degree of Doctor of Philosophy (in History) on May 16, 2023 by the Council of the Institute of History and Archaeology, University of Tartu.

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Commencement: September 12, 2023 at 16.15, UT Senate Hall,
 Ülikooli st. 18–204, Tartu, Estonia

The Thesis was completed with the financial support of the University of Tartu, the Institute of Latvian History, University of Latvia projects (Nr. VPP-IZM-2018/1-0018, No.ZD2015/AZ85), Sven Svenssons Stiftelse för Numismatik, and Estonian Research Council R & D project “Breaking the Ground for Reorganisation. Politico-economic Reason and Advocacy for Change in the Early Modern Baltic Region” (PRG318).

ISSN 1406-443X (print)
ISBN 978-9916-27-302-9 (print)

ISSN 2806-2337 (pdf)
ISBN 978-9916-27-303-6 (pdf)

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University of Tartu Press
www.tyk.ee

ACKNOWLEDGEMENTS

This dissertation would not be imaginable without the generosity of people upon whose friendship and support the journey to the doctoral studies at the University of Tartu and defence could be realised.

I am grateful for every chance to meet the right persons at the right time. I recall vividly early 2016 when I was reading an interview in Latvian newspaper with Meelis Friedenthal on occasion of publication of the Latvian translation of his book “Bees”. It was then that I got a sudden idea to apply for the doctoral position at the university. In the following days I would contact Santeri Junttila, who was my Finnish teacher at the grammar school and had been living in Tartu for many years. Santeri suggested contacting Kaarel Vanamõlder. Some days later we would meet in Riga and chat about the prospects of finding a good supervisor and my research topic. Another week later or so I would meet Enn Küng in Riga, who agreed to supervise my dissertation project. Ever since the admission as a full-time doctoral student later that year Enn hosted me at his Tartu apartment. I want therefore to thank Enn’s family for all their hospitality.

I cannot express enough gratitude to Ivar Leimus, my second supervisor and his wife Tiit. I have enjoyed every single conversation and brainstorming at home and work office, which helped to form, distil and shape many ideas. Ivar Leimus was of major assistance also in transcribing and understanding the most sophisticated handwritings of the 16–17th century scribes and historical figures. Above all, Ivar was the person to convince me to examine the remotely understood ‘Polish period’ numismatics.

Although building on the works of predecessors, the richest troves of knowledge for me were the less well-known public collections. To many librarians, collection keepers and archivists in Riga, Tartu, Schwerin, Greifswald, Stockholm, Uppsala and Lund – thank you for your work and invaluable assistance! In particular, Ligita Kampe, thanks for letting me work until last minutes! My gratitude also goes to Kai Tafenau, who beautifully managed to translate Latin sources in German and Ania Juga-Szymanska for trying to translate old Polish scripts. I thank the Museum of the History of Riga and Navigation for the permission to go through the schilling collection and select the finest specimens for the Thesis catalogue, and Astrīda Meirāne for taking the excellent photos. I extend my gratitude to the former colleagues at the Numismatic and Precious Metals department Tatjana Berga, who was my first tutor in numismatics, Inita Dzelme, Māra Eihe, Ilze Berga, Justīne Fišere. I was encouraged and inspired in many ways by my friends and colleagues of the Association of Baltic Numismatics, University of Latvia Institute of History of Latvia, the History Department of the University of Tartu and the University of Wrocław. Most sincere compliments to Frida Ehrnsten, Dalia Grimalauskaitė, Eduardas Remecas, Mauri Kiudsoo, Rūdolfs Brūzis, Ilze Boldāne-Zeļenkova, Kristīne Ducmane, Marten Seppel, Andres Tvauri, Kaili Kaseorg-Cremona, Külli Kuusik, Paweł

Milejski and Borys Paszkiewicz. You are the ones making numismatics and academic experience so enjoyable.

I would also like to express my admiration to Janusz Peters, Laine Kristberga and Eva Eihmane for their patience while editing my clumsy English and big thanks to Estonian translator Kaja Kahrik. To my opponents Prof. dr hab. Borys Paszkiewicz and Prof. dr. Jürgen Heyde: without your acuity, comments and observations the journey through the pages of my Thesis would turn into a nightmare to the brave readers.

There are many reasons to be thankful to those who kept my spirits up in sunny and stormy days, to Mārtiņš Laizāns, such a marvellous character and scholar, to the Egles, Lāsma Liepiņa, Jānis Traviņš, my best Estonian buddies Kristiina Paavel and Pikne Kama, *Twitter* for being a creative distraction and never-ending source of new findings and platform for reaching out to the international scholarly community.

I am eternally thankful to my Aunt Irēna, who trusted and encouraged me to follow my dreams. She would be beyond delighted of this achievement. Lastly, I turn to the Kaurāti family with my sincerest gratitude for being my mighty fortress and my dear friend Alma to whom I dedicate this work with all my heart.

Madliena,
June 15, 2023

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PLACE NAMES

Given that the Thesis is written in English and considering the complexity of the historical geography of the Polish-Lithuanian Commonwealth, analogue national toponyms and hydronyms are preferred to avoid any misunderstanding. The following list is compiled of the names, which in the context of historical research are commonly known by other, mainly German, equivalents. All historical names are put in an alphabetical order followed by the list of currently used equivalents in Latvian (LV), Estonian (ET), Lithuanian (LT), Polish (PL), Ukrainian (UA), or Russian (RU). Internationally recognised place names, such as Vilnius, Riga, Karelia, Smolensk, Warsaw, Cracow, Stockholm, Königsberg, Vyborg, Ingria, Vistula, Desna, and Dnieper Rivers, are used as usual.

Aa	Gauja River (LV)
Arrasch	Āraiši (LV)
Bersohn	Bērzaune (LV)
Birsen	Biržai (LT)
Bromberg	Bydgoszcz (PL)
Dahlen	Dole (LV)
Danzig	Gdańsk (PL)
Dorpat	Tartu (ET)
Driesen	Drezdenko (PL)
Düna	Daugava River (LV)
Dünamünde	Daugavgrīva Fortress (LV)
Elbing	Elbląg (PL)
Fraustadt	Wschowa (PL)
Keksholm	Priozersk (RU)
Kokenhausen, Kokenhusen	Koknese (LV)
Lemberg	Lviv (UA)
Lobsens	Łobżenica (PL)
Marienburg	Malbork (PL)
Memel	Klaipėda (LT)
Mitau	Jelgava (LV)
Narwa	Narva (ET)
Olkusch	Olkusz (PL)
Pebalg	Piebalga (LV)
Pernau	Pärnu (ET)
Pleskau	Pskov (RU)
Posen	Poznań (PL)
Reval	Tallinn (ET)
Rodenpois	Ropaži (LV)
Rositten	Rēzekne (LV)
Teschen	Cieszyn (PL)
Thorn	Toruń (PL)
Wenden	Cēsis (LV)
Wolmar	Valmiera (LV)
Żółkiew	Zhovkva (UA)

INTRODUCTION

This Thesis is devoted to a relatively unknown phenomenon – the expansion of the Riga schillings from the Duchy of Livonia (1561–1629). Often found in archaeological fieldworks and pieces being part of all the largest public history museum collections of the Baltic States, the Riga schillings are overlooked in Baltic numismatics¹ as well as the grand narrative of the Polish-Lithuanian Commonwealth monetary history.² Their commonly strong quantitative appearance is often overshadowed by ‘poor looks’, which do not attract the same fascination as the larger denominations of ferdings, thalers, or ducats, which are eye-catching, usually better preserved, and often exceptional testimonies of artisanship. The abundance of the Riga schillings is almost as incomprehensible as to question their genuineness and scientific value. And yet, despite their seemingly worthless stature, these coins claimed an essential part in the small change market and household economics far beyond their place of origin and without precedence in Livonian monetary history. As a regular and comfortable means of making daily rounds, a schilling reached into the everyday channels of circulation. Several schillings, depending on a person’s occupation and workload, would make a daily servant’s salary, a few schillings would be paid to the baker for the daily bread or bowl of beer, paid in tithes, first to go into the melting pot, to be adjusted as a pendant, to be hoarded and accidentally get lost. The Riga schillings were as abundant as they were available and affordable – common features of mass production, which unlike other historical sources are more authoritative primary evidence for their contemporality and official character – emissions were dated and royally authorised. Owing to their long and almost uninterrupted coinage history in the research period, schillings encapsulate a unique perspective of the so-called ‘Polish times’ in Latvia and Estonia. What makes this study, an outstanding contribution to the monetary history of the Commonwealth, is the uniquely rich source base of documentary evidence and rather complete coin base, which is now put together for the first time.

Schilling was introduced in the Commonwealth monetary system in 1580, just prior to the subjugation of Riga to the Polish-Lithuanian rule in the forthcoming year. Several mints attempted to mint schillings with varying degrees of success, but only a few, in particular the mint of the capital of the Duchy of Livonia (lat. *ducatus Ultradunensis*, ger. *das Überdünische Herzogtum*), emerged as the major emitter of these coins (Appendix 1). During the 40 years of the Polish rule in Riga (1581–1621), schillings were minted for 37 years and attest to the rising share of Riga’s coinage in the Central and Eastern European monetary market. Additionally, in the first decades, Riga’s dreigroschen (1588–1600, 1619) gained popularity in the Commonwealth market, while the production of

¹ Baltic numismatics relates to the numismatic research of the modern-day Baltic countries: Estonia, Latvia, Lithuania.

² Henceforth, the Commonwealth.

other coins – groschen (1581, 1582–1584), dreipölkers (1616–1617, 1620) and gold ducats (1588, 1592, 1594, 1597, 1599) was less regular.

The positioning of the Riga mint to schilling production, if put in a historical perspective, might not come as a surprise. Schillings had been minted regularly in Riga and elsewhere in Livonia³, for over 150 years, since the carrying out of the 1422–1424 monetary reform.⁴ To Rigans and Livonian inhabitants schillings were as common as they were foreign to most of the Commonwealth population (except for Royal Prussia⁵). However, one cannot establish meaningful relations between the coinage of previous Livonian period schillings and the new Commonwealth period schillings that would permit one to speak of continuity. Monetary market conditions and minting rights were regulated completely differently. The expansion of the Polish and Lithuanian rule over the former Livonian lands acted as a game changer in the local politics and future perspective of schilling coinage. The Riga mint operated in a more complex monetary landscape and dimensions extending far beyond the provincial borders of the Duchy of Livonia. It was integrated into the system of uniform minting standards and currency values, complex denomination structure, multiple mints (approx. 15⁶), an extensive Commonwealth monetary market, and centrally issued rules. Riga was to strictly observe executive rights granted by the privileges, royal decrees, Sejm constitutions, and monetary commission decisions.

³ In this Thesis, the term 'Livonia' is used to denote the historical region, which formed in the early 13th century and ceased its existence in 1561. Livonia corresponds largely to the modern states of Estonia and Latvia. Sometimes 'Livonian province' or simply 'province' is used for the Duchy of Livonia.

⁴ Officially, the reform initiated coinage of artigs. But since their value was equal to the account unit of schillings, in circulation they were valued as schillings.

⁵ In 1454 Prussia was incorporated into the Polish kingdom. After the Thirteen year's war, in 1466, Prussia was divided into Teutonic and Royal parts, the latter consisting of the leading Prussian cities Gdańsk, Toruń and Elbląg. The eastern half, formally a fiefdom of the Polish King, remained in control of the Teutonic Order.

⁶ The number of all active mints is ill-defined in Polish numismatic historiography, but it was in the margins between 13 and 15 mints. According to Wojtulewicz, during the reign of Sigismund III, there were 8 Crown mints (Olkusz, Poznań, Wschowa, Bydgoszcz, Malbork, Lublin, Cracow, Łobżenica [Wojtulewicz was wrong since the mint of Łobżenica was a private mint – V.D.], the Lithuanian mint of Vilnius and five municipal mints (Gdańsk, Toruń, Elbląg, Riga, and Poznań). Henryk Wojtulewicz, "Coins of Kings Zygmunt III and Władysław IV : State of Investigations and Perspectives," *Fasciculi Archaeologiae Historicae* 3 (January 1, 1989): 23–26.; Kopicki counts 16 mints in the same timeframe: Edmund Kopicki, *Monety Zygmunta III Wazy* (Szczecin: Wydawn. Nefryt, 2007), 10. The updated list of active mints in the period under research. By 1601: Crown mints: Olkusz, Cracow, Poznań, Wschowa, Lublin, Urzędów, Malbork; Grand Duchy of Lithuania (henceforth, GDL): Vilnius mint; Municipal mints: Wschowa, Gdańsk, Riga; mints of vassal dukedoms: Königsberg, Jelgava; private mints: Bydgoszcz, possibly Łobżenica. After 1601: Crown mints: Cracow, Bydgoszcz, Warsaw; GDL: Vilnius mint; municipal mints: Wschowa, Poznań, Gdańsk, Riga; mints of vassal dukedoms: Königsberg, Jelgava, Drezdenko (Ger. Driesen); private mints: Łobżenica, Zhovkva (Pol. Żółkiew).

However, as shown in the present study, Riga was not a passive observer of the presented role, but rather an active political actor seeking the fulfillment of its own goals. The mint of Riga operated not only in the legal and political framework set by the state, controlled and run by state officials, but in a distinct area constituted by its historical and cultural experience, geography, population, and relations with its neighbours. Moreover, the minting of schillings was carried out amid constantly changing political and economic circumstances, regularly disrupted by military invasions, social and economic crises, fluctuations in European economic conjuncture, and bullion prices. The integrity of Riga mint coinage, within the Commonwealth market tendencies, as well as the willingness and/or ability to mint schillings or any other coin was deeply grounded in its state of affairs. One of the basic analytical concepts utilised in the Thesis relates to the agency of the Riga mint, or the entity of human agents (in the narrow sense: mint master⁷, warden⁸, mint lords⁹) acting as meaningful transmitters of the politics, ideas, and theories which had been performed in real actions. The focus on human agency stems from the notion that the monetary system participants (i.e. mints) could not be forced to produce coins against their will. It was the choice of each principality to make. Thus, the mint's policy and possibilities of schilling expansion within the existing monetary political system fit well within the conceptual framework and interplay of actors and networks.¹⁰

The Riga mint operated in the monetary system network, which was itself in a constant re-making process, often struggling to maintain consistency and decisiveness in the face of monetary challenges. During the period under research, the main challenge of the day was the increase of the silver price, which itself was part of the wider phenomenon, the 'Price Revolution'.¹¹ Within the period under research, the silver price increased by 114%, from 35 to 75 Polish

⁷ Lease holder of the mint. While being in charge of coin production, he was also responsible for the maintenance of the mint and keeping the mechanisms and tools in order for which he was freed of certain citizen's duties. See 6.4.2.

⁸ The overseer of the mint and production quality as well as performing the assayer's tasks during the coinage process. Second to the mint master in seniority of the mint hierarchy. See 6.4.2.

⁹ Elected authorities (one had to be a burgrave and one – a burgomaster), representatives of the state or municipal interests at the mint; mainly performing supervisory tasks and charging of the mint tax, i.e. Schlagschatz. See 6.4.1.

¹⁰ A multi-layered analysis of actor-network interplay has been explained and demonstrated in the volume of articles: Anu Mänd and Marek Tamm, eds., *Making Livonia: Actors and Networks in the Medieval and Early Modern Baltic Sea Region* (London and New York: Routledge/Taylor & Francis., 2020).; Marko Hakanen and Petri Karonen, eds., *Personal Agency and Swedish Age of Greatness 1560–1720*, *Studia Fennica Historica* 23 (Helsinki: Finnish Literature Society / SKS, 2017).

¹¹ Monetary phenomenon of European history (late 15th to mid-17th century), which witnessed heightened and sweeping inflation level rise (annual rise of 1–1.5%), decline in purchasing power of money and living standards.

groschen for Reichsthaler¹² (Appendix 2), inflating both the costs of everyday products and undermining the set of minting standards and exchange values. Neither early modern monetary theory nor the states had a recipe for how to deal most effectively under such conditions.¹³

While the terms of minting certain quality coins were periodically relaxed for some mints, others remained either idle or minted irregularly only some coins, mostly to satisfy local demand. The rise of Riga schillings as much as any other issues in the Commonwealth was linked to their supplies and the productivity of other mints, and as such serves as a reflection of general tendencies in the monetary policy and market fluctuations in the Commonwealth. This introduces the second analytical concept of the Thesis – the free coinage principle¹⁴, which was at the core of the sustainability of mints and underlines the supply mechanism of each denomination. The main idea was that anyone was free to bring or remind his/her precious metal at the mint in exchange for an equal sum of ready money (minus Seigniorage). In the commodity money system of early modern Europe, where monetary value was secured by a certain amount of metal, money could be obtained either through the exchange of goods or provision of services, or reminting of worn/demonetised/unworthy coins against the new coins. The incentive to convert metal in certain coins was determined by intervals of the coin's silver points – mint equivalent (ME) and mint price (MP).¹⁵ Although it was the government, which set the limits of intervals for each denomination, the aggregate stocks of currency and price level fluctuations would endow some denominations with higher liquidity and hence, increase the inflow of bullion at the mint.¹⁶ Decreasing purchasing power of denominations naturally resulted in the melting down of these coins. Thus, the amount of circulating monetary means to a large extent was regulated by the market participants, revenue prospects, price dynamics, economic activity, and outputs of other mints. Furthermore, since the mints operated in an open bullion market, metal supplies gravitated to places

¹² Thaler of the Holy Roman Empire. High value standard coin of the imperial monetary system and a principal coin of early modern Europe, according to which the value of silver and the Commonwealth thaler was expressed. See 'Thaler' in the Definitions section. Written sources are not always explicit about the type of thaler. Whenever there is uncertainty of its origin or no particular thaler is in mind, a more broader term of 'thaler' is used.

¹³ See Early modern theoretical approaches toward money and small change.

A good overview on the struggles to meet the rising bullion prices and the measures taken to tackle these obstacles in different Western European economies is provided in: William Arthur Shaw, *The History of Currency, 1252–1894: Being an Account of the Gold and Silver Moneys and Monetary Standards of Europe and America, Together with an Examination of the Effects of Currency and Exchange Phenomena on Commercial and National Progress and Well-Being* (New York, London: Putnam, 1896).

¹⁴ Thomas J. Sargent and François R. Velde, *The Big Problem of Small Change* (Princeton and Oxford: Princeton University Press, 2002), 128–29.

¹⁵ See 'Minting standard' in the Definitions section.

¹⁶ Sargent and Velde, *The Big Problem*, 8–9.

with higher prices or better profit possibilities. Precious metal prices and emission rates were in mutually interchanging relations, which is why this Thesis emphasizes examining the supply and demand aspects of schilling, the role of minting regimes as well as the measures taken by the Riga City Council to enhance mint productivity.¹⁷

Riga's minting right and established monetary relations with the seignior of the Commonwealth were revised in the wake of the invasion of Riga by Swedish king Gustav II Adolph (r. 1611–1632). Although Riga resumed issuing schillings with much success until 1665, their mintage was realised under different monetary and political conditions. Thus, the upper chronological limits of the Thesis are drawn by the change of political rule in Riga.

Definitions

Schilling

The denomination of schilling is one of the oldest in Western monetary tradition. First introduced in the late 3rd century by the Roman emperor Diocletian (284–305 AD) as a gold coin (4.5 grams), and being mainly minted in Byzantium until the 11th century, schilling, then was known as *solidus*. Its further history developed through various stages of development. In the early Middle Age Europe, solidus was used as a designation for the gold weight unit (equal to 1.3 grams). Later, roughly from the 8th to 12th century, in western Europe solidus was known as an account unit equal to 12 pfennigs,¹⁸ whereas in central and eastern parts (Bavaria and Austria) – to 30 schillings.¹⁹ The migration of Germanic tribes and early state formation in Europe were marked by a terminological extension in the monetary vocabulary. Latin ‘solidus’ was often identified with the old Germanic *skilling*, *schillinc*. In the German-speaking cultural

¹⁷ “This [commodity money – V.D.] system, which prevailed until the late 19th century, has some noteworthy features. The quantity of money is not controlled directly by the government; rather, additions to or subtractions from the money stock are made by the private sector, on the basis of incentives given by the price level. The incentives operate so as to make the system self-regulating. If coins become too scarce, their value increases and the price level falls until it reaches the minting point, when more coins are added to the stock. If coins become too numerous, on the other hand, their market value reaches their intrinsic value and it becomes worthwhile for the mint to melt them down.” François Velde, “Lessons from the History of Money,” *Economic Perspectives* 22, no. 1 (1998): 3–4.

¹⁸ Georg Septimius Andreas von Praun, *Gründliche Nachricht von dem Münzwesen insgemein, insbesondere aber von dem Teutschen Münzwesen älterer und neuerer Zeiten. Wie auch von dem Französischen, Spanischen, Niederländischen, Englischen, und Dänischen Münzwesen. 3., hin u. wieder verbesserte, besonders aber mit der Nachricht von dem Schwedischen, Rußischen und Polnischen Münzwesen vermehrte Auflage.*, 3rd ed. (Leipzig: Weygand, 1784), 31–40; Friedrich von Schrötter, *Wörterbuch der Münzkunde* (Berlin Leipzig: Verlag von Walter de Gruyter & Co, 1930), 597–603.

¹⁹ Peter Spufford, *Money and Its Use in Medieval Europe* (Cambridge: Cambridge University Press, 1988), 411.

space, to which Livonia also belonged, this coin was commonly known as ‘schilling’. The French *sou* and Italian *soldi*, however, were derived from *solidus*.

In the Livonian monetary system, *solidus* was introduced only in the 14th century, when 36 *solidi* were counted as 1 account mark. In the later Middle Ages *solidus* re-emerged in the physical form of a coin (*Schillinge*, *schillinchk*). First schillings were issued following the monetary reform of 1422. They were not small change, but highly valuable, expensive coins minted of 50% silver alloy. The schilling introduction illustrated the main goal of the reform to supplant the debased *artigs* with higher quality issues. However, their introduction was accompanied by overall inflation and a drastic silver price increase in the following years.²⁰ By the time the new Polish ruler, Stephen Báthory (r. 1576–1586), had authorised coinage of schillings in 1580²¹, the high value of the Riga schillings was a distant memory as the silver metal content had dropped below 10%.²² The official denomination switched to the more international ‘*solidus*’ – which for the first time appeared in the form of coin inscription (SOLIDVS) and was used in official documentation, meanwhile in the parallel German usage ‘schilling’ was kept.²³ With 18% silver content (2 lot 3 q 2 d), new schillings were intrinsically almost twice as valuable as the last Livonian schillings minted in the Free City of Riga (1561–1581) (1 lot 2q). However, by the end of the Commonwealth rule in Riga, they had debased to 13% silver alloy (2 lot 2 d) (Appendix 3).

Small change

The Livonian monetary system, given its relatively late formation in the 13th–14th century, was not familiar with its small change until the third quarter of the 14th century, when diversification of the money supply system started to take shape. By the time active coinage in Livonia came to an end in the early 18th century, the Livonian population had been introduced to several small change units – schillings, *scherfs*, *pfennigs*, *sechslings*, and *groschen*. Similar to other regions of pre-modern Europe the introduction of fractional coins of standard units was related to social stratification, the low purchasing power of the predominantly agrarian society, which required smaller units for daily subsistence,

²⁰ Ivar Leimus, *Tallinna mündiraamatud 1416–1526. Revaler Münzbücher 1416–1526* (Tallinn: Tallinna Linnaarhiiv, 1999), 44–46.

²¹ Kingdom of Poland was familiar with schilling coins through the contacts with the neighboring Teutonic Prussia. Master Vinrich von Kniprode (1351–1382) had begun schilling coinage in the value of 12 *pfennigs*, which would be then greatly expanded by the successive Masters. Following the establishment of monetary union with the Polish Kingdom (1526), Prussian schillings were introduced in the Polish monetary system and minted in the Royal Prussian mints of Gdańsk, Elbląg, Toruń henceforth.

²² Ivar Leimus, Mauri Kiudsoo, and Gunnar Haljak, *Sestertsist sendini: 2000 aastat raha Eestis* (Tallinn: AS Äripäev, 2018), 98.

²³ Philip Grierson, *Numismatics* (London, Oxford and New York: Oxford University Press, 1975), 24–25.

high precious metal prices as well as insufficient capacities of European silver mines.

In its wider meaning, small change denotes a variety of monetary means of exchange of a low nominal value. The demarcation line between small change and large coins (known as standard units) is impermanent, dependent on production period and origin, although the term is usually applied to small and medium-value coins, whose intrinsic (commodity) value is below the nominal value. Another designation that offers a clearer understanding of small monetary units is 'subsidiary coin' – a denomination smaller than the standard unit, which in the Commonwealth was groschen.²⁴ Subsidiary coin can be used as a synonym for small change since they both share decreased intrinsic value. Quite often in numismatic literature 'billon' is used as a synonym for small change, although it primarily refers to the metal content in the alloy. Contemporary Livonian sources usually refer to such coins by the Latin word *pagament* or *paiement*. Still, this is too general a term, since it is not the alloy, but its relation to the nominal value that is of importance. The token character of small coins is thus the opposite of full-bodied large coins, whose nominal value is covered by its intrinsic value.

Historically, the lower intrinsic value of small change was determined by the heightened production costs and often unsatisfied demand²⁵ and shortages of standard units, which further increased their velocity. On special occasions, when standard units were not available, one could make large purchases with small change, but then one would need to count with additional expenditure in the form of agio. The usage patterns of large coins differed from those of small change. Their usage was limited to making only large investments and purchases. Customers did not make small purchases with large coins because of their relative scarcity and higher liquidity, i.e. higher units could be easily converted into other assets (real estate, commodities, jewellery).

The position of small change in the commodity money system was tied to the price level, denomination structure, and their values. In the Commonwealth monetary system which consisted of 12 and in the later years more denominations, schillings stood only above kwartnik²⁶, 2-pfennigs, and pfennigs. Because of this low standing in the monetary system hierarchy and exchange relations, schillings were more exposed to downward fluctuations – depreciation and debasement. Moreover, discrepancies between the official rates and intrinsic values were imminent in Medieval and Early modern monetary systems, since the changes in coinage quality were not always synchronised with silver price changes or balanced across the denomination structure. The fragile balance between the various denominations meant that any changes in minting standards, silver and gold prices (i.e. the gold-silver ratio), or in

²⁴ Groschen was a small change as well.

²⁵ More about the re-occurring small change shortages: Sargent and Velde, *The Big Problem*.

²⁶ In numismatic literature often confused with 'ternar'.

exchange with most popular foreign units, required complex changes in the monetary system or its denomination structure to keep the standard relations and exchange values intact. Observation of these principles, however, was usually bypassed with more simple solutions.

Minting standard

The most casual way of fixing monetary problems in early modern Europe was employing alterations in coin standard or intrinsic value of the coin, often expressed in records as *Schrott vnd Korn*.²⁷ Literally meaning weight and fineness, in numismatics, it is also known as minting standard. Schrott vnd Korn was the universal method of expressing the output value of produced coins from bullion weight mark or mint equivalent (ME), which was effectively in use up to the 19th century.²⁸ In Livonia and Commonwealth, the fineness (*fein*) was measured in lots, 16 lots being counted to 1 mark equal to 100% purity of silver, while the weight was expressed in a number of coins minted from Cracow weight mark (201.8 g).

The 1580 mint ordinance, for instance, assigned the Commonwealth schilling with minting standard of 2 lot 3 quentin 2 pfennig²⁹ silver alloy and 178 coins in weight mark, meaning that each schilling was minted of 0.204 g pure silver and weighing 1.133 g each. The ME of schillings reached 11 złoty, which was equal to the ME of kwartnik but higher than other denominations and generally slightly above the mint price (MP), which was the value of a constant fine silver mark³⁰ (see Appendix 4). The main cause for differences in ME was the production costs and Schlagschatz, which was always higher for small change since the striking of coins was a lengthier process. In Riga, production of coins was not subsidised either by the mint or the Riga City Council. Therefore, the difference was charged from the coin users.

Schlagschatz or *Seigniorage* originates from the French word for the feudal lord (*seignior*), who exercised regal rights over coinage (ger. *Münzregal*). In Medieval times, it became a custom for the monarchs and seigniors to grant the use of minting rights to its subjects – principalities such as bishoprics and towns. They were acting as leaseholders in exchange for exclusive tax payment Seigniorage. Schlagschatz was charged either per each weight unit minted or a constant yearly sum.

Reduction either in weight or fineness or a combination of both, i.e. lowering the minting standard would result in larger output value and/or eventual de-

²⁷ Also, *Müntzfuss* (ger.), *piéd de monnaie* (fr.).

²⁸ One of the most excellent papers on this subject and account units: Debra Glassman and Angela Redish, "Currency Depreciation in Early Modern England and France," *Explorations in Economic History* 25, no. 1 (1988): 75–97.

²⁹ 1 lot was divided in smaller units 4 quentin with each quentin consisting of 4 pfennigs. In contemporary sources they were commonly abbreviated: 1 l[ot] 4 q[uentin] 2 d[enarius]. The ancient denarius stands for pfennig.

³⁰ Ignacy Zagórski, *Monety dawnej Polski z trzech ostatnich wieków* (Warszawa: Rastawiecki Edward, 1845), 130.

valuation of the coins. In contrast, increasing fineness or weight would cut the ME. This, however, was a very rare occasion in the period under research, which was characterised by the increase in silver price. Without setting the intrinsic value of schilling to the price of standard unit of thaler or a Spanish real³¹ this would most certainly lead to the withdrawal of schillings from the market and resultant losses to the mint.

Złoty

The minting standard of each coin was closely fixed to the metal price or mint price (MP) – the price a mint was willing to pay for the weight mark of silver. Similar to ME, its price was expressed in an account unit of złoty (abbreviated as *florin* – fl). The Sejm of Piotrków (1496) adopted a fixed value for złoty, which was equal to 30 groschen. Złoty was a frequently used Polish term for gold coins – ducats, florins, and guldens, meanwhile, its value was modelled after the most widespread piece with stable metal content – Hungarian ducat (3.55 g).³² Despite the rising bullion price and debasement of groschen, the mandatory exchange rate of złoty into 30 groschen remained. Thus, throughout the 16th and 17th centuries złoty was purely an account unit. Denomination in the złoty system permitted uniformity, which was an essential part of accountancy and financial transactions. Vitaly, it simplified the exchange between users of different domestic and foreign coins, which assumed great diversity both in quality and design. However, appraisal in złoty was not without limitations as it reckoned only the nominal value of current money. Before arriving at the real purchasing power of złoty, it was necessary to consider the debasement patterns of a groschen (Appendix 5).

Thaler

In the mint of Riga, as well as the Duchy of Livonia and other Commonwealth mints, the silver price was fixed to the value of Reichsthaler of the Holy Roman Empire. Thaler was the first large silver coin, which was designed as being equivalent to gold gulden. Hence the first thaler coins of Archduke Sigismund of Tirol (1446–1490) of 1486 retained the same visual appearance and similar denomination title – *guldiner* or *guldengroschen*. Accordingly, with the gold-silver ratio of that time – 1 : 12, guldiners weighed 29.93 grams in pure silver, while the gold gulden – 2.5 grams.³³ Later, *Joachimsthaler* issues (from 1520), whose shorter version was adopted to designate all similar issues, net weight

³¹ Standard currency unit of the Spanish monetary system. Here used to denote 8-real coin (Esp. *real de a ocho*), the most common and widespread denomination in the European and Livonian markets besides thalers.

³² Zbigniew Żabiński, *Systemy pieniężne na ziemiach polskich* (Zakład Narodowy im. Ossolińskich, 1981), 94–96.

³³ Peter Hammer, “Zur Entstehung des Talers = The origin of the Thaler,” *Geo Alp.*, no. 1 (sonderband) (2007): 53.

was cut to 27.4 grams but had been an instant success. In Livonia, the first (ceremonial) thalers were minted in 1525, in Riga, by the Master of the Livonian branch of the Teutonic Order, Wolter von Plettenberg (1494–1525).³⁴ Similar to other places, in Livonia thalers were used as a commodity and means of exchange, and from the middle-16th century replaced silver bullion as the main source of silver.³⁵ With the expansion of Dutch merchants at both ends of the Baltic sea trading networks,³⁶ by the end of the 16th century the dominance of thalers, particularly of the Dutch origin, was nearly absolute.³⁷

The elevation of thaler to internationally recognised long-distance trading money was cemented by the introduction of the state thaler (Reichsthaler) as the standard unit in many state monetary systems.³⁸ In this process setting the metrological standard of the imperial thaler in 1566 (29.322 g brutto weight and 14 lot 4 grain fineness (i.e. 25.97 g silver) had by far the greatest impact.³⁹ It was an important step forward to fixing the silver value in European silver markets, expressing “purchasing power of other silver coins in circulation”⁴⁰ and serving as a tool of mutual conversion between different currency areas.

The Commonwealth mints were not regular issuers of thalers, and even less so was Riga, which is not known to have minted any thalers in this period at all, being fully satisfied with the imported western species, which were highly valued for the comparatively stable price and high silver content. According to the 1580 mint ordinance, the Commonwealth issued the same quality thaler as the Holy Roman Empire mints, although the latter was evaluated slightly higher (36 groschen) than the former (35 groschen).⁴¹ Thus, the Imperial thalers would successfully replace the largely absent Commonwealth thalers in circulation and facilitate conversion with Imperial coins.

³⁴ Elena A. Yarovaja, “Rare Gold and Silver Ceremonial Coins of Walter von Plettenberg, Landmeister of the Teutonic Order in Livonia, in the Hermitage Collection,” *Arheologija Un Etnogrāfija* 31 (2020): 112–15.; Ivar Leimus, “Medieval Livonian Gold Coins – Additional Data.,” *Numizmatikos Rinkiniai: Istorinės Lietuvos Ir Su Ja Susijusių Šalių Paveldas. Mokslo Straipsnių Rinkinys.*, Lietuvos nacionalinio muziejaus biblioteka 24., 2015, 197.

³⁵ Ivar Leimus, *Das Münzwesen Livlands im 16. Jahrhundert: (1515–1581/94)*, Stockholm Studies in Numismatics 1 (Stockholm: Numismatic Institute, University, 1995), 17.

³⁶ Maria Bogucka, “Amsterdam and the Baltic in the First Half of the Seventeenth Century,” *The Economic History Review* 26, no. 3 (1973): 433–47.

³⁷ In this Thesis denomination of Dutch thalers is used in its broadest sense, denoting both thalers of Low Lands, as well as the so-called *Philips thalers* of the Spanish Netherlands, which make regular appearance in the Polish period hoards. See Kristīne Ducmane and Anda Ozoliņa, *Latvija Eiropa: monētu depozīti 1.–20. gadsimta*, Latvijas Nacionālā vēstures muzeja raksti 16 (Riga: Latvijas Nacionālais vēstures muzejs, 2009), 129–44.

³⁸ Żabiński, *Systemy pieniężne*, 86.

³⁹ Wilhelm Jesse, *Münz- und Geldgeschichte Niedersachsens*, Werkstücke aus Museum, Archiv und Bibliothek der Stadt Braunschweig, 15 (Braunschweig: Waisenhaus-Buchdr., 1952), 55.

⁴⁰ Petr Vorel, “The Function of the Thaler in Determining The Exchange Rates of European Currencies in the Second Half of the 16th Century,” *Wiadomości Numizmatyczne Rok LXVI* (2022): 296.

⁴¹ Żabiński, *Systemy pieniężne*, 106.

The rise of the Riga schillings

At the centre of the dissertation lies ‘the rise of the Riga schillings’, which is yet to be conceptualised in the field of numismatics. Defining terms of the concept, its temporal and spatial aspects could be a stepping stone in the direction of establishing a common understanding of the research subject.

In the present study, the term ‘the rise of the Riga schillings’ is used as a synonym for the schilling expansion. In regard to the Riga schillings, the expansion is understood as a unique phenomenon characterized by two external features – heightened emission rates and unparalleled territorial expansion, i.e. disseminating over provincial and municipal borders en masse, as the basic signature traits which distinguish these coins among its competitors in the Commonwealth. Yet another, internal feature, is being advanced in this research project – the successful promotion of the schilling coinage by the Riga City Council amidst the largely negative attitude towards small change in the Commonwealth.

As suggested from the linguistic perspective, – rise or expansion, do not necessarily entail finalising of action in the expected time, rather it requires an open-ended approach. This conception applies to the study of the Riga schillings. There was an actual time of departure – 1582 when the first Riga schillings started to pour into circulation, but no certain termination of expansion after 1621, when the last coins came out under the name of Polish kings in Riga.

The common understanding of the concept requires a general acceptance on the defining terms of the ‘expansion of coins’. However, numismatic lexicons have not introduced the term in their vocabulary yet. Possible interest could be hindered by practical and theoretical considerations. In the case of the Riga schillings, principal problems of conceptualising the extraordinary expansion are related to the differences of primary source (hoards and written records) preservation, periodisation and data representation: (1) complete lack of the schilling output figures of other Commonwealth mints; (2) methodological and temporary limitations of hoard inventories; (3) missing topographic maps of the findspots of the hoards containing the Riga schillings. There is also a complete lack of overarching theoretical framework within which to position the expansion of the Riga schillings. The rise of the Riga schillings does not fit comfortably in the ‘big problem of small change’ debate, which highlights the problem of shortages of small change as endemic to the Middle Ages and the early modern societies and equally challenging to monetary authorities.⁴² The aggregate stocks of small change in the Commonwealth were high, probably above the average European standards. The money supply mechanism of the Commonwealth was not prone to shortages of small change, if we paraphrase the authors of the well known *The Big Problem of Small Change*.⁴³ Both during the period of the current research and beyond, the Commonwealth suffered

⁴² See Early modern theoretical approaches toward money and small change.

⁴³ “Our model explains why the medieval money supply mechanism was prone to shortages of small change.” Sargent and Velde, *The Big Problem*, 8.

from the influx of foreign low-quality and fineness coins, besides, it experienced series of expansion of domestic small change. The rise of the Riga schilling manifests an important episode in the rising importance of schilling in the Commonwealth monetary market which was an era in which skepticism about the coinage of low fineness coins was still prevailing.⁴⁴ In its own way, with the the success of schillings, the Riga mint became a trend-maker in the Commonwealth small change market.

Lastly, the Thesis attempts to draw a demarcation line between ‘expansion’ and the everyday dissemination of currency. As the medium of exchange and unit of value, all coins going into open circulation are liable to dissemination. Through their form, materiality, visual attributes, and patterns of use, coins are an internationally recognisable medium. They have circulated and aggregated in great volumes outside the domestic markets since unforeseeable times, despite the sometimes taken measures to keep their circulation area within strict control. Distinct monetary areas were never isolated from outside impulses and Livonia certainly was not an exception. Throughout the 13th–16th centuries numerous smaller and larger episodes of Livonian coinage expansion in neighbouring or more distant countries have been encountered (and vice versa).⁴⁵ Coins would spread out regardless of their emission rates, saturation or size of the local monetary market.

While the circumstances of the coinage in each case are unique, for the common understanding of the ‘expansion of coins’ historic evidence of the territorial expansion of European coins was consulted, which displays common traits. I identify five major causal factors/driving forces of dissemination, which escalated dependent on the mint response to the market demand, geographical proximity of the mint to the afflicted territory, monetary, political, and economic relations of the mint agents, and monetary networks. The below listed ‘forces’, it should be noted, were often closely interrelated. Each of them

⁴⁴ Other notable episodes of schilling expansion/overproduction in the Commonwealth: the 1640s–1660s Riga schillings produced by the municipal mint and Livonian schillings at the the crown mint of Swedish king; in the 1660s, the Riga schillings were counterfeited in Suczawa, Transylvania; mass production of 1659–1668 copper schillings (so-called *boratynka*) in the Polish and Lithuanian mints.

⁴⁵ The presence of the earliest Livonian bracteates from Tallinn and episcopcy of Dorpat (end of the 13th – beginning of the 14th century) in the ancient Finnish bishop’s see of Koroinen, for example, has been explained not only in the context of possible mercantile contact between both lands, but the similarity of these coins with Gotlandic issues, which circulated in Finland in large amounts. Livonian issues were minted after the Gotlandic standard. – see Frida Ehrnsten, “At the Dawn of Monetisation – Livonian Coins and the Contacts at the Site of Koroinen,” *Numismatica Baltica*, Numismatics in the Centenary Year of the Baltic States, 2 (2019): 54–65.; Bracteates of the bishop of Riga Nicholas (1231–1253) have been detected in the coin finds in Gotland, Swedish mainland and Åland isles. Tatjana Berga, *Rigas Peldu ielas 13. gs monetu depozits* (Riga: Biedriba Mantojums, 2007), 13.; In the absence of their own money, the early 15th century Tartu and Tallinn artigs and pfennigs spread in the neighbouring republics of Novgorod and Pskov. Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 57.

potentially expanded the demand for coins at a level that surpassed the needs of the local monetary market:

- 1) Coins, foremost, spread in areas where there was an unmet demand for monetary means, whether it be for limited mint capacities, shortages of good money, precious metals, or some restrictive measures taken against coinage. Usually, it meant heightened silver or purchasing price of coins.
- 2) Dissemination often followed the principle of Gresham's law, which explains the driving out of coin by the equal coin of worse quality (debased schillings), i.e. good coins would be bought out with bad coins later to be melted down or hoarded; Gresham's law was invigorated by unbalanced value rates between schillings and some other coins within or outside the denomination structure.
- 3) Expansion over domestic borders was more likely within the monetary union, or between monetary systems sharing close similarities of minting standards and coin values.
- 4) Military incursions often led to the introduction of new coins in local monetary markets, since the armed forces were paid from the treasury.
- 5) Economic exchange with trading partners and economic hinterland.

Last but not least, the rise of the Riga schillings should not be confused with the expansion of the 'universal' coins, such as Medieval deniers/pennies, groschen/groats, or early modern thalers and guldens. These cases represent a completely different category of expansion, where a single denomination, which was initially localised in one principality, became overwhelmingly popular to become a model to similar regional or state coins and eventually evolve into a certain type of coin of their own. The Riga schillings, in contrast to these universal coins, remained a sort of regional type coin.

Historiography

As a distinct subject of research, the Riga schillings or small change in Livonian history has been thematised quite seldomly, and practically never outside numismatic and archaeological spheres of interest. Since the late 19th century, which saw the birth of professional numismatics in modern-day Latvia, Latvian numismatic scholarship developed in close connection with new archaeological finds and collection studies. Except for Anton Buchholtz (1848–1901) and Rasma Ceplīte (1913–1973), who were both self-taught numismatists, others either did not develop skills in reading primary written sources or had little interest to pursue academic research. Ceplīte is essentially the only one to dedicate an in-depth study to schillings of the Swedish mint of Riga (1621–1710), which contains a short report on the fineness of Polish issues.⁴⁶ In her career as the curator of the numismatic department of the National History

⁴⁶ Rasma Ceplīte, "Laikā no 1621. līdz 1701. gadam Rīgā kaltā sīknauda un tās apgrozība," in *Numismātika.*, Latvijas PSR vēstures muzejs. Raksti (Rīga: Zinātne, 1968), 111–50.

Museum of Latvia (1946–1970), she was preoccupied with sorting and recording the numismatical collection, which was badly damaged by the events of World War II. A different and scientifically much more productive career was led by her peer in exile, Aleksandrs Platbārzdīs (1899–1975). Shortly after Ceplīte’s book (1968), Platbārzdīs published his comprehensive study on the Swedish crown mint in Riga (1644–1669) which inaugurated the lifelong studies of Swedish archival sources. Apart from other merits, his book provided a multi-layered insight into the coinage history of schillings under Swedish rule. The efforts of both numismatists put the schilling coinage history under Swedish rule in an exemplary position in contrast to the Polish and Livonian periods. If Platbārzdīs was eager to write the Polish period monetary history, they were cut short by the lack of sources on his side of the Iron Curtain, which can be implied both from his bibliography as well as his comment on Ceplītes book.⁴⁷ Both biographies demonstrate the different opportunities and paths in which the numismatists of Cold War period would be implementing their scholarly interests. In the second nominal centre of numismatics, the Museum of the History of Riga and Navigation, which owned one of the most ancient numismatic collections of its kind in the Soviet Union⁴⁸, collection keeping dominated the calendar of a numismatist. The sheer prioritisation of collection keeping was paradigmatic to the work of Soviet museums and the dictate of the Soviet science policy, which allocated scientific research to the specifically established institutes, such as the Academy of Sciences of Latvia (est. 1946).⁴⁹ The Institute of History, which worked under the roof of the Academy, however, did not appoint a numismatist until the 1970s, when the position was trusted to Tatjana Berga (1944–2020).⁵⁰ Interestingly, simultaneously with

⁴⁷ Aleksandrs Platbārzdīs, *Die königlich schwedische Münze in Livland: das Münzwesen 1621–1710*, Kungl. Vitterhets historie och antikvitets akademiens handlingar. Antikvariska serien 20 (Stockholm: Almqvist och Wiksell, 1968), 521.

⁴⁸ Establishing of the museum’s numismatic collection is associated with Liborius von Bergman (1754–1823), Riga pastor and avid collector, who made an agreement with Himsel Museum in 1795 to sell his private collection. Viktors Dāboliņš, “Himzela muzeja monētu kabineta vēsture (1795–1881),” *Senā Rīga. Pētījumi pilsētas arheoloģijā un vesturē* 8 (2015): 303–19.

⁴⁹ Jānis Stradiņš, “Zinātne Latvijā: attīstības pamatmetu raksturojums (1775–2016),” *Acta medico-historica Rigensia* 11 (30) (January 1, 2018): 27–28, 33–34, <https://doi.org/10.25143/amhr.2018.XI.01>.

⁵⁰ The position was created at the initiative of archaeologist Ēvalds Mugurevičs (1931–2018) in collaboration with Vsevolod Potin, the head of the numismatic department at the Hermitage Museum who gave his consent to supervise her Thesis. Ēvalds Mugurevičs, *Mana dzīve – no ganuzēna līdz akadēmiķim: vēsturnieka liecības par savu darbu, laikabiedriem un radniekiem* (Rīga: Latvijas Vēstures Institūta Apgāds, 2013), 191.; Short biography and publication list of T.Berga: Antonija Vilcāne, “Arheoloģes un numismātes Tatjanas Bergas zinātniskā darbība,” *Arheoloģija un etnogrāfija* 31 (2020): 9–15; Antonija Vilcāne, “Dr. Hist. Tatjanas Bergas publikācijas (1976–2020),” *Arheoloģija un etnogrāfija* 31 (2020): 16–29.

Berga,⁵¹ another Latvian, Kristīne Ducmane (1946–) graduated from St. Petersburg under the supervision of Vsevolod Potin (1918–2005).⁵² Both are the only Latvians who have defended their Ph.D. Thesis on a numismatics-related subject.

Despite the entry of a new well-educated generation of professionals, the marginalisation of the Polish-era Livonian numismatics continued. The size and diversity of numismatic material extended beyond the local community's capacity to deliver high-level expertise over the whole spectrum of the monetary past.

The Polish numismatist community sought to fill this gap with new content. Their interest in the Baltic region's monetary past was especially felt in the 1980s. It was then that awareness concerning the Polish period Riga schillings was first raised in the ground-breaking work by Polish numismatist Andrzej Mikołajczyk (1948–1991).⁵³ Based on extensive use of Polish and Ukrainian hoard materials, A. Mikołajczyk came forward with the hypothetical emission rates which placed Riga mint output of schillings and dreigroschen in the forefront among the Commonwealth mints.⁵⁴ Mikołajczyk's work was highly praised in his own time. Polish colleague Henryk Wojtulewicz singled out Mikołajczyk's contribution from among specialists dealing with Sigismund III coinages as "innovative".⁵⁵ Mikołajczyk, however, justified the use of a particular statistical method with the massive losses of the first-hand written sources of the mints.⁵⁶

Besides the numismatists researching early modern Polish numismatics⁵⁷ and Andrzej Mikołajczyk's invaluable input, Eugeniusz Mrowiński's (1930–2009)

⁵¹ Tatjana Berga. *Coin finds in the 10th–12th century archaeological monuments of Latvia*. (1980)

⁵² Kristine Pelda. *Numizmatičeskije pamjatniki kak istočnik ekonomičeskoj istoriji Latviji XII – pervoj polovini XVI vv.* (1980) [Numismatic artefacts as Source of Latvia's Economic History from the 13th Century to the beginning of the 16th Century]

⁵³ Andrzej Mikołajczyk, *Einführung in die neuzeitliche Münzgeschichte Polens* (Łódź: Sztuka Polska, 1988), 207.; Andrzej Mikołajczyk, *Obieg pieniężny w Polsce środkowej w wiekach od XVI do XVIII*, Acta Archaeologica Lodziensia (Łódź, 1980).; Andrzej Mikołajczyk, "Rozmiary Produkcji Menniczej w Polsce Za Stefana Batorego i Zygmunta III Wazy. Pytania Bez Odpowiedzi?," *Wiadomości Numizmatyczne* 96 (1981): 65–120.

⁵⁴ More about the statistical method and its quantitative base, in: Chapter 4.5; The statistical hoard analysis has been widely applied in the studies of other period coinages as well.

⁵⁵ Wojtulewicz, "Coins of Kings Zygmunt III and Władysław IV."

⁵⁶ Mikołajczyk, *Einführung*, 23–26. In this manner Mikołajczyk reconstructed hypothetical emissions of 1659–1668 copper schillings (boratinki) and 1627 thalers. See Andrzej Mikołajczyk, "Trials of T. L. Boratini in 1661 and 1662 Revised," *Wiadomości Numizmatyczne* 23, no. 87 (1979): 60–68.; Mikołajczyk, "Rozmiary Produkcji Menniczej.," The problem of written source shortages in Polish numismatics and its implications on the used methods is discussed in Mikołajczyk's introduction of his book "Mikołajczyk, *Einführung*, 5–10.

⁵⁷ Żabiński, *Systemy pieniężne*; Zbigniew Żabiński, "Kryzys monetarny w czasach Zygmunta III," *Wiadomości Numizmatyczne* 20, no. 1 (75) (1976): 1–13.

comprehensive studies of Riga and Jelgava (Ger. Mitau) mint can be singled out.⁵⁸ Both monographs are descriptive overviews of the history of each mint and its production, which however failed to become a cornerstone of the subject since they do not express either an original perspective or interpretation of the subject or source analysis. For the current discussion, the most original thoughts by Mrowiński are shared in his article, which summarises the state of research in the coinage history of Jelgava and Dole (Ger. Dahlen) mints. Although Mrowiński for good reasons skips Riga mint⁵⁹, the outlined problems and future perspectives in several points are relevant to the research of Riga schillings. Mrowiński states that “it is impossible to eliminate the subject of feudal minting of those countries (Duchy of Livonia and Duchy of Courland-Semigallia – V.D.) from the Polish numismatic research.”⁶⁰ While tracing coins of both mints in private and public collections in Poland, Mrowiński realised a lack of thorough cataloguing of these coins. With exception of A. Mikołajczyk’s paper *Feudal coins of the Duchy of Courland in the monetary market of the Commonwealth*, which he hailed as “pioneer research”, there were no “analytical papers related to these coins”.⁶¹ Meanwhile, he rightly pointed out the limits of the once-classical works of Polish numismatists Ignacy Zagórski (1788–1854),⁶² Karol Beyer (1818–1877),⁶³ and Emmerich Hutten-Czapski (1828–1896)⁶⁴ who failed to deliver elaborate answers to the pending questions.⁶⁵ Mrowiński expressed hope that the many identified problems would be covered more intensely and comprehensibly in the future. Mrowiński outlines the basic tasks of such an undertaking – analysing the circulation area of the feudal coinages – first, single finds and later conducting comparative analysis of national hoard material, to study metrological data by use of numismatic material and written records, to outline their circulation range, the volume of production and its character. Mrowiński directed his hopes to the Latvian colleagues specifically:

⁵⁸ Eugeniusz Mrowiński, *Monety Rygi* (Warszawa: Warszawskie Centrum Numizmatyczne, 1986); Eugeniusz Mrowiński, *Monety Księstwa Kurlandii i Semigalii* (Warszawa: Warszawskie Centrum Numizmatyczne, 1989); Eugeniusz Mrowiński, “Feudal Coin of Livonia and Curlandia, in the 16th–18th Centuries: State of Investigations and Perspectives.,” *Fasciculi Archaeologiae Historicae*. 3 (1989): 51–58.

⁵⁹ Mrowiński published a monograph about the coinage of Riga in 1986.

⁶⁰ Mrowiński, “Feudal Coin,” 51.

⁶¹ Mrowiński, 54.

⁶² Zagórski, *Monety dawnej Polski*.

⁶³ Karol Adolf Bajer, *Skorowidz monet polskich od 1506 do 1825 roku*, Biblioteka Uniwersytecka w Poznaniu (Krakow: Polkowski Ignacy, 1880).

⁶⁴ Emeryk Hutten Czapski, *Catalogue de la collection des medailles et monnaies polonaises.*, 1–5 vols. (Graz: Akademische Druck- u. Verlagsanstalt, 1871).

⁶⁵ A notable exception is Mathias Dogiel “Codex diplomaticus” collection series. The 5th vol. is a compilation of Livonian records from the 13th to the 18th century, including sources from the Livonian monetary past. Mathias Dogiel, ed., *Codex Diplomaticus regni Poloniae et magni ducatus Litvaniae tomus V. In quo ut vniversae Livoniae, ita spaciatiim Cvrlandiae et Semigalliae ducatum res continentvr.*, vol. 5 (Vilniae: Typographia Regia et Reipublicae, 1759).

“In our efforts, we would like to be supported by the goodwill of our Latvian colleagues and we would like our cooperation to be most fruitful.”⁶⁶ Stagnation in the Polish Livonian numismatics, as declared by A. Mikołajczyk in the discussions following the presentation of the just discussed Mrowiński’s paper, could be eased by improving professional communication networks, exchanging sources, organising international conferences and researching archives in Riga, Vilnius and St. Petersburg.⁶⁷

Improvements followed sooner than might have been anticipated. The collapse of the Soviet Union in 1991 signified a turn in numismatic historiography as the numismatists of Latvia and other republics that had regained their independence tried to reinterpret and form new, ideologically unbiased views of the monetary past. Several new national monetary histories were offered to reach a larger readership in the early 1990s. In 1995, Kristīne Ducmane and Ēvalds Vēciņš published the first comprehensive history of Latvian numismatics,⁶⁸ while the leading Belarusian numismatist Valentyn Riabtsevich issued comprehensive *Numismatics of Belarus* (1995).⁶⁹ Lastly, 1995 saw the coming out of the influential *Livonian Coinage History (1515–1581/94)* by Estonian numismatist Ivar Leimus.⁷⁰ In 1994, the Polish Numismatic Association began organising international conferences (usually held in Augustów), which became the main forum for discussions between colleagues from the many nations once united under the Polish-Lithuanian Commonwealth rule. One of these meetings became a decisive experience also to my future academic aspirations.⁷¹ Bridging communicative networks as well as tightening the already existing personal ties more effectively was at the heart of establishing the Association of Baltic Numismatists in Riga in 2005. To enhance cooperation and communication with numismatists and the outside world, in addition to yearly meetings, the

⁶⁶ Mrowiński, “Feudal Coin,” 51.

⁶⁷ Mrowiński, 56–57.

⁶⁸ Kristīne Ducmane and Ēvalds Vēciņš, *Nauda Latvijā* (Rīga: Latvijas Banka, 1995).

⁶⁹ Valentin Naumovich Riabtsevich, *Numizmatika Belarusi* (Minsk: Polymia, 1995).; His conclusions about the dissemination of Riga issues do not seem to have evolved since the publishing of his book “What do the coins tell?” (1968), in which he writes that “*Great amounts of Riga schillings, groschen and 3-groschen reached Belorussian market, and from 1616 – also dreipolkers.*” Valentin Naumovich Riabtsevich, *O chem rasskazyvajut monety*, 1st ed. (Minsk: Narodnaia asveta, 1968), 46.; An in-depth studies of Belarusian finds, which I have not been able to access: Valentin Naumovich Riabtsevich, “Skarby monet z XVI i XVII wieku na terenie obwodu brzeskiego i grodzieńskiego Białoruskiej SRR = The coin-holds of the 16th and 17th century in the Brest and Gorodno oblast, Byelorussian SSR,” *Prace i Materiały Muzeum Archeologicznego i Etnograficznego w Łodzi*. 6 (1986): 211–39.

⁷⁰ Leimus, *Das Münzwesen Livlands*.

⁷¹ In discussion with Ivar Leimus, I learned about the ‘Polish times’ as a period worthy of greater attention. Until then, backed by scientific contributions of foreign colleagues, having poor conduct of Polish language and little discussions within the Latvian numismatic community, to me, a young and unexperienced scholar, problems and future tasks were not so evident.

academic publication series of *Numismatica Baltica* was initiated in 2016. So far, only two volumes have been released (2016 and 2019).

Another steppingstone in the apprehension of the research subject was the publishing of a comprehensive catalogue of coin hoards found in the territory of Latvia, which was released by National History Museum of Latvia specialists Kristīne Ducmane and Anda Ozoliņa.⁷² Besides the archival records of the mint of Riga, this is the best collection of sources for current research.

In what concerns the Polish Riga schillings, the achieved results have received minimal resonance within Latvian and Estonian numismatic communities, which ought to be its first audience. Neither have there been any attempts to follow Mikołajczyk's statistical method, even though in both countries there are no shortages of hoards from this period and a detailed list of hoards has been compiled, which only require further analysis.⁷³

Aside from the Latvian situation, which is more or less clear now, Estonian numismatists do not interact with the research subject more actively partially out of respect for the fact that main resources are kept in the Riga municipal archives and they were expected to be studied by Latvians. Besides, in the Estonian-speaking area, the rule of the Polish-Lithuanian kings lasted for a shorter period of time (1582–1621) than the rest of the Latvian-speaking area of the Duchy of Livonia (1561–1629), also its monetary independence was reversed with that of falling in Riga's sphere of influence. Despite the changing conditions, this period has left its footprints in the economic and monetary relations, which is demonstrated by the hoard analysis of Mauri Kiudsoo and in more recent times in the reports by Andres Tvaari.⁷⁴ Together with other publications about the Dole mint (1572–1573)⁷⁵ and the Swedish period in Estonia (1561–1710)⁷⁶ I. Leimus studies ground our understanding of the research subject in the larger historical context of the Duchy of Livonia since its making in 1561. In the framework of Tallinn coinage integration into the Swedish monetary system, one can also analyse the transformation of Riga coinage in post-1581 years. These works also speak of a relative shortage of written records, which is a shared problem for the Baltic region numismatics dealing with the research period.

Lithuanian colleagues are the most avid readers among the Baltic numismatists of Polish numismatic literature and active introducers of their ideas and accomplishments. Eduardas Remecas has paid respect to Mikołajczyk's statis-

⁷² Ducmane and Ozoliņa, *Monētu depozīti*.

⁷³ Ducmane and Ozoliņa.; Mauri Kiudsoo, "Eesti mündiaarded 17. sajandist. Väeringud ja nende käibeareaalid. Peaseminaritöö." (Tartu, 2000).

⁷⁴ More in: Chapter 4.6

⁷⁵ Ivar Leimus, "O chekanke monet v Doleskom (Dalenskom) zamke v 1572 i 1573 godah.," *Eesti NSV teaduste akadeemia toimetised ühiskonnateadused* 37, no. 1 (1988): 85–96.

⁷⁶ Ivar Leimus, "Das Münzwesen Revels im 17. Jahrhundert.," in *Festschrift für Vello Helk zum 75. Geburtstag: Beiträge zur Verwaltungs-, Kirchen- und Bildungsgeschichte des Ostseeraumes*, ed. Enn Küng and Helina Tamman (Tartu: Eesti Ajalooarhiiv, 1998), 169–97.

tical method in more than a few attempts to reconstruct hypothetical emission rates of GDL issues.⁷⁷ Lithuanians have also adopted the concept of a widely debased Riga schilling quality as the driving force of their expansion in the Commonwealth monetary market. In the general monetary history of the period, *Money in Lithuania*, an opus by Eduardas Remecas and Dalia Grimalauskaitė should be emphasised. This work more or less condenses major findings about the Riga issues in and outside Lithuanian numismatics, meanwhile preserving a solid and easily comprehensible form.⁷⁸ From the Lithuanian output Marian Gumowski's monograph *Vilnius Mint* stands apart with its focus on written sources. It is a very useful and hardly outdated book, given its publication year – 1921.⁷⁹

The Ukrainian numismatic contribution to the research subject is mainly felt in the counterfeiting area, which is affirmed by Andrij Bojko-Gagarin's dissertation on Medieval and Early Modern counterfeits. Given the fact that mints were not always up to the task to satisfy the demand for small change, this is an especially relevant topic. More so, since the decisions to produce counterfeits usually were based on the commonly circulating and therefore potentially lucrative issues, among whom, as noted by Boiko-Gagarin, were Riga 3-groschen⁸⁰ and especially schillings.⁸¹

Lastly, under free market conditions, one can witness active interest of private collectors in Riga schillings and publishing their collection catalogues. Edmund Kopicki,⁸² Gerbaševskis and Kruggel,⁸³ and Gunnar Haljak⁸⁴ catalogues are indispensable for anyone interested in chronology and typology of

⁷⁷ 16th c. GDL ½ groschen have been calculated using statistical methods: Eduardas Remecas, "XVI a. monetų apyvarta dabartinės Lietuvos teritorijoje," *Pinigų studijos*, no. 2 (2002): 58–77.; Secondly, Vilnius schillings of 1652–1653: Eduardas Remecas, "Lietuvos Didžiosios Kunigaikštystės monetų kaldinimas Vilniuje 1652–1653 m.," *Vilniaus istorijos metraštis* 1 (2007): 55–66.; Third, various 1664–1666 Vilnius mint issues: Eugenijus Ivanauskas and Robert J. Douchis, *Lietuvos monetų kalybos istorija: 1495–1769* (Vilnius: Savastis, 2002).

⁷⁸ In my research of hoards, I was completely left unaware of two notable publications by Lithuanian numismatist Eugenijus Ivanauskas: Eugenijus Ivanauskas, *Monetos ir žetonai Lietuvos senkapiuose 1387–1850 m. = Coins and Counters in the Graveyards of Lithuania 1387–1850* (Vilnius: Savastis, 2001); Eugenijus Ivanauskas, *Lietuvos pinigų lobiai: paslėpti 1390–1865 metais* (Savastis, 1995). However, the main results must be included in the statistic analysis of the noted book by Grimalauskaitė and Remecas.

⁷⁹ Marjan Gumowski, *Mennica Wileńska w XVI i XVII wieku* (Warszawa: E. Wende i S-ka, 1921).

⁸⁰ Andrij Boiko-Gagarin, *Falshivomonetnichestvo v central'noj i vostochnoj Evrope v epohu srednevekovja i rannego novogo vremeni* (Kyiv: Ukrainskaja akademija geraldiki, tovarnogo znaka i logotipa, 2017), 113.

⁸¹ Boiko-Gagarin, 99–100.

⁸² Kopicki, *Monety Zygmunta III Wazy*.

⁸³ Eckhard Kruggel and Gundars Gerbaševskis, *Die Münzen der Stadt Riga unter Polnischer Herrschaft 1581–1621*, 1st ed. (Riga: E. Kruggel and G. Gerbaševskis., 2002).

⁸⁴ Gunnar Haljak, *Livonian Coins XIII–XVIII Century. Part II: Kingdoms. Livonian Coins from XVI–XVIII Century* (Tallinn: Haljak Coin Auction, 2011).

Polish Riga issues. Currently, one of the main specialists in the schilling coinage is Polish collector Dariusz Marzeta, whose catalogue of Riga schillings under the rule of Sigismund III is a rare example of focused interest in schillings.⁸⁵ Although these publications are an indispensable tool for numismatics in what concerns coin rarity and visual particularities, the common problematic feature of these works is the reliance on predominantly outdated literature. In schilling studies, especially of the later Swedish issues, Dimitrij Staroverov, an independent researcher from Belarus, stands out, although some of his papers touch on technical aspects of the die engraving and typology of the Riga schillings under the Polish rule as well.⁸⁶

Although most of the noted studies are dealing with the Riga schillings only indirectly, and much less are touching on the aspects of schilling expansion, its research has seen some revision in the past 40 years, when Mikołajczyk first released hypothetical results of mint outputs. The focal point from hoards has been switched to dealing with written records and specific questions. A more comprehensive understanding of the schilling quality and silver prices in the Duchy of Livonia as well as full knowledge about the mint masters has been gained.⁸⁷ The first output results have been published based on the written records of the Riga mint.⁸⁸

Latvian numismatics has had little effect on the progress of the historiography of the period and vice versa. Edgars Dunsdorfs and Arnolds Spekke monograph *Latvian History: 1500–1600* (1964) and Jānis Straubergs monograph *History of Riga* (1937) essentially remains the standard Latvian works of the period. Both works illustrate a widespread narrative form of the interwar period and exile historians, which explained the progress of history through the antagonizing relations between the Latvian majority and the ruling German minority.⁸⁹ In part to turn over the previous nationalistic historiographical tradition of Baltic-Germans,⁹⁰ many Latvian historians, among whom the most

⁸⁵ Dariusz Marzeta, *Katalog szelągów ryskich Zygmunta III Wazy* (Lublin: Galeria u Marzety, 2020).

⁸⁶ Dimitrij Staroverov, “‘Polskoe Nasledie’ v Rizhsjoj Chekanke Solidov Gustava II Adolfa,” *Mizhnarodna Naukovakonferencija: Zbirnik Naukovih Pracj Konferencii*, January 1, 2015, 95–99, 130.; His colleague Viktor Kakareko has engaged in discussing monetary issues in the context of the circulation of Sigismund III 3-groschen of the late 16th century Grodno oblast (Western region of Belarus): Viktor Kakareko, “Trojaki poslednej chetverti XVI veka v denezhnom obrashchenii prinemania, po materialam kladov,” ed. Krzysztof Filipow, *Forum Numizmatyczne. Pieniadz i mennice.*, 2016, 29–62.

⁸⁷ More: chapter 6.4.2.

⁸⁸ Viktors Dāboliņš, “The Mint Book of Riga, 1598–1603,” *Numismatica Baltica*, Numismatics in the Centenary Year of the Baltic States, 2 (2019): 88–100.

⁸⁹ Jānis Straubergs, *Rīgas vēsture XII–XX gadsimts*, 2nd ed. (Rīga: Latvijas Mediji, 2019), 26.

⁹⁰ A good overview of primary source collections and published sources is provided by Latvian historian Teodors Zeids: Teodors Zeids, *Senākie rakstītie Latvijas vēstures avoti: līdz 1800. gadam* (Rīga: Zvaigzne, 1992).

notable were Arveds Švābe (1888–1959),⁹¹ Arnolds Spekke (1887–1972),⁹² Edgars Dunsdorfs (1904–2002)⁹³ and others⁹⁴ undertook with great zeal the early modern historical record publishing tradition. In the opinion of Aleksandrs Ivanovs, this remarkable intensity of source publications and criticism is uncontested in Latvian historiography.⁹⁵ The conclusions drawn by Ēriks Jēkabsons about Latvian historiographical development are relevant to this day: no one in Latvia is specifically dealing with the research of the ‘Polish period’; Latvian researchers share little interest in the sources kept in Polish, Lithuanian and Belarusian archives; the popular image of the Polish period is enshrined in primitive thinking and stereotypes, especially put in a negative light when contrasted to the ‘good Swedish times’.⁹⁶ Whilst the main conclusion is that the Polish period practically remains excluded from the grand narrative of Latvian history, and it falls back on investigation from the first decades of the 20th century, it should be remembered that active Polish period studies exist in many different fields in the rear of mainstream history discussion⁹⁷ – printing and literary history,⁹⁸ Jesuit studies,⁹⁹ Neo-Latin,¹⁰⁰ economic history,¹⁰¹ early modern chronicle studies,¹⁰² history of the Duchy of Courland-Semigallia.¹⁰³

⁹¹ Arveds Švābe, ed., *Die älteste schwedische Landrevision Livlands (1601)*, Latvijas Universitātes raksti = Acta Universitatis Latviensis. Tautsaimniecības un tiesību zinātņu fakultātes sērija, 2. sēj., Nr. 3 (Rīga: Latvijas Universitāte, 1933).

⁹² Arnolds Spekke, *Alt-Riga im lichte eines humanistischen Lobgedichts vom Jahre 1595 (Bas. Plinius, encomium Rigae)* (Riga: Häcker, 1927).

⁹³ Edgars Dunsdorfs, *Vidzemes arklu revīzijas 1601–1638*, Latvijas Universitātes raksti / Tautsaimniecības un Tiesību Zinātņu Fakultātes sērija 1 (Latvijas Universitāte, 1938).

⁹⁴ For a fuller list of the authors of historical source editions, see Ivanovs, Aleksandrs. Latvijas historiogrāfija un Latvijas vēsture 16.–18. gadsimtā: jautājums par “reālās” pagātnes aizvietošanu ar metavēsturi. In: Kļava, V. (ed.) *Latvijas teritorija agrīni modernā laikmeta politiskajā dimensijā 16.–18. gadsimtā*. Rīga: 2019, P. 26–28.

⁹⁵ Aleksandrs Ivanovs, “Latvijas historiogrāfija un Latvijas vēsture 16.–18. gadsimtā: jautājums par ‘reālās’ pagātnes aizvietošanu ar metavēsturi.” in *Latvijas teritorija agrīni modernā laikmeta politiskajā dimensijā 16.–18. gadsimtā*. (Rīga: Latvijas Nacionālā bibliotēka, 2019), 26.

⁹⁶ Ēriks Jēkabsons, “Žečpospolitas (Polijas-Lietuvas valsts) varas posms Latvijas teritorijā 1561–1795.” *Latvijas Vēstures Institūta žurnāls*, no. 4 (2012): 32–56.

⁹⁷ This listing does not attempt to give the most comprehensible overview of the thematical and theoretical horizons of Latvian academical output, only the most visible and currently actual academical research fields.

⁹⁸ Māra Grudule, “Vācieši, poļi, zviedri un krievi: nospiedumi un koeksistence latviešu 16.–18. gadsimta literatūrā.” in *Latvijas teritorija agrīni modernā laikmeta politiskajā dimensijā 16.-18. gadsimtā*, ed. Valda Kļava (Rīga: Latvijas Nacionālā bibliotēka, 2019), 163–77.; Māra Grudule, *Latviešu dzejas sākotne 16. un 17. gadsimtā kultūrvēsturiskos kontekstos*, Latviešu literatūras vēsture (Rīga: LU Literatūras, folkloras un mākslas institūts, 2017).

⁹⁹ Gustavs Strenge and Andris Levāns, eds., *Catalogue of the Rīga Jesuit College Book Collection (1583–1621). History and Reconstruction of the Collection = Rīgas jezuītu kolēģijas grāmatu krājuma (1583–1621) katalogs. Krājuma vēsture un rekonstrukcija* (Rīga: Latvijas Nacionālā bibliotēka, 2021).

¹⁰⁰ Ināra Klekere, “Reģiona un valstiskuma refleksija 16. un 17. gadsimta jaunlatīņu un vācu veltījumu dzejas sacerējumos mūsdienu Latvijas teritorijā.” in *Latvijas teritorija agrīni*

Practically unnoticed to Latvian readership has been a recent attempt by Polish historian Anna Ziemlewska to reinterpret Riga's history (2008).¹⁰⁴ In her book, Ziemlewska makes use of extensive literary and resource material from Riga and Polish archives, which by any measure is the most noteworthy contribution to the Polish period Riga research in the past 30 years. However, it fails to be 'attractive' in several aspects. The Polish language to most of the international readership still constitutes a barrier. This work represents a rather traditional approach to political history, that describes 'high politics' as represented by the 'political class' of the Riga City Council members, kings, and royal emissaries.¹⁰⁵ Moreover, there is little re-evaluation of the main actors and incentive to cast the current research subject in a new light, since the storyline is built upon the old themes – the 'Calendar riots', recatholicisation, the Swedish-Polish War.

In the field of the current research topic, publications in economic history occupy the primary role. Latvian economic historiography has a solid and internationally recognised reputation, thanks, particularly to the contributions of Georgs Jenšs (1900–1990)¹⁰⁶ and Vasilijš Dorošenko (1921–1992). For many decades Dorošenko was the single most productive Latvian researcher in the field of the early modern Latvian economy. Some of his most important surveys addressed dynamics of merchandising in Riga with its economic hinterland and western partners, which rested upon the quantitative data series provided by the existent customs, portorium¹⁰⁷, and excise¹⁰⁸ books of Riga, business letters, and

modernā laikmeta politiskajā dimensijā 16.–18. gadsimtā., ed. Valda Kļava (Rīga: Latvijas Nacionālā bibliotēka, 2019), 148–62.; Ojārs Lāms and Pauls Daija, eds., "Letonica", in *The Riga Humanists and Beyond*, vol. 20 (Rīga: LU Literatūras, folkloras un mākslas institūts, 2015), 112.

¹⁰¹ See below.

¹⁰² Ēvalds Mugurēvičs, trans., *Dionīsija Fabrīcija Livonijas vēsture = Dionysii Fabricii Livonicae Historiae* (Rīga: Latvijas Vēstures Institūta apgāds, 2016).; Aija Taimiņa, "Helmsa hronika: oriģināls, noraksti, attēlu pārceļojumi un pārveidojumi.," in *Kultūrvēstures avoti un Latvijas ainava*, ed. Saulvedis Cimmermanis, Letonikas bibliotēka (Rīga: Latvijas Zinātņu Akadēmijas vēstis, 2011), 240–69.

¹⁰³ Mārīte Jakovļeva is the single most active and renown historian in the field of the history of Duchy of Courland-Semigallia.

¹⁰⁴ Anna Ziemlewska, *Ryga w Rzeczypospolitej Polsko-Litewskiej (1581–1621)* (Toruń: Towarzystwo Naukowe, 2008).

¹⁰⁵ Modern historiographical landscape of early modern politics has shifted to analysing social networks, asymmetrical power relations, different group identities. See, for example: Lloyd Bowen, "Politics," in *Writing Early Modern History*, ed. Garthine Walker, 1st ed. (Delhi: Bloomsbury Academic, 2005), 183–204.

¹⁰⁶ Georg Jensch, *Der Handel Rigas im 17. Jahrhundert: ein Beitrag zur livländischen Wirtschaftsgeschichte in schwedischer Zeit.* (Riga: Kymmels Buchandlung, 1930).

¹⁰⁷ Customs duty imposed in the main ports of the Duchy: in Riga in 1581 and in Pärnu at an unspecified time. It was levied in amount of approx. 2% of the value of all exported and imported goods by foreign merchants. See 5.2.

¹⁰⁸ An indirect tax, which was imposed by the city (also 2%) on beverages, but later also from a wide variety of exported and imported products coming in the Riga Port.

the Riga City Council documentation.¹⁰⁹ Dorošenko's findings were well-received within the international community and are integrated into the scholarly output of many scientists to this day.¹¹⁰ His intellectual heritage poses only one unanswered question – Dorošenko knew, but never studied Riga's income and expense book, 1593–1654, and *Memorial* of Andreas Koy, 1588–1605 (see 5.2). Combined both sources create the earliest and most complete data series of Riga's economic activity under the Polish rule.

In the 1980s, Swedish economic historian Artur Attman brought the discussion of the bullion flow to the fore of the merchandise history of the Baltic Sea, which he based on the various indexes of merchandise activity in the largest Baltic port towns, including Riga. Despite the importance of this issue to the research subject, Attman was unable to elaborate on the substantial bullion inflow other than by offering rough estimates.¹¹¹ Dorošenko, in contrast to his Swedish colleague, was able to find much more evidence of the import of silver to Riga, however, since their recording was of an occasional character, Dorošenko most likely perceived the task of systematizing this set of information to be fruitless. Furthermore, Dorošenko maintained that the enormous export surplus represented only part of the whole picture, a more adequate indicator of Riga's economic activity is the turnover of exported and imported goods. Given Riga's negative trading balance with the economic hinterland and the fragmentary state of such records, in the current research, I argue that the most reliable source of tracing the economic activity is to look at the income from the customs duties.¹¹²

Attman also demonstrated an admirable apprehension of regional political history, which largely illustrates the notion of politics as an extension of economics.¹¹³ Causes of military-political conflicts, of course, were far more complex than those of conflicting merchandise interests. The struggle for the inheritance of Livonia was at the heart of major hostilities in the region. The end of the Livonian War (1583) and the peace terms did not maintain peace for long, however, Riga, unlike other port towns of Tallinn and Narva (Ger. Narwa), which had become hostages of boiling economic clashes in the region, enjoyed a relatively peaceful development. A comparative analysis of the size

¹⁰⁹ At least 30 articles and books belong to the pen of Vasilij Dorošenko from which the most relevant are: Vasilij Doroshenko, *Torgovlia i kupechestvo Rigi v XVII veke*. (Riga: Zinatne, 1985).; Vasilij Doroshenko, "Balansi' Rizhskoj vneshnej torgovlji v XVII–XVIII vv.," *Latvijas PSR zinātņu akadēmijas vēstis* 6 (491) (1988): 44–51.; Vasilij Doroshenko, *Myza i rynek. Hozjaistvo Rizhskoj iezuitskoi kollegii na rubezhe XVI i XVII vv.* (Riga: Zinatne, 1973).

¹¹⁰ Artur Attman, *The Struggle for Baltic markets: powers in conflict 1558–1618* (Göteborg: Kungl. Vetenskaps- och Vitterhets-Samhället, 1979).; J.T Kotilaine, "Riga's Trade with Its Muscovite Hinterland in the Seventeenth Century," *Journal of Baltic Studies* 30, no. 2 (1999): 129–61.

¹¹¹ Artur Attman, *Dutch Enterprise in the World Bullion Trade 1550–1800* (Göteborg: Kungl. Vetenskaps- och Vitterhets-Samhället, 1983), 64–68.

¹¹² Doroshenko, "Balansi' Rizhskoj torgovlji," 46.

¹¹³ Attman, *Baltic markets*.

of merchandise in the mentioned port towns under the Swedish rule is provided in Enn K ng articles.¹¹⁴ These results, unfortunately, cannot be compared with other competing port towns of Gdańsk (Ger. Danzig), Klaipėda (Ger. Memel), or K nigsberg due to the missing data records of portorium. Nevertheless, Bogucka’s studies on the Amsterdam merchants’ freight contracts for shipment to Gdańsk, Riga, and other ports (in 1597–1651), are revelatory (see 5.2).

Research questions and structure of the Thesis

The complexity of the research subject remained almost incomprehensible until I started to read manuscripts held at the Latvian State Historical Archive (henceforth, LVVA). At first, I was struck by the richness of written sources containing much detail yet to be uncovered. After a while, observing regularity and the sheer amount of sources dealing specifically with schillings convinced me that the schilling issue was far greater than its coverage in the literature. The limited scientific interest in the phenomenon, which emphasized hoard analysis perspective, on the one hand, and lack of in-depth, interdisciplinary studies, using different sources and methods, on the other, has largely hindered further publicity of the phenomenon and building academic discussions around the topic. The few attempts by Polish and Lithuanian numismatists to approach the phenomenon sink into the ocean of much unknown. Moreover, the predominantly descriptive and schematic approach to the monetary period in literature does not give much assurance for positive advancements in the subject research in the future. A much more focused and systematic approach to the research subject had to be delivered. Based on these observations and the preliminary results of my research, I formulated initial tasks that needed to be fulfilled before proceeding with the main research questions of the Thesis:

- 1) To collect and analyse primary sources about the history of the Riga mint;
- 2) To gain additional verifiable evidence about the mintage of the Riga schillings under the Polish rule.

The processing of primary sources – reading, dating, systematising, deciphering, transcribing, translating (and even finding a completely lost archive fund), was the most time-consuming and enjoyable experience in the long preparatory stage for the Thesis writing. I arrived at a rather surprising conclusion that the Latvian State Historical Archives hold the best preserved and complete mint corpus of all the Commonwealth mints of the research period. The work with written sources was facilitated by an anonymous (17th c.) record keeper of the Riga City Council archive, who had assembled all the related sources of the Riga mint in one complex with additional annotations of sources. Luckily, I was able to identify most of the originally assembled and preserved sources. I also

¹¹⁴ Enn K ng, “Tallinna kaubandusbilanss 17. sajandil,” *Tuna*, no. 1 (2015): 27–35.; Enn K ng, “Staatlichen Z lle – Portorium und Lizenzen – in den St dten den schwedischen Ostseeprovinzen,” *Hansische Geschichtsbl tter* 133 (May 30, 2020): 115–62.

greatly benefited from the availability of the printed hoard inventories from around the countries once ruled by the Polish-Lithuanian kings. The size of the acquired primary sources was convincing enough to drop the initial plans for the research trip to Lithuanian and Polish archives. The 2017 research trip to Swedish archives¹¹⁵ and archive material studies at the National Archives of Estonia, however, only partially met expectations. During the study semester at the University of Greifswald (2018/2019), I visited the regional archive of Vorpommern¹¹⁶ and the State Archive of Schwerin.¹¹⁷ Lastly, I examined the weight and size of 718 pieces of the sizeable schilling collection of the Museum of the History of Riga and Navigation (henceforth, RVKM) as well as acquired digitised photos of the finest and unique specimens for the catalogue (see the coin catalogue). In total, three different groups of monetary sources had been studied – written records, hoards, and RVKM schilling collection, which form the main database of the current study. Fulfilment of the basic tasks was practically feasible, seeing no particular restriction in the accessibility of sources. In contrast to the rather static image of the research period in the literature, which was schematically outlined with few well-known facts, the written source analysis offers a very solid factual basis, potentially placing it on equal grounds with the Livonian or Swedish period numismatics of Latvia, in whose long shadow Polish numismatics has long stood. Moreover, the assembled data collection permits the reassessment of the widespread perceptions and facts of the Commonwealth's monetary history.

The common monetary rules applied only to the coinage quality and observation of equal exchange rates. They, however, did not facilitate the dissemination of coins over the place of origin, least of all schillings and other small change, which was unlikely of becoming a long-distance currency because of their limited purchasing power and objections from the Commonwealth monetary authorities.¹¹⁸ To disperse over longer distances the Riga schillings had to be economically more beneficial than their equals. Moreover, there was no expansion without the deliberate assistance of the Riga mint and the Riga City Council. Given all the above arguments, I have come to the hypothesis that: **the Riga schilling expansion was fostered by an extraordinary change of events in the Commonwealth monetary system and Riga's overarching interest in schillings.** The main objective of the Thesis, therefore, is to investigate causes for the Riga schilling rise in the early modern Commonwealth schilling market.

Hence, the main research questions are:

¹¹⁵ Riksarkivet (Swedish National Archives in Stockholm), Carolina rediviva (Uppsala University Library) and Lunds Universitetsbiblioteket (Lund University Library).

¹¹⁶ Landesarchiv Greifswald (Germany).

¹¹⁷ Landeshauptarchiv Schwerin (Germany).

¹¹⁸ See Early modern theoretical approaches toward money and small change.

1) How many Riga schillings were minted?

This is the central question of the Thesis. Emission rates, next to the hoards are the main quantitative indicators of the progress of coinage. Based on this data series, it is possible to address the basic assumption of the Riga schilling expansion in spatial temporal dimensions, to project its progress in the relations with minting variables that may have affected the coinage – quality of coins, minting expenses and income. Following the progress of output on a year-to-year basis also allows to measure the impact of possible monetary regulations or economic activity fluctuations.

2) How many schillings went into circulation over the provincial borders?

There is plentiful evidence gathered from Eastern Europe which supports the massive character of the schilling dissemination beyond the provincial borders, however, it has never yielded a satisfactory answer as to their volume, dynamics and driving forces. Did the massive outputs answer for the Commonwealth market demand or/and were there some other factors involved, e.g. private interests, monetary speculations? What share of the total output stayed at home, within the province (represented by Latvian and Estonian hoard statistics) and how much ended up in the rest of the Commonwealth (represented by Polish, Ukrainian and Lithuanian hoard statistics)? What are the main trends in the dissemination of schillings? Did the coins leave the Livonian province immediately from the doorsteps of the mint?

3) What contributed to the unprecedented ‘expansionism’ of the Riga schillings?

This is the most complex question since there is no evidence to speak of a special privileged status of Riga in the schilling coinage vis-à-vis its counterparts. The previously outlined causes or principal movers of the currency expansion must be assessed. In addition to these, one can argue about the effectivity of monetary legislation, and transparency of supervision of the minting process, especially in the final 7 years under observation, when the legal or illegal debasement of schilling intensified at a rate that went out of regular control. Last, the human and technical side of expansion can be discussed: agency and network relations, points of mobility – roads, towns, toll stations, and financial tools/techniques. What was their role in facilitating the external outflow of the coin?

4) History of the mint under the Polish rule

Historical knowledge about the mint has been based on raw, fragmented, and often outdated facts, detached from the larger context of the Commonwealth monetary history. This question raises awareness to the technical, judicial, and economic basis for schilling expansion. How much its status, geographical or economic positioning affected the progress of coinage? How are the different interests of the mint agents – the Riga City Council as the owner of the mint,

mint master (as the leaseholder) and major monetary authorities (monarch, treasurer) interrelated in the schilling question?

Chronological limits of the present Thesis 1582–1621 are fixed to the coinage of the Riga schillings under the Polish rule (exception of hoard statistics – see below). Although the Riga City Council executed coinage rights from 1581, first, in the name of Stephen Báthory (r. 1576–1586) and his successor on the throne, Sigismund III (r. 1587–1632), the earliest schillings were issued in 1582. The necessity to address the spatial-temporal character of schilling expansion, however, disagrees with these strict temporal borders. Schilling dissemination did not stop because of the decision to stop their coinage, the attempts to demonetise¹¹⁹ or withdraw coins transparently hardly reached the desired goal. Moreover, the analysis of the most recent issues can not be performed with much precision within the chronological timeframe, since that would inhibit the precision of results and therefore extends the upper chronological limits to 1629.¹²⁰

The structural organisation of the Thesis is based on the chronologically-thematical principle. Investigation in the research questions was conducted through six chapters, which form three thematical blocs: Chapters 1–3 document the monetary history of Riga and the Commonwealth, Chapters 4–5 describes quantitative and qualitative data of schillings and their dissemination; Chapter 6 reviews the organisation of the Riga mint. Each chapter assumes a different perspective on the research questions, and as such functions as a freestanding investigation.

The first chapter introduces the background of the Commonwealth monetary history, major monetary political discussions and decisions of the 1604 and 1616 Warsaw Commissions, characteristics of the system, and the framework in which the various mints executed minting rights. This chapter argues that in 1601 the monetary system passed the threshold at which the former state of affairs developed in a more unstable phase due to the decline in economic activity, rising silver price, inflation, and the beginning of the Swedish-Polish War. This change had far-reaching consequences for the further development of the small-change market. Although this is a largely descriptive chapter, it introduces some new results and aspects to the general understanding based on the source analysis.

The second chapter turns the focus of attention to the domestic money market of the Duchy of Livonia and Riga as its informal centre of provincial monetary politics. This chapter publishes and investigates the main legal acts with which the rulers granted Riga exclusive coinage rights and set new monetary rules – exchange rates, values, and monetary standards, which integrated the new province within a united monetary area. This chapter argues that the integration did not happen overnight, both old and new schillings were in parallel use in the everyday transactions and accountancy.

¹¹⁹ Coins that are officially deprived of their legal use as monetary means.

¹²⁰ See Methods and sources.

The third chapter takes the form of what is known as *Histoire événementielle* – a history of events. Not a completely new approach to history writing, this approach was applied to bring in the new flow of numismatic information and as yet unpublished mint sources of the period. Some of the sub-chapters are based on thematic record collections. The case studies of the trials of 1597 and 1621, and the debt crisis of the mint master (1594) showcase some of the critical points in Riga’s coinage history within the mint and relations to its competitors and monetary authorities. Separate subchapters are dedicated to the 1604 and 1616 Warsaw Commissions which are often considered in the numismatic literature as formative stages in the monetary development of the Commonwealth. Others chapters discuss general patterns in schilling coinage and disputable dreipölder coinage.

The fourth chapter deals with the research question on the schilling output and expansion. First, it describes the most notable accounts books, which help to reconstruct emissions for 1598 to 1621 with some precision and distinguishes different quantitative data groups. Given the magnitude of output, the different resource and expense groups occupied an ever greater role in the minting prospects. The second and third source groups are studied independently and finally contrasted with the calculated emission rates to bring early conclusions on the traits of expansion and possible emissions in the unrecorded period (1582–1597).

The fifth chapter explores the beginnings of the 1615–1621 expansion stage, which had its roots in the very critical 1614 year for the Riga mint. The Thesis examines the onset of expansion through the used argumentation of the mint master of Riga, and weighs their potentiality in the decision-making process. Henrich Wulff stressed the necessity to debase coins by pointing out to the Polish Livonian monetary-political relations with the royal authorities, poor economic conditions of the war-torn Livonia, a European scale fall of small change quality, and the shift of small change policy.

The final chapter gives a detailed review of the various material, personal, technical, and financial attributes of the Riga mint. The mint is seen as a municipal enterprise, which demonstrated advantages of an early technological upgrade, but was likewise resource-intensive, very costly, and only irregularly a profit-bearing undertaking.

Methods and sources

The research options of the Thesis are imbedded in the perception of the rise of the Riga schillings as a monetary history phenomenon. Monetary history traditionally is associated with the field of historical research or its sub-genre – numismatic discipline, which studies the history of monetary means, their usage patterns, circulation, technical, legal, and economic aspects of coinage. In the three centuries-long formation and self-defining process, numismatic scholarship has developed a rigid methodological and theoretical arsenal to provide re-

searchers with more objective and precise description, explanation, and interpretation opportunities. Numismatics transform the ways we describe coins, narrates and maps findings of monetary matters in correspondence with objectivity, logical, and verifiable historical knowledge principles. It is especially efficient at describing monetary issues at the ground level of a research project when delivering extensive groundwork, i.e. raw material studies with intensive explanatory work are of primary importance. This makes numismatics so relevant to the study of the current topic.

Besides the focus on the different monetary history aspects, the disciplinary borders of numismatics have never been clear-cut nor limited by theoretical, thematical, and methodological considerations. The all-pervasive character of money permits a wide spectrum of possible explanations and combinations of methods of use. Numismatics is not able to capture the full spectrum of questions related to monetary history, however, that is not the issue. The availability of sources, research questions, and period of research constructs the object and perspectives of the current numismatic research. It is for these reasons that numismatic research, including the current Thesis, maintains an explicit interdisciplinary character, and strong affiliation to monetary economics and archaeology, while at the same time absorbing new theoretical approaches, principles, and ideas. In other words, this study takes a complex approach to the research topic.

As previously noted, the phenomenal rise of schillings has not been researched much outside the context of **hoard analysis**. The usage opportunities of this method have not been exhausted in the previous numismatic historiography. In general, the hoard analysis relates to the studies of unearthed/archaeologically obtained numismatic evidence, which are part of a compactly stored and undisturbed assemblage of treasure (hoard). Initial analysis of hoards entails a study of their composition – attributing and dating of coins, dating the time of deposition according to the *tpq* principle, and depending on the tasks and size of a hoard, may be expanded to a grouping of coins according to their place of origin, types, emission years and denomination. These basic principles of hoard analysis are observed everywhere.

However, there persist crucial differences in the presentation of data in publications, which sets limits for using statistical methods and achievable results. The current study is mainly based on the three inventories of hoards from Latvia,¹²¹ Estonia,¹²² and Poland.¹²³ Comparative analysis of Lithuanian, Polish, and Ukrainian hoard inventories are provided in the book *Money in Lithuania*.¹²⁴ Although this book provides some cumulative data for later

¹²¹ Ducmane and Ozoliņa, *Monētu depozīti*.

¹²² Kiudsoo, “Eesti mündiaarded 17. sajandist.”

¹²³ Marta Męclewska and Andrzej Mikołajczyk, *Skarby monet z lat 1500–1649 na obszarze PRL. Inwentarz I* (Warszawa: Polskie Towarzystwo archeologiczne i numizmatyczne, 1983).

¹²⁴ Dalia Grimalauskaitė and Eduardas Remecas, *Money in Lithuania* (Vilnius: Lietuvos nacionalinis muziejus, 2020), 206., Table 20; Remecas, “XVI a. monetų apyvarta,” 71., Table 8.

periods as well, it limits comprehensible analysis of Lithuanian and Ukraine hoards up to the 1601 schilling emissions. Furthermore, the distribution pattern of the Riga schillings in Estonian hoards is not traceable due to the missing datings of coins. Yet, the more recent finds of the period allow making general observations of the first half issues, up to 1600.

Numismatic scholarship studies transmission of coins in space and time using the *tpq method* – *terminus post quem*, which limits the most recent use of coins based on the youngest coin or item found in the hoard or archaeological site. Although this method is not accurate at portraying the circulation periods and amounts, it is very precise at mapping the hoard distribution in the real environment and revealing hoarding patterns based on the composition and place of storage. Moreover, hoarders usually demonstrated selective attitude towards coins, meaning that the schilling occurrence in hoards may not be directly proportionate to the circulating amounts. High-value silver coins were more likely to be hoarded than small change, however, their frequency depended on the availability of such coins in the locality as well as social standing of the person/family collecting coins. Disposal practices were also defined by the regional monetary market differences, monetary politics and external shocks.

Lastly, in addition to these major critical points, which need to be considered when approaching the hoard analysis from the reliability point of view and hypothetical emission rates, the current research suffered acute deficiency of topographic maps of hoards containing the Riga schillings. In the current research context, the task of fulfilling this gap in our knowledge was not undertaken due to several obstacles. Today, only printed topographical maps of hoards exist. In these maps, most find spots cannot be precisely identified or verified due to the missing references and coordinates. The only solution was to carry a thorough and consistent content analysis of the inventorised national hoards. However, it was not implemented due to complexity of such an endeavour. Some inventories (of Lithuania and Ukraine) were not reachable, while many other hoards are originating from remote localities, some of which are hard to geolocate.

Next to the hoards, an extensive primary source group is archive records. LVVA is the holder of the most significant record group of Riga mint and monetary matters (*Monetaria*), which comprises at least a few shelf metres. This complex is located in the External Archive of the Riga City Council (*Rīgas maģistrāta ārējais arhīvs*) fond No 673 and currently contains 25 file numbers.¹²⁵ At its fullest, the complex may have included several more files.¹²⁶

¹²⁵ The file Nos: Fremde Münzen, 1759: LVVA 673-1-258; Standgelder des Marktplatzes: LVVA 673-1-758; Strafgeder: LVVA 673-1-759; Bei den Zoll-Aemtern anzunehmende Münzen: LVVA 673-1-867; Hermeisterliche Sachen in Münzsachen, 1468–1560: LVVA 673-1-1275 (The file contains only item registry); Berichte über die Münze, 1517–1591: LVVA 673-1-1276; Monetaria Wolf Nothafts Händel, 1532–1545: LVVA 673-1-1277 (the file contains only item registry); Verlehrung und Inspektion der Münze, 1547–1621: LVVA 673-1-1278; Miscellanea in Münzsachen, 1547–1706: LVVA 673-1-1279; Wardier und

Except for three accountancy books and notes,¹²⁷ most of the materials related to the Polish period in Riga (1581–1621) are fused with other period sources. In quantitative numbers and from the preservation of sources point of view, the sources of the Polish period are best represented. Based on their functional role and origin, three different record groups can be distinguished among these materials. First, and most important are the book-keeping records – mint books, warden notes, and mint lord notes. These were official documents, whose productions were regimented and regularly checked. Because the mint was one of the main budgetary institutions, these documents can be regarded as primary municipal financial documents. Another group is formed by legal sources – privileges, oaths, contracts, commission discussions and decisions, and trial documents; Third – *varia* (multiple kinds of notes, accounts, calculations, letters). Except for the first group materials, originals are blended with notes, copies, and third-party accounts. Thus, from the perspective of source reliability, the quality of these first-hand sources is not even. The authenticity of many sources can be verified based on palaeographical analysis and provenience studies, while many other documents are signed or sometimes notarially certified.

The creation of the Riga mint and monetary history archive collection, i.e. its provenance, has not been researched at any length. Without making any conclusive statements, I will outline a few basic points of reference for better understanding. The External Archive was established following the Riga City Chancellery regulations of February 2, 1598, which stipulated the creation of a common archive instance for all administrative and judicial authorities.¹²⁸ Aleksandrs Ivanovs, who is the leading Latvian archivist today, notes that the

Münzmeister Bestellungen, 1557–1661: LVVA 673-1-1280; Münz-Edikte und Ordinanz, 1547–1662: LVVA 673-1-1281; Dahlische Münze, 1572–1583: LVVA 673-1-1282; Das neue Münzbuch, 1598–1603: LVVA 673-1-1284; Münze-Rechnungen, 1605–1650: LVVA 673-1-1285; Schlagschatzrechnungen des Wardeins Lambert Goldenstedt, 17.10.1607–29.09.1610: LVVA 673-1-1286; Das Münzbuch, 1615–1622: LVVA 673-1-1287; Münz-Sachen, 1621–1662: LVVA 673-1-1288; Münzbuch, 1633–1658: LVVA 673-1-1289; Marsilius Philippsen u. Heinrich Jäger, 1644: LVVA 673-1-1290; Acta der Müntz-Kommission in Warschau, 16.05.1650: LVVA 673-1-1291; Wardierensattestate verschiedener fremder Münzsorten, 1763, 1764, 1766: LVVA 673-1-1292; Registratur in Müntz Sachen, n.d.: LVVA 673-1-1294; Ivdicalia in Müntz Sachen, 1597–1644: LVVA 673-1-1369; Drafts by Riga mint master Henrich Wulff, 1594–1595: LVVA 673-1-1460; Riga mint materials, 1595–1607: LVVA 673-1-1461.

¹²⁶ Few files from the 673 fond register could not be found in the archive: Valor der Münzen: LVVA 673-1-1283; Erzbischöfliche alte Verträge und Missiven, 1384–1554. Fortunately, two item descriptions from 1426 and 1510 are copied and found in: LVVA 8-4-59, fol. 18r.

¹²⁷ LVVA 673-1-1284; 1286; 1287.

¹²⁸ Enija Rubina, “Rīgas pilsētas vēsturiskais arhīvs,” in *Rīga un rīdzinieki arhīva dokumentos*, ed. Valda Pētersone, Ilze Antēna, and Ināra Jēgere, Latvija Valsts vēstures arhīva zinātniskie lasījumi (Rīga: Latvijas Nacionālais arhīvs, 2015), 178.

registry of the External Archive was drawn up in 1599¹²⁹ and after that in the 1630s.¹³⁰ The handwriting of the Mint complex registers is identical to the hand of the latter, which allows to date the creation of the complex to the 1630s at the latest. The complex was designated with the topical label “*Monetaria*”, which is found on top of the pages of the registry and was kept in two copies: a full¹³¹ and item registry for each volume. In observance of the thematical record-keeping principle, documents were stored in distinct volumes. As evidenced by the changing handwriting of inscriptions, the complex was not motionless, new acquisitions were made and new volumes were created throughout the 17th and 18th centuries, but unfortunately, the registered items were not provided with annotations anymore. The inscription of the most valuable group of sources of mint books is vague: “Several old mint calculations and mint books” (*Einige alte Müntz-Rechnungen vnd Müntz-Bücher*) that one may never be able to find out the complete number of files.¹³² But there is hope for future discoveries. For example, some of the documents of the initial complex (the 1630s) have been identified in the Inner Archive, fond No 8.¹³³ Besides the *Monetaria* complex related documents and other relevant issues are found and discussed in several other record groups most important of which are: taxation and income books;¹³⁴ mint masters’ inheritance, real estate, and debt papers,¹³⁵ the goldsmith guild’s documentation,¹³⁶ and trial documents.¹³⁷

¹²⁹ Aleksandrs Ivanovs, “Dokumentu komplekss par Rīgas attiecībām ar austrumslāvu pilsētām un zemēm 12.–17. gadsimtā Latvijas Valsts vēstures arhīvā,” ed. Valda Pētersone, Ilze Antēna, and Ināra Jēgere, Latvijas Valsts vēstures arhīva zinātniskie lasījumi (Rīga: Latvijas Nacionālais arhīvs, 2015), 17.

¹³⁰ Ivanovs, 20.

¹³¹ LVVA 673-1-1294; This registry is clearly outdated. The more extensive and detailed LVVA 673 fond register, which was compiled in the first half of the 20th century, holds several previously unrecorded files from the 18th century.

¹³² *Ibidem*, fol. 24.

¹³³ Exchange rates in Riga portorium, 5.05.1582, LVVA 8-4-59, fol. 14r-v; Valor der Müntzen von Ao 1602 biß [16]27 LVVA 8-4-59, fol. 16r-v; L. Goldenstedt’s appointment letter, 29.09.1588: LVVA 8-4-59, fol. 33v; Hans Rademacker’s request for money, n.d.: LVVA 8-4-59, fol. 34r; L. Goldenstedt’s notes, 28.11.–26.12.1612: LVVA 8-4-59, fol. 36-40.

¹³⁴ Taxa Portorii regii Rigensis, 6.05.1582: LVVA 673-1-1252, fol. 2r-v; Copia Proventuum Portorii per Praefecto Portorii Andream Koyen, 1588–1605: LVVA 673-1-1253; Ierlicher Summarischer Auszugk aller der Stadtt Einnahme vnd ausgabe, 1593–1654: LVVA 8-1-32.

¹³⁵ H. Wulff’s debt and pledge to the Riga City Council, 1595–1604: LVVA 8-4-62, fol. 52-68; Renthebock, 1550–1584: LVVA 8-1-17; Renthebock, 1585–1680: LVVA 8-1-18; Drafts by Riga mint master Henrich Wulff, 1594-1595: LVVA 673-1-1460; Riga mint materials, 1595–1607: LVVA 673-1-1461.

¹³⁶ Rīgas Mazā ģilde, zeltkaļu amats. Mācības beigušo reģistrācijas grāmata, 1571–1743: LVVA 224-1-2644

¹³⁷ *Instrvctio* darnach die auf dem vorstehenden Wendischen Landtagk sich fürnemblich zurichten, 1592: LVVA 673-1-132, fol. 25r–27r; Process eines Vorburgischen falsarii, 1598–1599: LVVA 673-1-1026.

As for many other researchers outside the field of archive study, the methodical toolbox of numismatist research of archive sources is mainly limited to the **source criticism** method. Through the prism of the external and inner set of features analysis, I was able to identify the most relevant primary sources, and their inner relations, to categorise and systematise information. The assembled collection of quantitative and qualitative data allows the creation of new data series, which capture a distinct perspective of historical reality, moreover, paraphrasing French historian Fernand Braudel, “has its own reality,”¹³⁸ while having them in greater numbers yields more solid conclusions.¹³⁹ **L’histoire serielle** method of devising statistical data results based on the visible indications is highly practical in the context of the Polish Riga period since all schillings were produced uniformly, with standard weight, diameter, fineness, and year date, which indicated the year of striking.¹⁴⁰ Data series permits fact-checking by cross-examination of various related indexes and verifying problematic claims in written sources, and contemplating or evaluating the given information conveyed by contemporaries. The unexpected side-effect of using this method is the increased dynamism of time and the revealing of factual complexities.

Early modern theoretical approaches toward money and small change

The conceptual framework of the early modern monetary authorities was defined by several late Renaissance thinkers in their dialogue with the classical authorities’ perceptions on a wide range of monetary issues: nature, quality and value of money, usury, debt, and coinage rights.¹⁴¹ One of the leading figures to criticise the previously dominant commodity-money principle, which states that the coin’s face value is derived from its intrinsic value, was French legal scholar

¹³⁸ Full quote: “A price series certainly has its own reality but is not established *for its own sake*. It has significance only in contributing to knowledge, as a reappraisal of historical realities.” F. P. Braudel and F. Spooner, “Prices in Europe from 1450 to 1750,” in *The Cambridge Economic History of Europe from the Decline of the Roman Empire: Volume 4: The Economy of Expanding Europe in the Sixteenth and Seventeenth Centuries*, ed. C. H. Wilson and E. E. Rich, vol. 4, *The Cambridge Economic History of Europe* (Cambridge: Cambridge University Press, 1967), 375.

¹³⁹ Braudel and Spooner, 381.

¹⁴⁰ The practice of dating coins in Livonia appeared in the early 16th century coinages, but established firmly in the coinage of the Free City of Riga (1561–1581).

¹⁴¹ Scholarly education and theory in economics was based on the erudition and interpretation of ideas of classical masterminds. Most cited authors would be Aristotle (384–322 BC), Thomas Aquinas (1225–1274), Nicholas Oresme (1325–1382) and Nicolaus Copernicus (1473–1543). Sargent and Velde, *The Big Problem*, 109–10.; Jotham Parsons, “Money and Sovereignty in Early Modern France,” *Journal of the History of Ideas* 62, no. 1 (2001): 59–79.

Charles Dumoulin (1500–1566).¹⁴² Dumoulin argued that the real value of money is defined by nominal value rather than intrinsic value (*by tale, not by weight*). Thus, for example, the centuries-old Roman law “on repayment of commodity loans should be applied to values in exchange, not value by weight.”¹⁴³ This, so-called *nominalist* view of money eventually was assimilated into French law and later would be established “in matters of debt payments in England.”¹⁴⁴ However, Dumoulin rejected the use of fiat money, the idea, which had been proposed earlier by Italian jurist Girolamo Butigella (1470–1515).¹⁴⁵ Butigella argued that money derived its value not from its content or material but from its public approval as a legal tender.¹⁴⁶ French jurist and later mint master for the Duke of Bavaria, René Budel (1530–1591), together with Guillaume Budé (1468–1540) and Étienne Forcadel (1534–1574) would be the most vocal proponents of this new perception of the value of money. Budel, for example, concluded that under conditions of dire need, money could come in any form or material (leather, bark, salt, etc), provided that the equivalent value could be paid in gold or silver.¹⁴⁷

From the ancient times to the Middle Ages and more recent times, small change has been a source of reoccurring debate among the monetary policy makers as well as in scholarly circles.¹⁴⁸ In the 16th and 17th centuries Europe, discussions over the nature, use, and value of currency revolved around the most pressing monetary problems of the day, e.g. the rising inflation and endemic shortages of small change. Early modern theoreticians understood small change as something inherently needed for domestic transactions and therefore they advocated for the coinage of small change either in the form of overvalued or fiat money. However, proponents of token money advised to keep their outputs low to avoid alterations in their value and keep the price level stable.¹⁴⁹ French jurist Jean Bodin (1530–1596), who was among the most notable intellectual figures to study the causes of inflation, the phenomenon so widespread and yet so poorly understood in early modern Europe, identified five causes of inflation: 1) the great influx of gold and silver from the New World, 2) monopolies, 3) “scarcity which is caused both by the export trade and by waste [wear and tear – V.D.]”, 4) demand for luxuries, and lastly, 5) debasement.¹⁵⁰ Most importantly, of all the causes of inflation Bodin believed debasement “to be the only *remediable*” one, since resisting others would inflict

¹⁴² Sargent and Velde, *The Big Problem*, 100.

¹⁴³ Sargent and Velde, 103.

¹⁴⁴ Sargent and Velde, 105; David Fox, “Case Study: The Case of Mixt Monies,” SSRN Scholarly Paper (Rochester, NY, 2014).

¹⁴⁵ Sargent and Velde, *The Big Problem*, 108.

¹⁴⁶ Sargent and Velde, 108.

¹⁴⁷ Sargent and Velde, 111–12.

¹⁴⁸ Spufford, *Money and Its Use*, 330–35.

¹⁴⁹ Sargent and Velde, *The Big Problem*, 113–15.

¹⁵⁰ D. P. O’Brien, “Bodin’s Analysis of Inflation,” *History of Political Economy* 32, no. 2 (2000): 278.

more harm than good.¹⁵¹ In order to prevent any attempts of the debasement of coinage and avoid inflation, Bodin argued for a radical monetary reform, insisting that all coins should be minted without any alloy. However, due to high silver and gold prices, Bodin's proposal was not practically applicable to the coinage of small change. Like many of his peers in the field, Bodin abstained from defining his views on small change, but more likely he leaned in favour of discontinuing its coinage.¹⁵²

On the other side of the unsettled dispute over the quality of small change stood the equally problematic question about the permissible amount of money in circulation. In addition to the ruling theory that debasement of coinage drives inflation, in the 1540s, the councillors of the Polish royal court made a major advancement concerning inflation. They suggested that the supply of money influenced the value of standard units and consequently prices in general.¹⁵³ The excessive growth of money stock, especially that of bad quality coins, caused monetary disorder. Ensuring the right proportion of small change in the money stock faced multiple obstacles. Due to the relatively high production costs, mints were reluctant to issue them at sufficient levels.¹⁵⁴ They preferred either to debase or mint copper coins instead. However, this is where the interests of mints clashed with those of the legislator, because non-precious metal currency set in motion Gresham's law, i.e. drove out good money from circulation. On the other hand, shortages of small change in the market resulted in undesired inflow of low-quality coins or counterfeits. For centuries monetary policy experts and governments struggled to address this dilemma, the so-called 'big problem of small-change',¹⁵⁵ which, in reaction to the homonymous book by Thomas J. Sargent and Francois Velde, in the past two decades has induced major discussions on the subject.¹⁵⁶ The book shows that despite the rather late

¹⁵¹ O'Brien, 285.

¹⁵² O'Brien, 286–87.

¹⁵³ Oliver Volckart, "Early Beginnings of the Quantity Theory of Money and Their Context in Polish and Prussian Monetary Policies, c. 1520–1550," *The Economic History Review* 50, no. 3 (1997): 430–49. In this chapter, I only outline general ideas discussed in the contemporary monetary theory of the Commonwealth. More about the topic: Zdzisław Sadowski, *Pieniądz a początki upadku Rzeczypospolitej w XVII w.* (Warsaw: Wydawnictwo Naukowe PWN, 1964); Aleksandra Popioł-Szymańska, *Poglądy monetarne w Polsce od XV do XVIII wieku* (Poznań: Wydawnictwo Naukowe UAM, 1978); Zdzisław Sadowski, ed., *Rozprawy o pieniądzu w Polsce pierwszej połowy XVII wieku* (Warszawa: PWN, 1959). See also 3.5.

¹⁵⁴ "They had the disadvantage of being much subject to counterfeiting, since their value theoretically depended on their silver content and this could not be possibly verified." Grierson, *Numismatics*, 33.

¹⁵⁵ Sargent and Velde, *The Big Problem*.

¹⁵⁶ John Munro, "The Technology and Economics of Coinage Debasements in Medieval and Early Modern Europe: With Special Reference to the Low Countries and England," *Working Paper No. 456 (MUNRO: WP No. 43)*, 2012, 1–29. Before the release of Sargent & Velde book, the problem of small change and their imminent debasement earned some interest in the works by the eminent British numismatist Philip Grierson and Italian economic historian Carlo M. Cipolla. See Grierson, *Numismatics*, 32–33; Carlo M. Cipolla, "Currency Depreciation in Medieval Europe," *The Economic History Review* 15, no. 3 (1963): 413–22.

introduction of token money and liberation from the commodity money principle, which took place from the mid-19th century until the 1940s, the various reform attempts by state authorities and experts were entrenched in the shortages of minting technology and state monetary theory. Hence, Medieval and early modern societies struggled with largely unsatisfied supplies of small change.

This Thesis raises a question to what extent the early modern monetary theories resonate with the Commonwealth's monetary policies and statements about small change voiced in major assemblies. Although this question demands a more thorough comparative investigation of legal and theoretical sources and enactments, the research of several discussions (Chapters 2 & 3) reveals a set of recurrent motives (principles), which guided the legislators' policies and the measures taken to tackle the problems. There was a common agreement that price stability had to be maintained for the sake of the common good (*gemeine beste*),¹⁵⁷ the basis for which was seen in keeping a constant bullion price and minting high-quality currency. The monitoring of product prices, the quality of circulating coins,¹⁵⁸ and the suppression of the production and inflow of small change/low-quality coin issues were critical to the maintenance of this system. It went hand in hand with the overarching political goal of the unification of the domestic monetary market. Guided by these principles, the Commonwealth monetary policymakers hesitated to debase or devalue domestic coinages or react to the market prices of silver, but rather keenly imposed countermeasures, prohibiting low-quality issues, closing down problematic mints, and vigorously persecuting offenders. This is demonstrated consistently throughout the period under study. The most notable decisions and discussions related to this policy are the 1601 royal decree to withhold the coinage of schillings and the operation of crown mints in order to suppress the inflow and circulation of low-quality coins, and to prohibit the emission of copper coins. The letter by the delegates of Gdańsk to the 1604 Warsaw Commission is essentially a statement of faith in this policy (see 3.5). Presumably, the most striking expression of the influence of contemporary theory, is the discussions of the 1616 Warsaw Commission. During the first round of discussions, the revision of the monetary system based on nearly full-bodied coinage and the renunciation of small change was suggested (chapter 3.7). The influence of Bodin is unmistakable here.

Most governments, the Warsaw court being no exception, perceived the primacy of domestic coin issues and their quality as the guarantors of the stability

¹⁵⁷ 'Common good' is a widespread concept in monetary political thought of the day as evidenced by the 16th–17th c. Riga mint records. See also Velde, "Lessons," 3.

¹⁵⁸ The wages for the labour of different groups of servants and artisans as well as prices for the end-productions were prescribed in the so-called *Policej- oder Stadtordnungen*, judicial codices of the town councils which regulated social, moral and economic praxis, and orderly daily life. Early 16th century Riga codex (*burspraken*) *inter alia* strictly ordered observance of stated silver and gold prices. Jakob Gottlieb Leonhard Napiersky, *Die Quellen des Rigischen Stadtrechts bis zum Jahr 1673* (Riga: J.Deubner, 1876), 238.

and independence of monetary market. The king and monetary authorities of the Commonwealth demonstrated little interest in proactive monetary policy that could have encouraged profiteering and risked destabilisation, and decrease of income for the fiscal chests. The inflow and circulation of foreign coin issues were mainly permissible as a source of bullion. Hence, the national policy of the Commonwealth married protectionism with the features of *bullionism*. Bullionism was probably the most influential economic thought of the day, which measured the wealth of a nation in the accumulation of precious metals. The so-called *bullionists*, who also formed a considerable faction within the Commonwealth political elite,¹⁵⁹ recommended the freezing of Reichsthaler and ducat prices, introduction of full-bodied currency, heavy taxation of imported goods, prioritization of high-income bearing industries, and restrictions on the outflow of the domestic currency.

The success of the Riga schillings demonstrates a unique resistance to the contemporary monetary principles and theories, which viewed small change mostly in negative light. Therefore, in addition to the study of external features (outputs and geographical scope of the dissemination of schillings), I approach the schilling success story by focusing on its internal features – the policy of the coinage of the Riga schillings, its political, and social-economical factors. The perspective of the Riga mint agency allows addressing the differences between the theoretical standpoint and the practical expansion of schillings, the possible interplay between the legal considerations (the law-makers' motives, constraints on the law enforcement process¹⁶⁰) and the changing social-economical conditions (gold-silver ratio, supplies of liquid money in the domestic market, economic and military developments).

¹⁵⁹ Andrzej Szwagrzyk, *Pieniądz na ziemiach polskich X–XX w* (Wrocław, Warszaw, Krakow, Gdansk: Ossolineum, 1973), 124.

¹⁶⁰ Some critical views regarding the efficiency of law-enforcement process have been advanced in Volckart's study of the monetary politics in the early half of 16th century Poland. It shows that, for example, countermeasures were virtually doomed owing largely to their uncoordinated and misguided character. Volckart, "Early Beginnings of the Quantity Theory."

Chapter 1. MONETARY HISTORY OF THE POLISH-LITHUANIAN COMMONWEALTH: AN OVERVIEW

The chronology of the Thesis overlaps with the monetary period (1580–1622/1623)¹⁶¹ in the history of the Commonwealth monetary system, which was composed of approx. 15 mints, each granted their privileges, while each being united under the roof of common legislation. Thus, it was one of the largest early modern monetary areas of Europe. The inner division of the monetary period was characterised by the initial expansion of mint production, the relative stability of mint prices and coinage quality, and the gradual disintegration of the monetary system as a result of inflation and a drop in the coinage quality. As a new acquisition, Riga was speedily integrated into the system, enjoying not only the fruits of the larger monetary market and centralised monetary policy but also its flaws and inner strives. In this chapter, the main goal is to review the background information on the development of the Commonwealth monetary system in the period under research. The complexity and diversity of subject matter nevertheless compels to place interest in a limited number of aspects, such as the changes in the monetary system, main discussions, and problems within the monetary circles, quality of coins, and their relations to foreign issues.

1.1 The age of expansion

In an attempt to strengthen monarchical authority, overcome monetary disruptions¹⁶² and bolster military power for the realisation of eastern expansion plans,¹⁶³ Stephen Báthory pushed forward with the judiciary, monetary,¹⁶⁴ and religious reforms. It is commonly agreed among Polish numismatists that the Ordinance of January 5, 1580, succeeded in solidifying and revitalising the monetary economy of the Commonwealth by completing the unification of

¹⁶¹ This periodisation is introduced in the work of Polish numismatist Zbigniew Żabiński and partially acknowledged by Andrzej Mikołajczyk. The inception of the new system is seen in the light of the monetary Ordinance of 1580, which promoted higher uniformity in mint production and governing principles. By the early 1620s, the system had fallen in disarray and new monetary reform was announced in 1623. Żabiński, *Systemy pieniężne*, 111–12; Borys Paszkiewicz, “Podobna jest moneta nasza do urodnej panny,” in *Katalog Aukcji 50 WCN*, vol. 50 (Warszawa, 2012), 233; Mikołajczyk, *Einführung*, 50, 61–68.

¹⁶² There was a shortage of a good and full-bodied currency, as the most precious coinages had been exported and exchanged against the less worthy foreign issues. See Szwagrzyk, *Pieniądz*, 120.; In addition, Braun writes that in the Crown mints debasement of coinage was observed – David Braun, *Ausführlich-Historischer Bericht vom Pohnisch und Preußischen Münz-Wesen* (Elbing: Georg Bannehr, 1722), 65.

¹⁶³ Szwagrzyk, *Pieniądz*, 124.

¹⁶⁴ The term ‘reform’ is adopted from the Polish and Lithuanian numismatics; the concept of reform, however, was rather alien to pre-modern Commonwealth.

Polish and Lithuanian monetary systems in compliance with the provisions of the Union of Lublin (1 July 1569).¹⁶⁵ Unifications of monetary systems took shape in the introduction of unitary minting standards, account units, and exchange rates for most of the coins.¹⁶⁶

The core elements of the monetary system were based on the złoty system, in which złoty functioned mainly as a base unit of account (Abbreviated as fl) equal to 30 groschen, whereas the gold coin would be minted occasionally. The standard or base unit of the new, reformed monetary system was the silver thaler, whose price was raised from the previous 30 groschens to 35 Polish groschens. Thalers had to be minted from 13.5 lot silver and weight 7 pieces in 1 Cracow mark (28.8g).¹⁶⁷ The Commonwealth monetary system incorporated several smaller fractional units, which were produced with ever-changing issue rates and regularity.

Table 1.1.1 Minting standards according to the 1580 Ordinance¹⁶⁸

Denomination	Fineness (lot)	Number of coins in weight mark (pieces)	Gross weight (g)	Fine silver content (g)
Denar	1 ½	540	0.373	0.035
Double-denar	1 ½	270	0.747	0.070
Kwartnik	2 7/8	355.7	0.567	0.102
Schilling	2 7/8	178	1.134	0.204
½-groschen	5 ¾	212	0.952	0.342
groschen	5 ¾	106	1.904	0.684
3-groschen	13 ½	82.6	2.44	2.059
6-groschen	13 ½	41.3	4.881	4.118
Half-thaler	13 ½	14	14.414	12.162
Thaler	13 ½	7	28.829	24.324
Ducat	23 ½	56	3.573	3.456 (fine gold)

Both Lithuanian and Polish numismatists' views on the unification of parallel monetary systems of the kingdom of Poland and the GDL imply that it was carried out at the expense of Lithuania, which lost its monetary independence.¹⁶⁹ A

¹⁶⁵ “§ 13. The currency both in Poland and in Lithuania is to be uniform and equal in weight and bullion, the number of coins [minted from one weight unit] and the inscriptions on coins. His Royal Majesty and his descendants will be obliged to carry this to effect.” The Union of Lublin (translation in English), accessed March 28, 2022, http://www.history.pth.net.pl/files/source_editions/The_Union_of_Lublin_1569.pdf

¹⁶⁶ Mikołajczyk, *Einführung*, 48.; Riabtsevich, *Numizmatika Belarusi*, 182.; Grimalauskaitė and Remecas, *Money in Lithuania*, 188.

¹⁶⁷ Grimalauskaitė and Remecas, *Money in Lithuania*, 188.

¹⁶⁸ Based on: Mikołajczyk, *Einführung*, 48.; Leimus et al., *Sestertsist sendini*, 102.

¹⁶⁹ Grimalauskaitė and Remecas, *Money in Lithuania*, 188.; Gumowski, *Mennica Wileńska*, 94–97.

more pragmatic viewpoint to erasing monetary differences is offered by the Belarusian numismatist Viktor Kakareko, who explains the devaluation of Lithuanian monetary units as necessitated by the heightened gold-silver ratio because the country's silver reserves were running low.¹⁷⁰ The 1580 monetary reform permitted the usage of old domestic coins as testified by the setting of exchange rates between the less valuable Polish and higher quality Lithuanian groschen of pre-1580 years. Officially 4 Lithuanian groschens were exchanged for 5 Polish groschens,¹⁷¹ while 28 Lithuanian groschens or 35 Polish groschens were paid for a thaler.¹⁷²

Under Ordinance 1580, the monetary system obtained a more centralised and administratively regulated structure. The monarch transferred the responsibility of settling monetary issues to treasurers of the Polish Kingdom and GDL, and common parliaments (*Sejm*).¹⁷³ The extension of each treasurer's jurisdiction probably corresponded with those of each nation, while the Lithuanian treasurer seems to have exercised his authority also over the Duchy of Livonia. The mints were entrusted with merely executive power and a limited consultative role at the court and monetary commissions held during the *Sejm* sessions.

The effectivity of legislation and law enforcement however was often tested by the competitive and contradictory interests of the monarch, the *Sejm*, and mint holders,¹⁷⁴ which lead to sluggishness and corruption inside of the monetary system, most evident from the numerous prosecutions and violations of law in the research period. Some disagreements may have arisen from the fact that at least four judicially distinctive groups of mints operated within the Commonwealth: royal mints, municipal mints, private mints, and fief mints with further possible stratification within the group because each mint was granted minting privileges of its own. Moreover, mints vigorously defended their rights, often seeking to extend privileged status to expand monetary borders and fiscal income, which was the case of Riga mint. Particularism was at the heart of the

¹⁷⁰ Kakareko, "Trojaki," 30–31.

¹⁷¹ This exchange rate was set as early as 1508. Later attempts to equalize both groschen were futile due to different intrinsic values. Żabiński, *Systemy pieniężne*, 94.

¹⁷² Polish and Lithuanian groschen minting standards, n.d.: LVVA 673-1-1276, fol. 21r; Riabtsevich, *Numizmatika Belarusi*, 202.

¹⁷³ GDL treasurer was assisted by co-administrator-provisional in the person of voivode of Vilnius (i.e. governor) and by voivode of Cracow in the case of Crown treasurer. The ordinance of 5 January, 1580 granted both administrators "complete freedom to plant mints in the places they saw fit and to choose the people, bring in the moneyers, artists, engravers and assayers needed for the mint." Grimalauskaitė and Remecas, *Money in Lithuania*, 188; Gumowski, *Mennica Wileńska*, 97.

¹⁷⁴ The 16th–17th century Commonwealth political system was *Monarchia mixta*, meaning that the monarch ruled within the scope of parliamentary system. The Parliament was the primary governing/legislative institution in the state, composed of three bodies – the Monarch, Senate (Roman-Catholic diocesan bishops, dignitaries of both nations, palatines and castellans) and House of Deputies (deputies elected by the landed gentry and representatives of the main cities).

Commonwealth monetary system, thus being inherently liable to monetary instability and lessening of monetary discipline in the face of external pressures.

Having said that, the Commonwealth monetary system, fuelled by stable and low silver prices, did experience a great leap in coinage outputs and mint activity for almost twenty years. During the reign of Stephen Báthory, a mere ½-groschen rise in the price of Reichsthaler was registered around 1585.¹⁷⁵ Price stability preconditioned the largely unaltered high-quality of coins.¹⁷⁶ In 1584 only four mints were active: Olkusz (Ger. Olkusch) mint in Crown lands, Vilnius in GDL, Riga in the Duchy of Livonia, and Gdańsk in Royal Prussia. In the succeeding years, 6 Crown mints were reopened or created in Poznań, Bydgoszcz (Ger. Bromberg), Wschowa (Ger. Fraustadt), Malbork (Ger. Marienburg), Lublin, and Cracow¹⁷⁷ and three more private mints were created in Poznań, Wschowa and Łobżenica (Fig 1.1).



Map created by Lāsma Liepiņa

Fig 1.1 Major mints and schilling producers in the Polish-Lithuanian Commonwealth (late 16th–early 17th centuries)

¹⁷⁵ Caspar zum Berge's report on Reichsthaler and real prices, 1585: LVVA 673-1-1281, fol. 7r-8v. This raise in silver has not been recorded in any other sources of the research period. Moreover, it was not typical for the monetary authorities to raise the bar by half-groschen.

¹⁷⁶ Monetary stability in the Commonwealth was in stark contrast with the high inflation in west European countries, see Shaw, *The History of Currency, 1252–1894*.

¹⁷⁷ Janusz Reyman, *Mennica Olkuska 1579–1601* (Wrocław, Warszawa, Krakow, Gdansk: Wydawnictwo polskiej akademii nauk, 1975), 358.; Mikołajczyk, *Einführung*, 52–53.

In an age where the role of technological innovations in market growth was limited, the expansion of trade markets and intensification of contacts gave the largest dividends.¹⁷⁸ The population increase in Western Europe, urbanisation processes, and the gradual switch of the peasantry from grain growing to the cultivation of special products¹⁷⁹ led to a decreasing elasticity of local grain supplies. Combined with periodical bad harvests¹⁸⁰ and pestilences these tendencies could threaten famine. The need to compensate for the flows created an increasing demand for raw materials imports from the Baltic Sea region, and Poland in the first instance. This, however, put pressure on price levels. The analysis of price dynamics in various countries confirms the notion that prices of agricultural produce, especially grain, rose much more than for manufactured or colonial goods.¹⁸¹ In line with the upward tendency in western markets, in Cracow, from 1501 to 1580, the medium price for the main cereals (rye, wheat, oats, barley) almost tripled.¹⁸² Nevertheless, price differences between the bread-producing Eastern European lands and the west were great enough to offer some of the largest margins of profit in the long-haul trade.¹⁸³ The port city of Gdańsk occupied an almost monopolistic position in trade with foreign countries. Gdańsk serviced as much as 80% of the Commonwealth export,

¹⁷⁸ More recently David S. Jacks has reconsidered the concept of market integrations: David Jacks, "Market Integration in the North and Baltic Seas, 1500–1800," *Economic History Working Papers* 55/00 (2000): 285–329.

¹⁷⁹ Cultivation of olive trees and vineyards in Spain and Italy, maize and rice in Italy. Maria Bogucka, "The Baltic and Amsterdam in the First Half of the 17th Century," in *The Interactions of Amsterdam and Antwerp with the Baltic Region, 1400–1800: De Nederlanden En Het Oostzeegebied, 1400–1800*, ed. W. J. Wieringa, Werken (Dordrecht: Springer Netherlands, 1983), 52–54.

¹⁸⁰ For more detailed overview on the increasing subsistence crisis in the Western Europe and the rise of heavy exports from the Baltics: Kristof Glamann, "European Trade, 1500–1750," in *The Fontana Economic History of Europe. The Sixteenth and Seventeenth Centuries*, 1st Edition, The Fontana Economic History of Europe 2 (London: HarperCollins, 1971), 454–67. A number of regional subsistence crisis have been notified in several other works: Ralph Davis, *English Overseas Trade 1500–1700*, 2nd ed., Studies in Economic History (London: McMillan, 1985), 18.; Jan de Vries, "The Economic Crisis of the Seventeenth Century after Fifty Years," *The Journal of Interdisciplinary History* 40, no. 2 (2009): 159, 169.; Fernand Braudel, *Civilization and Capitalism, 15th–18th Century, Vol. I: The Structure of Everyday Life*, trans. Siân Reynold (New York: Harper & Row, 1981), 128.

¹⁸¹ Ingrid Hammarström, "The 'Price Revolution' of the Sixteenth Century: Some Swedish Evidence," *Scandinavian Economic History Review* 5, no. 2 (1957): 136.; On price dynamics in Livonia, in 1508–1570, see Ivar Leimus, "Vorläufige Bemerkungen zur Entwicklung einiger Löhne und Preise in Reval im 16. Jahrhundert.," *Forschungen zur Baltischen Geschichte* 9 (2014): 50–66.

¹⁸² Bartosz Stefańczyk, "Eksport głównym czynnikiem rozwoju Polski w XVI wieku," in *Polskie osiągnięcia gospodarcze: perspektywa historyczna*, ed. Janusz Kaliński, Wyd. 1 (Warszawa: Wydawnictwa Akademickie i Profesjonalne, 2010), 45–46. Stefańczyk's estimates are reckoned in nominal prices. They do not take in to account inflation, which would arguably decrease the 'price scissors' in relation to imported industrial and colonial good prices.

¹⁸³ Bogucka, "Baltic and Amsterdam," 55.

including 82% of its grain export.¹⁸⁴ However, Gdańsk's role in securing sales markets was rather passive:

“Thus, particularly high exports from Danzig coincide with crop failures in western Europe, e.g. in 1562, 1565, 1586 and all through the 1590s, when particularly acute shortages in the Mediterranean countries gave rise to heavy exports.”¹⁸⁵

Conversely, as the western grain-producing regions and supply networks recovered in the opening decades of the 17th century, the high yields from Polish and Baltic grain export diminished or remained stationary.¹⁸⁶ The rapid growth of the Polish economy after all was fuelled by transient external factors and particularly high grain prices.¹⁸⁷ A time of prosperity and expansion of the Commonwealth monetary market, which was suggested to be inaugurated by the monetary reform of 1580,¹⁸⁸ coincided with the time of economic expansion.

The most widespread currency of the period was 3-groschen. 3-groschen coinage was introduced under Stephen Báthory, being produced in 6 mints. In the succeeding years of Sigismund III's reign, minting resumed with ever-increasing intensity, with 10 mints active in the craft.¹⁸⁹ In the early 1920s, Polish numismatist Marian Gumowski reckoned “almost” 20 Commonwealth mints being employed in 3-groschen coinage, thus reaching “enormous quantities” in output.¹⁹⁰ Three mints stand out among the issuers of 1580–1601 3-groschen coins found in the Polish archaeological material. The coinage was led by Poznań with a 22.94% share of all finds, followed by two neighbouring mints of Riga and Vilnius with respective 21.94 and 13.78% share of the total 3-groschen output.¹⁹¹ Meanwhile hoarding data from Lithuania (1588–1601) suggests an almost exclusive dominance of Riga and Vilnius 3-groschen, with shares ranging above 40% level.¹⁹² Regularity is yet another index that gives some understanding of the position of each mint in the monetary market. Vilnius mint produced 3-groschen in 1580–1586, 1589–1603 and 1608.¹⁹³ Riga produced 3-groschen continuously for almost 20 years (1581–1586, 1588–

¹⁸⁴ Stefańczyk, “Eksport,” 47, 53.

¹⁸⁵ Glamann, “European Trade,” 462.

¹⁸⁶ Aldo de Maddalena, “Rural Europe 1500–1750,” in *The Fontana Economic History of Europe: The Sixteenth and Seventeenth Centuries*, 1st ed., vol. 2 (London, Glasgow: Collins, Fontana Books, 1974), 310–11.

¹⁸⁷ Walter Michinton, “Patterns and Structure of Demand 1500–1750,” in *The Fontana Economic History of Europe: The Sixteenth and Seventeenth Centuries*, 1st ed., vol. 2 (London, Glasgow: Collins, Fontana Books, 1974), 95.

¹⁸⁸ Mikołajczyk, *Einführung*, 48–49.

¹⁸⁹ Dariusz Ejzenhart, *Herby i znaki mennicze na trojakach Polskich*. (Wrocław, 2008), 10.

¹⁹⁰ However, Gumowski did not provide a more precise accounting. Gumowski, *Mennica Wileńska*, 139–40.

¹⁹¹ Mikołajczyk, *Einführung*, 61.

¹⁹² Grimalauskaitė and Remecas, *Money in Lithuania*, 205.

¹⁹³ Grimalauskaitė and Remecas, *Money in Lithuania* 192, 200.

1600). The coinage resumed only in 1619 reaching very high output levels (Fig. 4.2.2). In the Polish Kingdom, the most regular producer of 3-groschen had been Olkusz (1588–1601) and Poznań (1588–1601) mints.¹⁹⁴ Judging from the output figures in 1598–1600, Riga’s input in the “Polish era of 3-groschen”, the designation used by Ejzenhart to denote the central role of this coin in the 16th–17th centuries Polish monetary history, was tremendous.¹⁹⁵

Ever since their appearance, 3-groschen were subjected to widespread imitations and counterfeits.¹⁹⁶ The fraudulent activities had been detected both in the Polish Kingdom and in central European countries. Interestingly, several of them originated from historical Moldova and Transylvania, border regions to the south of the Polish Kingdom.¹⁹⁷ The marginal Suczawa mint, which became one of the leading actors in the Polish monetary catastrophe of the 1660s, had already made its debut in underground activities.¹⁹⁸ Other imitations were produced inside the country¹⁹⁹ and the Holy Roman Empire.²⁰⁰ In 1605, Court Marshal Mikołaj Wolski (1600–1616) dispatched a circular informing about imitations of 3-groschen, which were minted in Hungary by a certain “Botzkay”.²⁰¹ The coins were imitating Cracow issues. The obverse coins were featuring the head of king Sigismund III.²⁰² To inhibit the circulation of the said counterfeits as well as inquire about the quality differences of various domestic coins, an inquisition was summoned in the same year.²⁰³

In the late 16th century, the Polish Kingdom experienced hard times sustaining stability of the monetary system, which led to the monetary crisis of the late 16th – early 17th century. According to Zbigniew Żabiński’s study, the crisis was imported from the neighbouring German and Czech lands by exchange of goods and coins.²⁰⁴ Both lands emitted coins of decreased quality, which eventually would lead to rising the exchange rate of thaler and ducat, and further inflation.²⁰⁵ Merchants and money exchangers flocked to the Commonwealth, attracted by the abundance of high-quality coinage and lower prices of the

¹⁹⁴ Ejzenhart, *Herby i znaki*, 10.

¹⁹⁵ Ejzenhart, 13.

¹⁹⁶ Ejzenhart, 68.

¹⁹⁷ Ejzenhart, 70.

¹⁹⁸ Ejzenhart, 71.

¹⁹⁹ Wojtulewicz, “Coins of Kings Zygmunt III and Władysław IV,” 23.; Boiko-Gagarin, *Falshivomonetichestvo*, 113–14, 124.

²⁰⁰ Ejzenhart, *Herby i znaki*, 69.

²⁰¹ The source is referring to Stephen Bocskai, prince of Transylvania (r. 1605–1606), a renown political figure from a noble Hungarian family closely related to the ruling Báthory family, forging the fame of his name mainly in battlegrounds.

²⁰² Court Marshal Mikołaj Wolski’s circular, 19.07.1605: LVVA 673-1-1283, fol. 62r-64r.

²⁰³ Cracow mint lord Anthoni Rohell’s (Rhoel) inquisition materials, 1605: LVVA 673-1-1283, fol. 62r -73r

²⁰⁴ Z. Żabiński’s paper records the publication history of the subject back to at least 1902. See Żabiński, “Kryzys monetarny,” 1.; Large sections of this article are integrated in Żabiński’s monograph: Żabiński, *Systemy pieniężne*, 107–17.

²⁰⁵ Żabiński, *Systemy pieniężne*, 107.; Żabiński, “Kryzys monetarny,” 1–2.

Commonwealth, which promised a good amount of return. Several monetary circles of the Holy Roman Empire voiced discontent with the export of Reichsthalers and other large denomination coins to the Polish lands, calling for tighter border control measures.²⁰⁶ Similarly, lower denomination coins were collected in various markets and fairs in Wrocław²⁰⁷ and Leipzig and brought to Poland to be melted and reminted in 3-groschen (*Pohlnische Duttichin*), which were later exchanged in German lands with a high premium.²⁰⁸ According to Swagrzyk, new issues hardly reached customers in the interior before they were intercepted by foreign merchants, among whom Berlin-based merchants are known.²⁰⁹

A vivid description of the development of the crisis is found in Vilnius mint master Zacharias Boll (~1597–1618) and his warden Christoff von Tharnaw letters exchanged with their colleague Henrich Wulff I in Riga. In a letter dated 17 April 1597, Boll recalled events from the recent trip to Warsaw. The coin business did not go as planned because of the high silver thaler price in Warsaw. Boll was also contemplating the idea of increasing outputs of 3-groschen by 1–1 ½ pieces from the weight mark. Unfortunately, he was not able to put the question of currency debasement on the agenda of the Sejm meeting. In that regard, Boll recalled Hans Friederich, Riga mint master Henrich Wulff's son-in-law²¹⁰ attempt to grant (*verehren*) the Crown treasurer's support with 100 florins (Hungarian ducats)²¹¹, which met with no luck, as the meeting was about to end. The question was postponed until the next Sejm meeting in 1598.

While commenting on the decreasing quality of Courlandic (Jelgava) 3-groschen (86–87 coins in weight mark), Boll did not hesitate to express his astonishment at the poor quality of Polish 3-groschen, as well as those minted in Cieszyn (Ger. Teschen)²¹² in the Holy Roman Empire.²¹³ Boll's impression was

²⁰⁶ Gumowski, *Mennica Wileńska*, 139–40.

²⁰⁷ Wrocław was part of Habsburg Empire.

²⁰⁸ William Arthur Shaw, "The Monetary Movements of 1600–1621 in Holland and Germany," *Transactions of the Royal Historical Society*, New Series, 1895, 206.; Gumowski, *Mennica Wileńska*, 139–40.

²⁰⁹ Swagrzyk, *Pieniądz*, 122. This fact, similarly to many others in Swagrzyk's book, is without reference and cannot be verified. Considering this and many other idiosyncracies, the publication fails to meet academic writing standards. I thank Prof. Borys Paszkiewicz for pointing out to me this problematic aspect in the author's biography.

²¹⁰ H. Wulff was married to Anna Friederichs, offspring of the eminent patrician family of Riga. Friederichs family produced a number of city councillors and envoys, including Reinhold Friederichs, who died in Toruń (22.10.1607) on his way back from the mission to the Warsaw Sejm. See Heinrich Julius Böthführ, *Die Rigische Rathslinie von 1226 bis auf die gegenwärtige Zeit*. (Riga, 1857), 159, 162, 172.; Viktors Dāboliņš, "Rīgas monētu meistari Vulfī (1557–1659)," *Latvijas Vēstures Institūta žurnāls* 3 (2018): 15.

²¹¹ Viktors Dāboliņš. Riga and Vilnius mints in the midst of the late-16th – early 17th century crisis. *Forthcoming*.

²¹² Nowadays a town in Poland.

²¹³ "[...] desgleichen Jn Polenn ist solh Lumpenn geltt ganbar, das es wunder ist, zw Teschenn Muntzett mahnn auch, aber es ist vnter denn Romisch reich, es sollenn 3 Creuzer sein, aber Jnn Polen werdenn sie alle vor 3 g[roschen] ausgeben [...]" Vilnius mint master Zacharias Boll to Riga mint master Henrich Wulff, 15.04.1597: LVVA 673-1-1369, fol. 30r

that the population did not differentiate between the good and bad coins, despite the warnings that users in Poland exchanged 3-groschen for 3-kreuzers. The test showed 3-kreuzers contained only 9 lot of silver, whereas Polish 3-groschen were minted from much higher, 14 lot silver alloy.²¹⁴ In Boll's opinion, visual similarities between both coins could add to the confusion: "I send one specimen for you, so that you may see how easy it is to confuse the coin with 3-kreuzer, which looks just like 3-groschen."²¹⁵ Further, Boll writes that he had recently started to melt silver. Muscovite and Armenian (merchants) sold Spanish reals for 36 groschen, whereas old thalers – for 36 groschen and 4 schillings.²¹⁶ In the letter from 8 June Boll returns to the expense of products and comes to the hardly surprising conclusion: "Every thing has become so expensive that it is beyond human's understanding. It is God's punishment."²¹⁷

Following the described events, the 1598 Warsaw Sejm was expected with much anticipation. The assembled mint masters approached the Crown treasurer requesting debasement of 3-groschen, which was motivated by the rise of silver price and mounting minting expenses.²¹⁸ In response, the output of 3-groschen was raised from the previous 82.6 to 84 pieces in weight mark.²¹⁹ The Sejm decided to take a closer look at the infiltrating foreign issues and created a general warden post (*Generalprobirer*) to which Kasper Rytkier, mint master of Olkusz (1595–1601) was appointed.²²⁰ In his capacity, Rytkier was not only to carry a yearly visitation of crown mints but also to make a thorough investigation of problematic foreign coins and their values. Rytkier's study *The Image and Assessment of All Sorts of Foreign Coins, Which Can Be Exchanged in Crown Poland* came out in 1600. The catalogue depicts 143 foreign small-change units – 1 ½ groschen, groschen and schillings, and calculated losses that may arise from the exchange with these coins at the given price.²²¹

Regardless of changes in minting standard, mint masters, as argued by Gumowski,²²² continued reducing coin quality on an arbitrary basis. 3-groschen became lighter as the number of coins increased per weight mark to 90 pieces in

²¹⁴ Ibidem, fol. 30r.

²¹⁵ "Schicke euch einn stuck von denselbigen, da werdeth ihr sehnn, wie fein das mahnn es vorblumen kan, das es eyynn ansehn hatt wie ein dreier". Ibidem.

²¹⁶ Ibidem.

²¹⁷ "Vndt sein ietzt In allen ding Inn solchs teuerung gerathen das es nicht mensch erdenken konnen. Es ist aber eyne straffe gottes." Ibidem, fol. Fol. 32v.

²¹⁸ Graf Colonna-Walewski, "Beiträge zur Geschichte der polnischen Münzstätten 1558–1624," *Zeitschrift für Numismatik* 12 (1885): 259–60; Gumowski, *Mennica Wileńska*, 139.

²¹⁹ Gumowski, *Mennica Wileńska*, 139; Stanislaw Walewski, *Trojaki koronne Zygmunta III. od 1588 do 1624* (W Krakowie: Czcionkami drukarni "Czasu" Fr. Kluczyckiego i sp., 1884), 5.

²²⁰ Colonna-Walewski, "Beiträge," 1885, 250–52.

²²¹ Kasper Rytkier, *Wizerynk y Szacvnek Mynic Wszelakich Cvdzoziemskich, iakoktóre w Koronie Polskiej brane y wydawane bydz maiq* [reprint 1965/1600], version 2, ed. Tadeusz Biniewski et al., 2nd ed. (Warszawa: Drukarni Narodowego Banku Polskiego, 1965).

²²² Marjan Gumowski, *Mennica Wileńska*, P. 139.

1601.²²³ Citing the figures from the work of 18th century numismatist David Braun (1701–1786),²²⁴ Gumowski argues that the fineness of various coins did not hold either. Ultimately, together with the large diversity of local petty coinages, the influx of debased foreign coins and counterfeits started to assume that very same undermining composition, which affected Western economies and their monetary stability, i.e. led to severe shortages of hard currency and high inflation.²²⁵

1.2 Times of uncertainty

Like most of the countries in western Europe, the Commonwealth monetary authorities struggled to limit the effects of rising silver prices and devaluation of the currency. Polish authorities resolved the adoption of stricter, prohibitionist monetary measures. On March 13, 1601, the Sejm passed a constitutional order, demanding to seal all private and Crown mints, except for Olkusz and Cracow mint, which were not found guilty of violating coin quality.²²⁶ Bydgoszcz, Lublin, Malbork, Olkusz, Łobżenica (Ger. Lobsens), Gdańsk, and Wschowa mints closed permanently or for the time being. It was said to be a temporary solution until the appointed commission decided on the strategy to prevent continued deterioration of the coin quality.²²⁷ During his visit to Vilnius in 1601,²²⁸ Sigismund III ordered the mint to close.²²⁹ Vilnius, however, disobeyed the order until 1603, when abandoned by mint master Boll.²³⁰

Unless strengthening border control and implementing countermeasures against speculations the constitutional order of 1601 could not achieve the goal of overcoming inflation and silver price rise. While the former was theoretically implemented in 1598, the order had a degrading impact on the minting

²²³ The secret debasement rate roughly corresponds with the silver weight calculated for 1604 pieces by Dariusz Ejzenhart. According to him, in 1604 the average silver content of 3-groschen was 1,885 grams per piece. Ejzenhart, *Herby i znaki*, 12.

²²⁴ 6-groschen of 1596 and 1599 had been coined from 13 and 12 lot silver and a decreased weight; 3-groschen of 1589 were minted from 13 lot and weighed less, whereas the issues of 1595–1597, 1599 and 1601 were minted from 12 lot. Groschen and schilling coins, which had to be minted from 6 lot silver alloy, were produced from 5 lot silver. Braun, *Ausführlich-Historischer Bericht*, 71–72.

²²⁵ Szwagrzyk, *Pieniądz*, 122–23; Żabiński, *Systemy pieniężne*, 109.

²²⁶ *Prawa, Konstytucye Y Przywileie Krolestwa Polskiego Y Wielkiego Xięstwa Litewskiego Y Wszystkich Prowincyi Należących Na Walnych Seymach Koronnych Od Seymu Wislickiego Roku Pańskiego 1347 Aż Do Ostatniego Seymu Uchwalone*, vol. 2 (1550–1609) (Warszawa: Drukarnia Pijarów, 1783), 825–26.

²²⁷ Walewski, *Trojaki koronne*, 6.

²²⁸ Ivanauskas dates the royal visit and later request by Andrzej Wojna to follow king's order to 1602. Eugenijus Ivanauskas, "Johan Dila – a Vilnius Master of Coins and Medals," in *Studia Numismatica Festschrift Arkadi Mölvigin 65* (Tallinn: Huma, 1995), 67.

²²⁹ Vincas Ruzas, *Lietuvos Didžiosios Kunigaikštystės monetos Lietuvos banko Pinigų muziejuje katalogas = Coins of the Grand Duchy of Lithuania at the Money Museum of the Bank of Lithuania* (Vilnius: Lietuvos Bankas, 2015), 295–96.

²³⁰ Zacharias Boll to Henrich Wulff, 30.10.1603: LVVA 673-1-1369, fol. 46r.

schillings and 3-groschen, some of the most regularly issued and profitable coins for the mints. Rising silver expenses and the inflow of low-quality issues deprived the mints of the necessary stimulus for their existence.

At the turn of century, several internal and external factors brought the period of relative stability to an end and initiated the rise of uncertainty. Just as the rise of the Commonwealth monetary market could be viewed in the context of favourable external factors, so the era of uncertainty with the reverse of favourable external factors. Early 17th century Dutch and English client countries managed to diversify their economies and daily foodstuffs, meanwhile, the Spanish and Italians experienced a sharp decline in the population, and a collapse of export industries, long-haul trade, and networks.²³¹ Under such conditions, the ‘mother trade’ – the trade of grain with the Polish Kingdom was losing its strategic importance. The decline in Transatlantic trade manifested in the yearly bullion shipments from the New World, from over 30 000 tonnes up to the 1610s to 13 000 tonnes in the 1640s.²³² The Golden fleet was not the only source of metals. European precious metal stocks were continuously replenished with the production from the central European mines, but not sizeable enough to fundamentally alter stock levels.²³³

Last but not least, the relation between the centre and periphery had been put to the test, increasing pressure both on finances and local monetary prospects. By the time crown mints were being shut down, an external threat rose against the Commonwealth in the north, initiating a crisis in the remaining active Commonwealth mints. The Duchy of Livonia was pulled into the centre of the Swedish-Polish War, as the duke Charles of Södermanland (1550–1611) in spring 1601 invaded the Duchy of Livonia and attempted to occupy its capital. Though the Swedish invasion met with temporary success, it undermined the state’s monetary stability and reduced circulation of valuable coins. The war increased public expenditure on defence and nutrition. The reserves were exhausted sooner than they could be replenished, wherefore authorities often resolved to levying of extra taxes and expropriation of livestock.²³⁴ The popular reaction towards the crisis was concealing of wealth, which manifested in a massive hoarding period under Polish rule in the early years of the 17th century.²³⁵ The spread of debased and low-quality foreign currency was therefore more likely to accelerate. The Vilnius and Riga mint, some of the most productive mints in the Commonwealth, faced the deepest crisis. After the withdrawal of Swedish military forces, in 1602 and 1603 plague ravaged the

²³¹ de Vries, “The Economic Crisis,” 170.

²³² de Vries, 168.

²³³ Żabiński, *Systemy pieniężne*, 100.

²³⁴ Riga was supposed to provide the Polish army with 300 fully equipped infantrymen. The City Council was reluctant to do so on the pretext of increasing expenses which multiplied during wartime. Ēriks Jēkabsons, “Streit um die Festung Dünamünde: Die Beziehungen zwischen der Stadt Riga und der Rzeczpospolita von 1561 bis zum frühen 17. Jahrhundert,” ed. Mati Laur and Karsten Brüggemann, *Forschungen zur Baltischen Geschichte* 11 (2016): 65–66.

²³⁵ Ducmane and Ozoliņa, *Monētu depoziiti*, 132–38.

poverty-stricken land. The collapse of the economy and the bullion famine brought a heavy increase in prices.²³⁶ In the meantime, the plague reached Vilnius from two sides at once, from Prussia and the Duchy of Livonia.²³⁷ In a letter (30.10.1603) to Henrich Wulff I, mint master Z. Boll wrote that Almighty God in all his severity had attacked the city of Vilnius with the ferocious pest, thus the city was almost empty and deserted.²³⁸

Destabilization of the interior economic situation and deterioration of coin quality urged a complete revision of the monetary system. The Commonwealth mints and mint specialists were authorised to draft proposals for the upcoming 1604 monetary commission in Warsaw. The goal of the Warsaw Commission was to stabilise the monetary system by suspending grave misconduct of the mints and to set unitary values for coinage in GDL and Polish kingdom.²³⁹ The numismatic community is generally united on the results of the Commission: the silver mint price was raised from 36 to 38 groschen per thaler, and debasement of some monetary units was initiated. A thorough analysis of the published debasement rates and comparison with the written and material evidence of the Riga mint exposes some irregularities in the published figures, which are discussed to a larger extent in chapter 3.5.

Table 1.2.1 Introduced minting standards by the 1604 Warsaw Commission²⁴⁰

Denomination	Fineness (lot)	Weight (number of coins in weight mark)	Gross weight (g)	Fine silver content (g)
6-groschen	13 ½	45 1/6	4.468	3.77
3-groschen	13 ½	90 1/3	2.234	1.884
Groschen	5 ¾	127	1.588	0.571
½-groschen	5 ¾	260 2/5	0.773	0.278
Schilling (Riga, Vilnius)	2 7/8	200	1.007	0.181
Schilling (Crown Poland)	2 ¾	381	0.530	0.091

²³⁶ “Neben dem Kriege von Anno 1601 bis 1602 zu der Aerndte große schwere Theuerung, also daß 1 Lof Roggen in Riga gegolten hat 10, 11, 12 Mk. (damalen sind 6 Mk. Auf einem Rthlr. Gerechnet), ein Lof Gerste 9, 10 Mk., ein Lof alter Haber oder deutscher Haber 5 ½ Mk., 1 Lof Buchweizen 9, 10 Mk.” Benedict Hintze, “Arve-Böcksken,” *Rigaische Stadtblätter*, October 9, 1835, 41 edition, 325.; Jakob Gottlieb Leonhard Napiersky, ed., *Bodeckers Chronik Livländischer und Rigascher Ereignisse 1593–1638*. (Riga: Kymmels Buchhandlung, 1890), 13, 15.

²³⁷ E.A. Eckert, *The Structure of Plagues and Pestilences in Early Modern Europe: Central Europe, 1560–1640* (Basel: S. Karger AG, 1996), 113.; Wilhelm Sahn, *Geschichte der Pest in Ostpreussen* (Leipzig: Duncker & Humblot, 1905), 19–25.

²³⁸ Zacharias Boll to Henrich Wulff, 30.10.1603: LVVA 673-1-1369, fol. 46r.

²³⁹ Mint decree, 9.05.1617: LVVA 673-1-1283, fol. 120v.

²⁴⁰ See chapter 3.7 and Table 3.5.5.

Sigismund III praised the Commission for finding a solution to the influx of the Empire coins and the ensuing silver price rise by introducing unitary monetary standards and observing the proportionality in mint production.²⁴¹ However, the taken measures did not have a lasting impact. Firstly, as a result of the Commission's decisions, not only Polish and Lithuanian groschens but also schillings separated ways in terms of value. Secondly, there was no actual rise in the silver mint price, it was merely a recognition of the market price, which had been reached already in 1601. The new minting standards would not hold for long. Barely half a year after the Commission's discussions on January 30, 1605, H. Wulff reported to the Riga City Council about the low quality of Polish and Lithuanian issues (see 3.6). This was exactly the problem that was foreseen during the Warsaw Commission, i.e. resuming of debasement due to inadequacy in minting standards.²⁴²

Another monetary commission was assembled in Vilnius, at an unknown specific time between 1604–1608²⁴³ (see 5.3). The main decisions largely seemed to repeat the 1604 Warsaw Commission stipulations, while also putting the outflow of 3-groschen in a completely different light. Jews, Scots, as well as merchants from Gdańsk and other places, who exported these and other coins “in heaps” from the Empire, would receive a premium of 5 florins for every 100 florins in return for the imported “daken” (?) thalers and Hungarian guildens. It shows that 3-groschen outflow was not spontaneous but sanctioned by the state as means to acquire precious metals in foreign markets. 3-groschen essentially was a trading coin (ger. *Handelsmünze*) and the state sought to coordinate its outflow. At the turn of the 17th century, German lands were flooded with Polish 3-groschen or so-called *Düttchen*. Because of their decreasing quality, several lands in the Empire restricted silver export to the Commonwealth and resettled their exchange rates with local 3-kreuzers.²⁴⁴

The unstoppable growth of the silver price dissolved the established parity between thaler and groschen. This problem was brought up in H. Wulff's plea to the Riga City Council (January 13, 1609), in which he stated that despite the

²⁴¹ “[...] solchs heilsames mittel erfunden, das man nach vbersehung Ihr: Keys: Mtt münzte vnd theuerung des silbers zu Resp (.welchs vnsern Müntzen wegen mangelung der ärtz von dannen gereicht wirdt.) ebenmeßig in vnsern müntzen, derselbigen proportion nach, die müntze schlagen laßen, allein es verfels hiebei die vnkostungen welche bei der müntzung auffgehet.” Mint decree, 9.05.1617: LVVA 673-1-1283, fol. 120v.

²⁴² “Inmaßen auch daselbst in dieser geringen Zeitt [von 1604 – V.D.] das goldt vnd silber in sehr hohe theuerung gerathen (.Wie solches die H. Commißary vorm Jahr mit des Reichs approbirung praecaniret vnd gesehen, das wan vff der H. Commißarien Anni 1604 gefundener proportion fortgestellet würde müste man sich befürchten, das unsere Müntzen von tage zu tag kleiner vnd geringer ann gewichte würde.)” Ibidem, 120v–121r.

²⁴³ The source, which refers to *eine Commission zur Wilda*, is the enigmatic Ioannis Öberhovy *Relation* wegen der müntze, 1609: LVVA 673-1-1283, fol. 87r-88v; copy of the same: Ibidem, fol. 88r-v.

²⁴⁴ Mikołajczyk, *Einführung*, 102–4.

“new ordinance” the rise of the thaler exchange rate to 41 groschen made new 3-groschen more worthy than thaler.²⁴⁵

As a result of the 3-groschen undervaluation, Polish mints were not able to proceed with 3-groschen coinage henceforth. In addition, the appreciation of thaler below the silver market price accelerated their withdrawal from the Commonwealth monetary market. Hence, the downplaying of market fluctuations undermined the whole mint system. Mints were forced either to shut down, invent new ways of decreasing expenses, or issue smaller units, such as schillings. In 1605, Anthoni Rohell, mint lord of Cracow mint, testified to the inquisition that he was not able to keep up with the expenses after the silver price reached 40 groschen per 1 Reichsthaler. To decrease costs, Rohell introduced night shifts in the mint.²⁴⁶ It is of particular interest to note that he had to buy silver with groschen, because the purchasers did not accept foreign coins.²⁴⁷ Hence, the Commonwealth mints encountered a heavy dilemma – despite the groschen coinage becoming too expensive, it was necessary to keep up with their coinage or extraction from the domestic market in order to attract silver from the outside. Being overly suspicious of possible speculations and inflation if recognising silver market prices, the Commonwealth monetary authorities resorted to mitigate these risks and likewise attract bullion by channeling the outflow of valuable dreigroschen to international markets.

There were at least a few more attempts to regulate monetary market development. In 1608 the Gdańsk mint started issuing ortstaler valued at 10 groschen or ¼-thaler. Their introduction followed the silver price rise to 40 groschen per thaler. In Żabiński’s opinion the valuation of such a quarter taler at 10 groschen indicates that the devaluation of smaller coins had been approved.²⁴⁸ Furthermore, these coins with the silver content of 6.089 g upset the value balance with 3-groschen and 6-groschen by lowering the groschen standard from 0.628 g to 0.609 grams of fine silver.²⁴⁹

Around 1614 mint authorities sat in the general assembly in Cracow to settle pending monetary issues.²⁵⁰ Silver price reached 42 groschen per thaler or 11 złoty for pure silver mark, therefore it was suggested to increase the output of 6-groschen and 3-groschen to 50 and 100 pieces in weight mark, respectively.²⁵¹

²⁴⁵ “Die Neue ordnung gemachet, nicht höher als der thaler zu 38 g. Wer nun einen thaler haben wil soll oder muß, der muß darvon 41 g geben. Ist aber mall hiraus zu sehen, das die Neuen dreyer beßer als die thaler sindt, wie dan aus beygefügeten schreiben gleichfals befindtlich, das auch die Müntzmeister In Polen nicht wol fort Kommen Können, weil die thaler, so gar hoch gestigen.” H. Wulff’s supplication, 13.01.1609: LVVA 673-1-1283, fol. 79v. Wulff’s conclusion were drawn from earlier calculation. – H. Wulff’s consideration on thaler – groschen exchange rate, 17.12.1608: LVVA 673-1-1283, fol. 75.

²⁴⁶ Fragstücke Anthoni Rohell Muntzverwalter, n.d.: LVVA 673-1-1283, fol. 65v.

²⁴⁷ Ibidem, fol. 66r.

²⁴⁸ Żabiński, *Systemy pieniężne*, 111; Żabiński, “Kryzys monetarny,” 7.

²⁴⁹ Paszkiewicz, “Podobna jest moneta,” 98–99.

²⁵⁰ Cracow valuation, 1614 (?). Exists three copies: LVVA 673-1-1283, fol. 90r-91v; Ibidem, 92r-93v, 96r; Ibidem, 94r-95v.

²⁵¹ Ibidem, fol. 94v.

In 1614 a new unit of dreipölder was introduced into circulation. The coin was first issued by Conrad Bremer in Bydgoszcz, soon followed by the Cracow mint (1614) and Riga (1616). Dreipölder were based on the minting standard of the Holy Roman Empire's 3-kreuzers, i.e. from 8 lot silver and 121 ½ pieces in weight mark. The valuation of coins in 1614 stated that the Polish coin standards had to meet the silver price and the minting standards of the Holy Roman Empire.²⁵²

By the time of assembling the Warsaw Commission (1616) the climate for more crucial change was prepared. Neither exchange rates nor minting standards held on to the previous levels. A further debasement of various denominations became widespread all over the Commonwealth. Evidently, it was the price that was paid for silver price stability, i.e. reluctance to rise Reichsthaler value, which was kept at the rate of 42 groschen from 1611 until 1616. The Commission summoned on 7 October discussed the matters until 17 October. The Commission agreed on a moderate revision of the monetary system by approval of decreasing minting standards and raising the silver price to 46 groschen. The study of Żabiński shows that this policy included reinstating the proportionality principle between 3- and 6-groschen, and ortsthaler. The taken measures raised hopes for constituting a certain order in the monetary system. However, Żabiński concludes, this did not happen because of the further increase in thaler and ducat prices.²⁵³ The Commission did not act as a reformer but rather as a guarantor of the status quo.²⁵⁴

Table 1.2.2 Introduced minting standards by the 1616 Warsaw Commission²⁵⁵

Denomination	Fineness (lot)	Weight (Number of coins in weight mark)	Gross weight (g)	Fine silver weight (g)
10-groschen (ort)	13	31 4/10	6.427	5.222
6-groschen	13	52 ½	3.844	3.123
3-groschen	13	105	1.922	1.561

²⁵² “Hierbei hat I.K.M. eine rechtmäßige münzordnung zuersehen, vnd wan I.K.M. zu münzen begeret, kan keine beßer gestellet werden nach dem EinKauff des Silbers, vnd das I.K.M. Münze so wol in Teudtschenlandt, als in der Crohn Pohlen mag gangbar sein, gleich wie die Teudsche münzte in der Crohn Pohlen gangbar vnd gemein ist.” Ibidem, fol. 95r.

²⁵³ Żabiński, *Systemy pieniędzy*, 111.

²⁵⁴ Similar view has been expressed in: Wojtulewicz, “Coins of Kings Zygmunt III and Władysław IV,” 24.

²⁵⁵ Based on: Braun, *Ausführlich-Historischer Bericht*, 75. These figures agree with written sources: Warsaw Commission's decisions, 17.10.1616: LVVA 673-1-1283, fol. 108v-109r; Warsaw Commission's draft of decisions, 7.10.1616: LVVA 673-1-1283, fol. 111r-112r.

In the context of the Commission decisions another important issue had been highlighted by the Riga mint master Marten Wulff II, who was present at the Commission: minting standards for small change, at least of Riga, were not defined. Wulff claimed that after the thaler price increase to 46 groschen, it was proposed to mint dreipölkers from 7.5 lot silver with 130 pieces in weight mark, and ‘white’ schillings of Riga – from 2 lot 3 d with 222 pieces in weight mark. Ultimately, his majesty did not decide on this issue, leaving it for later.²⁵⁶

Wulff’s claims cannot be verified by the existing minutes of the Commission²⁵⁷, but certainly, they are something to be aware of since the mints were sure to exploit any indecision for their good. As if to confirm suspicions, in 1621 M. Wulff was accused of counterfeiting ‘white’ schillings and dreipölkers (see 3.11). This indecision probably is one way to explain the increasing debasement of Riga schillings, which was in full swing starting from 1615 and gaining pace in the succeeding years. The decrease in coinage quality was reinforced by the acceleration of the silver price increase so much that it doubled in 1620 reaching 75 groschen per thaler. Therefore, as M. Wulff reports, he could not sustain weight and size of coins (*Hat bei dem obgemeldten Schrott vnd Korn nicht Verblieben können*).²⁵⁸ In 1620, for example, the minting standard of Vilnius 2-pfennigs and schillings changed in terms of a single month or even weeks. Moreover, if one can trust M. Wulff’s testimony, schillings and dreipölkers were minted after consideration of changes in their quality elsewhere in the Commonwealth. As a standard, his coinage had to be of higher quality.²⁵⁹ This last aspect signals the fact that, on the one hand, the quality differences were casually used for their interests, and on the other hand – the impotence of law enforcers. Due to the latter, arbitrary measures offered the best momentary solution to prevent losses from the spread of bad coins from neighbouring mints.

Generally, the massive deterioration of the coin quality was a collective response of the Commonwealth mints towards the inadequacy in the ratio of silver and gold prices vis-à-vis its foreign partners and inflation in the West. As A. Mikołajczyk argued, the monetary crisis in the Commonwealth must be understood through the lens of supply and demand relations of precious metals, which prescribed the price of silver and gold, their ratio, and trade balance with foreign markets. In the Commonwealth, according to the 1580 Ordinance gold-silver ratio was 1:11, which was below the overall indices of European countries. This difference persisted until ~ 1600 and resulted in the influx of silver from foreign markets, where it was less highly valued.²⁶⁰ However, around the

²⁵⁶ “Tedoeh ist diß ein Vngefehrlicher Vberschlagk gewesen, drauff von der Konigl. Maytt nichts gewißes geschlossen, Sondern die sache in dem Stande gelaßen, Vnd biß zur andern Zeitt Verschohen worden.“ Riga mint master Martin Wulff’s dispatch to Riga city council, 23.07.1621: LVVA 673-1-1369, fol. 49v.

²⁵⁷ Warsaw Commission’s decisions, 17.10.1616: LVVA 673-1-1283, fol. 106r-110v.

²⁵⁸ M. Wulff’s dispatch, 23.07.1621: LVVA 673-1-1369, fol. 49v.

²⁵⁹ Ibidem, fol. 49r.

²⁶⁰ Mikołajczyk, *Einführung*, 102–3, 128.

same time, a major depletion of Polish stocks of bullion took place as the local issues became increasingly undervalued and silver became scarcer in local markets because of the widespread arbitrary debasement of coinages, inflation, and decline in economic activity.²⁶¹ In the latter half of the period under research, Vilnius, Cracow, and Bydgoszcz mints were the only highly versatile minting centres with coin production ranging from the smallest units of denars to the gold ducats. Other Commonwealth mints specialised on a limited number of issues: Gdańsk was a regular and relatively abundant producer of ortstalers and ducats, Riga of schillings, and Poznań of denars and kwartniks.

²⁶¹ Henryk Wojtulewicz is rather critical on the state of investigation of the monetary crisis under Sigismund III; critical points are: assessing of imported bullion during the massive emission years under Sigismund III, the evolvement of crisis from the perspective of monetary policy; iconographical analysis of coins; production of Warsaw, Urzędów and Zhovkva mints. Wojtulewicz, "Coins of Kings Zygmunt III and Władysław IV," 23–26.

Chapter 2. TRANSFORMATION OF THE MONETARY SYSTEM IN RIGA (1581–1588)

Since the Middle Ages, minting rights in Livonia were bestowed to a limited number of urban settlements. Riga, together with Tallinn and Tartu (Ger. Dorpat), was among those towns which earned some degree of autonomy and more judicial prerogatives or privileges.²⁶² In 1211 Bishop Albert (1199–1229) granted the merchants arriving to Riga the minting privilege (ger. *Prägerecht*, lat. *ius cudenda monetae*). Further, in 1225 papal ambassador William of Modena confirmed the bishop the princely right of coinage (ger. *Münzrecht*, lat. *ius monetae*), i.e. to mint, to regulate the design and value of coins and their exchange rates.²⁶³ As often happens, sovereigns frequently delegated the practical rights to mint to the Riga City Council. It is possible that starting from these early times the mint with all the minting tools belonged to the city.²⁶⁴ After the subjugation to Polish rule, the king owned rights of coinage by the *ius subjectionis* of Riga citizens. First, Stephen Báthory (1581) and later his successor Sigismund III (1588) granted city privileges to Riga, including the minting rights. This chapter focuses on the confirmation of minting rights and their conditions. The period under discussion is understood as a transformational phase, when two parallel monetary systems, the former Livonian and the new Polish monetary order, co-existed.

2.1 Minting privilege of Stephen Báthory (1581)

The submission of Riga to the Polish king Stephen Báthory was a result of long negotiations and many compromises.²⁶⁵ The onset of the Livonian War (1558–1583) and the territorial gains of superior Muscovite ruler Ivan IV the Terrible, forced Livonian landlords²⁶⁶ to reach out for protection and military support

²⁶² Wilhelm Lenz, *Riga Zwischen Dem Römischen Reich Und Polen-Litauen in Den Jahren 1558–1582*, Wissenschaftliche Beiträge Zur Geschichte Und Landeskunde Ost-Mittel-europas (Marburg (Lahn): Herder-Inst., 1968).; Heikki Pihlajamäki, *Conquest and the Law in Swedish Livonia (ca. 1630–1710): A Case of Legal Pluralism in Early Modern Europe*, vol. 77, The Northern World (Leiden, Boston: Brill, 2017), 26.

²⁶³ Privilege text published in: Arveds Švābe, ed., *Senās Latvijas vēstures avoti = Fontes historiae Latviae medii aevii*, vol. 1, Latvijas Vēstures avoti (Rīga: Latvijas Vēstures Institūta apgādiens, 1937), 91–92.

²⁶⁴ Unless Bishop Albert started minting before Riga had its institutions evolved.

²⁶⁵ The course of discussions as well as political, military and economic considerations of both parties have been covered in detailed analysis by Herta von Ramm-Helmsing, “Das staatsrechtliche Verhältnis der Stadt Riga zu Polen-Litauen im Zeitraum zwischen 1561–1581.,” *Jahrbücher für Geschichte Osteuropas* 6, no. 2/4 (1941): 171–200.

²⁶⁶ In the recent Livonian historiography, the term ‘Livonian Confederation’ has been contradicted, as there were no mutual agreements binding these heterogenous territories in a single political entity. M. Tumzers, ‘Pārdomas par kādu Eiropas vēsturisko reģionu’ in: Matiass Tumzers et al., “Livonija viduslaikos. Pārdomas par kādu Eiropas vēsturisko

from outside. On 28 November 1561, the last Master of the Livonian branch, Gotthard Kettler (1559–1562), and Archbishopric of Riga (with the exclusion of Ösel-Wiek-Pilten, and Northern Estonia) concluded an agreement of submission *Pacta subjectionis* with the Sigismund II August, king of the Polish Kingdom and Grand Duke of Lithuania. The Treaty of Vilnius foresaw the secularisation of the Livonian branch of the Teutonic Order and granting of privileges to Livonian estates laid out in the *Privilegium Sigismundi Augusti*. Territorial reorganisation followed in the ceded territories. In 1562, the Duchy of Courland-Semigallia came into being, which was ruled by G. Kettler as a fiefdom.²⁶⁷ The territories north of the River Daugava (Ger. Düna) would form the Duchy of Livonia (1561–1629). The act of submission was finalised in Riga castle, on March 5, 1562, however, Riga stood outside of the treaty with Sigismund II August. Shortly before, on March 3, 1562, Gotthard Kettler released its citizens from the oath of submission. *De jure* and *de facto* Riga had full sovereignty.²⁶⁸ One of the reasons to decline the capitulation plan was the fear that the acceptance of the Lithuanian monetary standard and the insignia of the Commonwealth on their coins, would give false signals of its subjection.²⁶⁹ Instead, Riga was seeking military support without any political repercussions. In the following bilateral discussions with the envoys of the king, Riga was offered different prospects of joining the monetary union with GDL, which were never realised.²⁷⁰ Riga continued to execute the rights of a free city, including the rights of coinage, until 1581.

Finally, the future of Riga was decided by the military achievements of Stephen Báthory's army against the tsarist Russia of Ivan IV.²⁷¹ The victories in the Livonian War, 1578–1580, and a further successful intrusion into Muscovy in 1579–1581, stroke a decisive blow to the Muscovite plans for acquiring a foothold in the much-disputed Livonian territories. However, in Livonia, the political and economic interests of the Commonwealth clashed with Sweden's geopolitical pretensions. The main goal for both countries was to obtain a monopoly over the lucrative Russian trade arriving at the Livonian ports and controlling the exit to the Baltic Sea.²⁷² Ultimately, Polish forces gained the

reģionu,” *Viduslaiku Livonija un tās vēsturiskais mantojums = Medieval Livonia and Its Historical Legacy*, 2019, 34. However, mutual agreements were settled regarding the monetary issues. See Ivar Leimus, “The Livonian Monetary Union (c. 1250–1561),” ed. N. Champroux et al., *Construction and Deconstruction of Monetary Unions. Lessons from the Past. Proceedings of the Warburg (2015) and Vienna (2017) Conferences*, 201, Collection Moneta, 2018, 5–13.

²⁶⁷ Dogiel, *Codex Diplomaticus*, 5:238–43.

²⁶⁸ Klaus-Dietrich Staemmler, *Preußen und Livland in ihrem Verhältnis zur Krone Polen 1561 bis 1586*, Wissenschaftliche Beiträge zur Geschichte und Landeskunde Ost-Mittel-europas 8 (Marburg: Herder-Inst., 1953), 64. Formally, until 1563, Riga was ruled by Archbishop of Riga, Wilhelm of Brandenburg, who died in the same year.

²⁶⁹ Leimus, *Das Münzwesen Livlands*, 55.

²⁷⁰ Leimus, 55.

²⁷¹ Staemmler, *Preußen und Livland*, 65.

²⁷² See Attman, *Baltic markets*.

upper hand over Sweden, its principal opponent in Livonia, as they were in control of the River Daugava basin, i.e. Riga's economic hinterland.

Poles tried to extract the most from their new possessions by opening new toll stations on the Pskov (Ger. Pleskau) road and in Daugavgrīva (Ger. Dünamünde), which was instrumental in the defence of the mouth of the river.²⁷³ E. Dunsdorfs and A. Spekke claim that under these circumstances it was the only solution for Riga to merge with the Commonwealth.²⁷⁴ After some delay in the early discussions of 1579, in the following negotiations in Vilnius at the turn of 1580/1581 both parties made an agreement. On 14 January 1581, Stephen Báthory signed *Corpus privilegiorum Stephaneum* in Drohiczyn, which was later (16.11.1582) confirmed at the Sejm of Warsaw. The ruler approved earlier privileges and rights of citizens' property, the Riga City Council was secured extensive competencies in the legislation, determining weights and measures, exercising jurisdiction in the city and patrimony, and, last but not least, minting coins.²⁷⁵

Riga was granted privileges enjoyed only by a small group of the largest Commonwealth cities.²⁷⁶ According to Klaus-Dietrich Staemmler, Stephen's Corpus of privileges was cast upon a corresponding model for Royal Prussian cities, Elbląg and Gdańsk in particular.²⁷⁷ The formulation of renewed coinage rights conveys this notion quite clearly. It stated that Riga was granted a permission to mint gold and silver coins similarly to the "right previously granted by our ancestors to the largest towns in our Prussian lands"²⁷⁸: coins had to bear the insignia of the Commonwealth on one side and the coat of arms of the city,

²⁷³ Edgars Dunsdorfs and Arnolds Spekke, *Latvijas vēsture 1500-1600* (Stockholm: Daugava, 1964), 452. J. Straubergs, *Rīgas vēsture XII-XX gadsimts*. (3rd edition; Rīga, 2019) 320-321.; More detailed descriptions of these toll stations have been provided in: von Ramm-Helmsing, "Das staatsrechtliche Verhältnis."

²⁷⁴ In Livonian times, taxes were collected only in Koknese. Dunsdorfs and Spekke, *Latvijas vēsture 1500-1600*, 452.

²⁷⁵ Dogiel, *Codex Diplomaticus*, 5:308-14.; Ziemiańska, *Ryga*, 77-78.

²⁷⁶ Ziemiańska argues that: "This provision was in contradiction to the constitution of 1538, which forbade cities and their residents to possess landed property. The exception was made only for the largest cities of the Commonwealth (Cracow, Poznań, Lwow, Warsaw, Lublin, Vilnius and large Prussian cities). In 1582, Riga joined this narrow group." Ziemiańska, *Ryga*, 78.

²⁷⁷ Staemmler, *Preußen und Livland*, 70-71.; The city lost its religious freedom, rights to appeal at the court of the Holy Roman Empire, rights to impose the death penalty. Ibidem, 71-72.

²⁷⁸ Stanislaw Kutrzeba, "Danzig and Poland in History," *Baltic and Scandinavian Countries*, no. 4 (1938): 302. During the Royal Prussian diet of Marienburg in 1528, Prussian cities and the Duke of Prussia on the one hand and Polish king, on the other, agreed on the monetary order in Royal Prussia according to which Polish, Lithuanian and Prussian coinages had to observe equal minting standards and exchange rates: 1 mark = 20 groschen = 60 schillings = 360 pfennigs. LVVA 673-1-1283, fol. 27v; Stanislaw Kutrzeba writes that: "The charter of 1457, known as the *Haupt-Privilegie*, empowered the City Council (of Gdańsk - V.D.) [...] to mint gold and silver coins - on condition that they bore the King's image and were of the same fineness as Polish currency." Ibidem, 302.

on the other side. The weight and fineness of the coins had to be equal to those of Poland and Lithuania so that there was no difference to their usage. The income from coinage would be left to the city.²⁷⁹

The privilege marked a total revision of the earlier minting right and the introduction of a new monetary system in Riga and Polish Livonia. In the first instance, it reflected on the currency and its quality. The monarch was the holder of monetary sovereignty, meaning that any introduction of changes in the rights had to be agreed or introduced by the monarch. The privilege formulated only the main principles of coinage and exchange. It did not cover all practical and judicial aspects concerning minting, exchanging, valuation or possible counterfeiting cases, which would be addressed in various legal enactments and released mandates to the Riga City Council. There was, however, a division of responsibilities. The monarch, on the one hand, acted as the supreme holder of privilege and legislator, on the other hand, approval of the Commonwealth Sejm was required to introduce changes in minting standards (*Müntzfuss*) and values. Finally, in what concerns Riga, the City Council was the owner of the mint, responsible for the provision of the mint with necessary tools and resources, and guarantor of the coin quality after the mint master and warden. Furthermore, the appointment of a burgrave to the mint lord position, which oversaw the practical implementation of requirements in the minting process and collected profit from coinage (*Schlagschatz*), secured the monarch's knowledgeability over local issues and ensured the implementation of state legislation (see 3.3).

Riga became the sixth municipality in the Commonwealth after Poznań and Wschowa, and three Prussian cities – Gdańsk, Toruń (Ger. Thorn), and Elbląg to mint its coins.²⁸⁰ Tartu, another Livonian mint city under Polish jurisdiction, was less fortunate. In December 1582, a royal privilege confirmed Tartu its old law, including coinage rights. However, it was an empty promise, the town was prohibited from executing coinage rights.²⁸¹ There were probably a few more alternatives for minting coins in the Duchy of Livonia. Cēsis (Ger. Wenden), Koknese (Ger. Kokenhausen), and Dole had been minting coins at various

²⁷⁹ “Et quia Civitatis n[ost]ra Rigen[sis] per Internuncios suos nobis exposuit, se ius cudendi monetam, cum auream tum argenteam, ad eamq[ue] rem prop[r]iam domum cum omni Instrumento Monetario habuisse, nobisq[ue] supplicasset, ut id ipsum quoq[ue] confirmare dignaremur: nos eam facultatem, cum omni eius emolumento, Civitati illi liberam (. quod Ius Ciuitatibus etiam maioribus terrarum n[ost]rarum Prussiae maiores n[ost]ri, ante concesserunt.) relinquimus, ita tamen vt ex vna parte pecuniae, effigies n[ost]ra, vel insignia Regni, magniq[ue] Ducatus Lithua[e], in altera, Civitatis insignia exprimantur. Pondus vero et valor aequabilis moneta[e] Regni ac magni Ducatus Lithua[n]iae sit, eiusq[ue] pecuniae vsus cum pecunia cussa in Communi Repub:[lica] promissiva et indifferens sit.” Riga mint privilege. Excerpt from “Corpus privilegiorum Stephaneum”: LVVA 673-1-1369, fol. 24r; There are two other copies of the privilege, both with minor differences in the transcription – LVVA 673-1-1290, fol. 1b and Dogiel, *Codex Diplomaticus*, 5:312.

²⁸⁰ Tadeusz Kalkowski, *Tysiac Lat Monety Polskiej* (Krakow: Wydawnictwo Literackie, 1974), 187.

²⁸¹ Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 91.; Leimus, *Das Münzwesen Livlands*, 61–62.

periods in the 15th–16th centuries. Theoretically, Dole held the best chances as it was closed rather recently (1573) and possibly required least investments in the upgrade with necessary tools. However, the Dole mint was just a temporary mint (active in 1572–1573) set in the Dole castle. The small village population of Dole enjoyed no town rights to express sound claims for the mintage rights.²⁸² From a legal point of view, only Tartu bishops had well-justified grounds as they possessed *ius monetae* in previous times. This in turn may explain the fact that Tartu was the only town to make its claims known to the monarch.

Early that year Riga and Tartu were legally incorporated in the Commonwealth. The Truce of Jam Zapolski (15 January 1582) secured Polish conquest in modern-day Latvia, parts of South Estonia – a region of Pernau and the once Bishopric of Tartu, and in parts of Muscovy. The king himself arrived in Riga on March 12, 1582.²⁸³ On March 14, the citizens gave a present to Stephen Báthory: a large beaker filled with 1000 Hungarian guildens, additionally 20 oxen, and other foodstuffs worth a total of around 17 000 marks.²⁸⁴ In Poland, a medal in gold and silver was commissioned in praise of his recent acquisitions. On the reverse inscription reads LIVON(IA) POLOT(IA)Q(UE) RECEPTA. This medal, depicting Stephen Báthory on the obverse, and a “mourning figure representing the capture of Polotsk and Livonian area”²⁸⁵ on the reverse, draw on iconography of ancient Roman coins commemorating the capture of Judea and other provinces.²⁸⁶ Thus, capturing the Livonian province was bestowed a highly symbolic value.

2.2 A dispute over minting standard of early schillings

The Ordinance of January 5, 1580,²⁸⁷ was the principal legal document in the coinage of schillings in the Commonwealth. Despite being the most recent addition to the Commonwealth monetary system, schilling quality has been a source

²⁸² Ēvalds Mugurēvičs, *Viduslaiku ciems un pils Salaspils novadā* (Rīga: Latvijas vēstures institūta apgāds, 2008), 11.

²⁸³ Bathory remained in Riga until May 2. Arnolds Spekke, *Ķēniņa Stefana ienākšana Rīgā un cīņas par Doma baznīcu* (Rīga, 1932), 7.

²⁸⁴ Spekke, 13. Here Spekke refers to the letter of an uncertain D. Herman addressed to the City Council of Gdańsk (signed 14 March 1582). This letter originates from the State archive of Gdańsk (the title of the archive may have changed considering the fact that Spekke worked there in the pre-war period). A similar description was given by an uncertain J. Pietrkowski to the Marshal of the Polish Kingdom. (18 March 1582). The report is cited in: Ziemlewska, *Ryga*, 83–84.

²⁸⁵ This description was given in one of the earliest records of the medal, dating from 1611. Bartosz Awianowicz, “From IVDAEA CAPTA to LIVON(IA) POLOT(IA)Q(Ue) RECEPTA. The Reception of the Famous Reverse of Vespasian Coins in Renaissance Poland.,” *Wiadomości Numizmatyczne* 63 (2019): 4.

²⁸⁶ More about this enigmatic medal: Awianowicz, “IVDAEA CAPTA.”

²⁸⁷ The ordinance is published in full by: Zagórski, *Monety dawnej Polski*, 129–31.

of ongoing disputes in the Baltic and Polish numismatic community till now.²⁸⁸ Several metrological versions have figured in numismatic literature. The first notable author was David Braun, the burgrave of Malbork, whose monograph *A Detailed Historical Review of Polish and Prussian Coinage* (1722), in many cases served as a primary source in Polish numismatics. According to Braun, 335 pieces of 6 lot silver alloy were minted from the weight mark.²⁸⁹ Braun's figures are incorrect in the sense that they referred to the early, 1578 edition of monetary reform, which was not carried out.²⁹⁰ A wider recognition of Ordinance 1580 within the numismatic community perhaps was reached with the seminal work *Coins of Ancient Poland from the Last Three Centuries* (1845) by Ignacy Zagórski. It is the most complete collection of documents from Polish monetary history, which includes a full transcript of the Ordinance. I hereby quote the original passage referring to the quality of schillings:

“Marca, ex qua solidi cudentur, argenti continebit in se duos lotos, tres quintas, duos denarios. Ex qua quidem marca mixta petiae seu solidi centum septuaginta septem, et quinquagesimae septimae sexagesimae quartae, ex marca autem fain petiae seu solidi nonigenti nonaginta conficiuntur. Ita quod marca una in solidis efferetur florenis undecem [...].”²⁹¹

Schillings had to be minted of 2 lot 3 quentin 2 pfennig fineness and 177 57/64 pieces in weight mark. From the fine silver mark 990 pieces were minted to the value of 11 florins. Despite the clear statement of the source, the following century produced new ideas about schilling quality. In the early 1920s Polish numismatist Marian Gumowski argued that schillings were minted from ~ 2 lot 2 q 2 d silver alloy (2.6 lot) and 178 coins in one weight mark.²⁹² Gumowski's estimates had been widely accepted, coming down to the 1970s when redrawn by Polish numismatist J. A. Swagrzyk, who introduced a slightly altered picture of the minting standard of schilling – 2 lot 2 q fine silver (2.5 lot) and 178 coins in weight mark.²⁹³ After a decade, Polish numismatist Zbigniew Żabiński brought back Zagórski's figures to the frontline of the dispute.²⁹⁴ Zagórski-Żabiński views are shared by most of the scholarly community today with exception of the Lithuanians.²⁹⁵ In the recently published monumental *Money in Lithuania* (2021) Lithuanian colleagues come forth with quite a

²⁸⁸ Grimalauskaitė and Remecas, *Money in Lithuania*, 188.

²⁸⁹ Braun, *Ausführlich-Historischer Bericht*, 67.

²⁹⁰ Emil Bahrfeldt, *Münzen und Medaillen der Stadt Danzig*, vol. 5, Die Münzen und Medaillen-Sammlung in der Marienburg (Danzig: Verlag des Vereins für die Herstellung und Ausschmückung der Marienburg, 1910), 15–16.

²⁹¹ Published in: Zagórski, *Monety dawnej Polski*, 130.

²⁹² Gumowski, *Mennica Wileńska*, 112, 132.

²⁹³ Swagrzyk, *Pieniądz*, 122.; Swagrzyk's figures later appeared in: Leimus, *Das Münzwesen Livlands*, 58.

²⁹⁴ Żabiński, *Systemy pieniężne*, 105.

²⁹⁵ Mrowiński, *Monety Rygi*, 47; Mikołajczyk, *Einführung*, 50; Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 102.

different metrology of schillings: 2.6 lot fine silver and 162.5 coins in 1 weight mark.²⁹⁶ The justification for the differences in the minting standard of schillings is nowhere to be found. However, despite the impression of the differences in coin quality, there are no essential differences between these coins as both are intrinsically equal with 0.203–0.204 g of silver per piece. There remain differences between the other proposed figures, which suggests that some may not be calculated on the basis of written records but rather real coins. Thus, to some extent, the source of confusion is the lack of trustworthy first-hand accounts. The complex of the Riga mint records is one such example. Despite the rather sheer volume of mint-related records at the LVVA, there is virtually no mention of the quality of the first Riga schillings.

2.3 Minting of the Riga schillings in 1582–1586

Minting of the new Riga coins started immediately after the confirmation of the new city privileges. 3-groschen and groschen are known from 1581.²⁹⁷ In 1582 the first schillings were minted in Riga, depicting the monogram “S” of king Stephen Báthory on the obverse and the small coat of arms of Riga – crossed keys and cross above – on the reverse side. Similar to the coinage of Vilnius mint, all denominations (but schillings) featured the royal portrait on the obverse and the coat of arms of Riga on the reverse.²⁹⁸

It seems as if the arrival of a new ruler had breathed new life into the Riga mint. The last coins, 1579 ferdings, and schillings, had been minted almost three years earlier. The coinage of the Free City of Riga (1561–1581) could have been on the downslide for some while, which was evident by the debasement of all monetary units throughout the Free City of Riga.²⁹⁹ Otherwise the municipal mint of Riga had demonstrated strong resilience towards contemporary economic shocks – the Livonian War and the coinage of the Dole coins in 1572–1573.³⁰⁰ In the 1570s mint output, schillings dominated, assuming a massive scale in the second half of the decade. In 1575 alone 1.8 million schillings (30 000 account marks) were coined. It is not certain whether such productivity was achieved in the following 4 years,³⁰¹ but if so, their output could be estimated in the range of millions. The fact that it could be one of the

²⁹⁶ Grimalauskaitė and Remecas, *Money in Lithuania*, 188.

²⁹⁷ There are two types of reverse of 1581 groschen: with a coat of arms of Riga and a coat of arms of Poland-Lithuania. According to G. Haljak, groschen with the latter type is less common, which might suggest that this type was used at the very beginning, until the new type was developed as prescribed in the privilege. Haljak, *Livonian Coins XIII–XVIII Century. Part II*, 83. (Nr. 995, 996).

²⁹⁸ Vilnius coins were featuring a joint coat of arms of GDL and Poland. Grimalauskaitė and Remecas, *Money in Lithuania*, 190.

²⁹⁹ Leimus, Kiudsoo, and Haljak, *Sestertisist sendini*, 97–99; Leimus, *Das Münzwesen Livlands*, 53.

³⁰⁰ More: Leimus, *Das Münzwesen Livlands*, 55–58.

³⁰¹ 1579 schillings and ferdings are the last dated coins of the Free City of Riga.

most productive periods in schilling coinage has been suggested by numerous coin hoards, dating to as recent times as the 18th century.³⁰²

The coin hoards of the first decades (1581–1604) under the Polish rule do not indicate a massive turnover of contemporary issues of Riga mint coins. Previous Livonian issues, in particular the schillings of the Free City of Riga, took a predominant role in the everyday merchandise,³⁰³ although somewhat less regularly in the native Estonian area (see 4.6). The output of the newly opened mint was lagging behind the imports of issues from GDL, which entered Livonian territories en masse during the Livonian war years and was reinforced by lifting the monetary barrier between the Commonwealth and the Duchy of Livonia in 1581. To a lesser degree hoards consisted of a variety of neighbouring coinages, particularly from the Duchy of Courland, Muscovy, and Dole. The more distant coins from western countries, except for Spanish reals, had been withdrawn from circulation almost completely. The results can be explained by considering firstly, the shortage of currency in Polish Livonia after the war, and secondly, the rebuilding of the devastated Livonian province. From this perspective, the arrival of Lithuanian issues and previous coinages occupied an instrumental role in the rebuilding process of the local economy.³⁰⁴

It would take time before new issues and their values were established in the everyday circulation. For example, the Free City of Riga schillings of 1572 were minted from 1.5 lot silver alloy and probably 200 pieces³⁰⁵ from Livonian weight mark (208.1 g).³⁰⁶ The average schilling contained only as much as 0.098 g of pure silver. In contrast, 1582 Polish schillings were minted from a silver alloy twice as high (18%) and contained 0.204 grams of silver (Table 2.3.1). But it was not only schillings. Livonian and the Commonwealth monetary systems – accounting, weights, and denominations were different in every aspect.

Table 2.3.1 Comparison of the 1572 and 1582 schilling standards³⁰⁷

Free City of Riga, 1572			Riga under Polish rule, 1582		
Fineness of schilling (lot)	Gross weight (g)	Silver content (g)	Fineness of schilling (lot)	Gross weight (g)	Silver content (g)
1.5 (9.3%)	1.04	~ 0.10	2.875 (18%)	1.13	0.204

³⁰² Ducmane and Ozoliņa, *Monētu depozīti*, 27.

³⁰³ Ducmane and Ozoliņa, 129–44.

³⁰⁴ For more comprehensive analysis, see Chapter 4.6. and Tables 4.6.1. and 4.6.8.

³⁰⁵ The number is theoretical, based on the assumption that Riga schillings weighed similar to Dole schillings. Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 98.

³⁰⁶ Leimus, *Das Münzwesen Livlands*, 53. The number of minted coins from 1 weight mark are also unknown. The estimate number is 200 pieces.

³⁰⁷ Source: Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 98, 102.

In pursuit of solidifying a common monetary market, the Polish took the incentive to organise the market of the Duchy of Livonia. During his stay in Riga in the spring of 1582, Stephen Báthory discussed monetary issues in the context of the introduction of the customs duty of portorium.³⁰⁸ In the portorium instruction, issued in April 1582, paragraph 13 stated exchange rates that had to be observed when levying the port duty.³⁰⁹ These rates were as follows:

1 Reichsthaler = 35 Polish groschen;

1 Riga account mark = 6 Polish groschen;

1 Polish groschen = 6 Livonian schillings = 3 Polish or Lithuanian schillings = 6 Polish or Lithuanian half schillings (pfennigs).

In this instruction, one can witness an early attempt of combining two distinct account systems, which was based on the equation: 1 mark = 4 ferdings = 18 Polish schillings = 36 Livonian schillings.³¹⁰ A clearer impression of their diffusion can be gathered from the mint books and records of the period. In the mint records, accounts and calculations were settled accordingly: 1 złoty (fl) = 5 mark (M) = 30 groschen (g) = 180 Livonian schillings (β).

Báthory's instruction did not exclude the parallel existence of both account systems in the Duchy of Livonia. On 5 May 1582, the exchange rates for the most widespread hard currencies in Riga were expressed in Polish (złoty, groschen, and schillings) and Livonian (marks and schillings) account units.³¹¹

As argued by I. Leimus, the initial use of Livonian schillings in accounts could have been necessitated by the shortages of new schillings in the market.³¹² However, it has been revealed by later mint sources that Schlagschatz and other payments at the mint were calculated in the Polish-Livonian account units. This particular account system was in place all through the period. Interestingly, in Swedish Estonia similar diffusion of two distinct account systems took place at the end of the 16th century, only here it involved Livonian and Swedish units.³¹³

Two reports are especially noteworthy in this regard. In the earliest source, mint lord Caspar zum Berge (1585) mentions minting of 3-groschen and “ander dubbelde schilling” in passing.³¹⁴ Another report from 1605 by mint master

³⁰⁸ Exchange rates in Riga portorium, 5.05.1582: LVVA 8-4-59, fol. 14r; Portorium was installed in Riga in 1581 after subjugation of the city by Stephen Bathory. The duty was paid for every in- and outcoming shipment of good and inland *kramwaren* to the amount of approx. 2% of the value of the merchandise. 1/3 of the total income was entrusted to the city for the upkeep of infrastructure. G. Jensch, *Der Handel Rigas im 17 Jahrhundert. Ein Beitrag zur livländischen Wirtschaftsgeschichte in schwedischer Zeit* (Riga 1930) 115.; see 5.2.

³⁰⁹ Ibidem, fol. 14v.

³¹⁰ Leimus, *Das Münzwesen Livlands*, 30.

³¹¹ Leimus, 59, 93.; Taxation of 1582: LVVA 673-1-1281, fol. 5; LVVA 8-4-59, fol. 14r and LVVA 673-1-1252, fol. 2 (another 1582 money taxation is dated to May 6 with values expressed in Livonian account units); Taxation of 1584: LVVA 673-1-1281, fol. 6.

³¹² Leimus, 59.

³¹³ Leimus, “Das Münzwesen Revals im 17. Jahrhundert.,” 194–95.

³¹⁴ Caspar zum Berge's report on thaler and real prices, 1585: LVVA 673-1-1281, fol. 7v.

H. Wulff I employs the very similar “zwei schilling” denomination³¹⁵ although later on, he consistently uses only the term ‘schilling’. Both 3-groschen and schilling were regularly issued coins in Riga mint. It is without question that ‘zwei schilling’ denomination was used to denote the higher quality Polish schilling. It indicates that more than twenty years after the issuing of the last Livonian schillings and witnessing changes in Polish schilling quality, the mint was still operating in terms of old, Livonian schillings. Consequently, there was a peculiar albeit simple conversion observed in the accountancy:

- 1) Due to a higher minting standard and value, one Polish schilling was equal to 2 Livonian schillings.
- 2) Whether the accounts are settled in Polish schillings or Livonian schillings, that did not change the outcome in zloty, marks, and groschen, except the schilling figure, which might need to be divided by two if accounts were settled in Livonian schillings. To try how it works in reality, one can take, for example, the registered Schlagschatz income of 105 florin 26 groschen and 4 schillings on November 21–26, 1615.³¹⁶ As noted, these values are calculated with Livonian schillings. To arrive at a final result it is enough to divide 4 schillings by two, but to test the outcome I proceed $105 \text{ fl } 26 \text{ g } 4 \beta = 19\ 060 \text{ Livonian } \beta / 2 = 9530 \text{ Polish } \beta$; $9530 \beta / 90$ (number of Polish schillings in zloty) = 105 fl 26 g 2 β .

Transition to new, Polish values and units could be fostered not only with the rising output of new issues and simple conversion regime, but also the rising silver price and inflation, which arrived in the Duchy of Livonia shortly before the end of the 16th century (see 3.4). Depreciation of schillings would lead to buying up and melting of old Livonian schillings for the sake of profit. Different legislative measures should not be excluded, although no such evidence has been found.³¹⁷

The technical side – provision with necessary punches, the supply of silver, or checking of quality of minted coins – or organising of the new coinage is unclear. The written sources of the years under the Polish king Stephen Báthory are virtually lost. Based on the coin finds, schillings were minted every year, except for 1583, for which no reliable finds have been preserved. The same periodisation of schilling coinage is suggested by coin collections. In the aftermath of Stephen Báthory’s death on December 12, 1586, minting activities of Riga were suspended. The election of new monarch Sigismund III did not take place until a year later, on December 27, 1587. Thus, the *interregnum* period lasted for over a year, until the confirmation of city privileges took place. There are no coins from Riga dated to 1587.

³¹⁵ H. Wulff’s report, 30.01.1605: LVVA 673-1-1283, fol. 57r.

³¹⁶ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 5v.

³¹⁷ In 1422–1424, when the previous monetary reform in Livonian principalities was carried out, the recess of October 25, 1424 prescribed calculations of payments and taxes in the new money, while the payment of the debt was permitted in old money, “as long as it was circulating in each principality”. Leonid jun. Arbusow, *Akten und Rezesse der Livländischen Ständetage (1417–1424)*, 3rd ed., vol. 1 (Riga: Jonck & Poliewsky, 1926), 305.

The single evidence from the vacancy period points to a significant dispute within the monetary political circles. In the letter to the Riga City Council (15 July 1614) H. Wulff I reminded that the Vilnius and Olkusz mints, unlike the Riga and other mints, did not suspend their minting activity during the intermediate period.³¹⁸ H. Wulff's discontent with the execution of minting privilege was at least partially based on real facts. According to Edmund Kopicki, the first Sigismund III coins were produced in the crown mints of Olkusz and Poznań as early as 1587.³¹⁹

This dispute hints at a far more complex problem than recognised in the above-mentioned letter by H. Wulff. First of all, the illicit coinage could have been a short-lived affair so as not to make it publicly known. Secondly, the coins would need to be backdated. Consequently, one could expect emission rates of the previous years to exceed the average yearly outputs. Furthermore, the actual number of participants in the illegal activities could be higher than the suggested two or three mints. Looking from this perspective, it is theoretically possible to identify the mints participating in the illicit coinage by studying their outputs and the number of die variations of the previous year issues. According to Reyman, the emission rates of 1586 Olkusz schillings was twice as high as in the previous, 1585 and the following, 1588, year. This is but one example, which could illustrate the notion of the high divergence from average outputs as resulting from the illegal coinage. In order to test the theory, a systematically processed database of several mints should be obtained. Lastly, this episode displays a certain confusion about the minting privilege, i.e. the extension of the freedom to mint coins and rules to follow during *interregnum* could be disputed.

2.4 Minting privilege of Sigismund III Vasa (1588)

In 1588, the Riga mint resumed striking coins of three different denominations: schillings, 3-groschen, and ducats. The ducat was not a regular coin, it was issued only on special occasions, which also explains their extreme rarity. Only pieces from 1588, 1592 (*portugal*³²⁰), 1594, and 1597 have been detected. Whereas schillings and 3-groschen were minted yearly until 1600. The coins of Sigismund III were minted largely following the established design patterns of

³¹⁸ “Es erinnert sich auch Eur Erb Rath das in 1586 nach Christmilter gedechtnüs Kön: Stephan tödtlich abgang die münzte Zu Ilkusch und zur *Vilna* da ich derer Zeitt selbst gewesen stillgehalten vnd nichts gemünztzett: EwErb. Rath aber dieser Stadt hatt ungeachtett des *Interregni* sich Ihres Priuilegy für vnd für gebrauchett vnd habe immer fordt gemünztzett, da die andere still gehalten.” H. Wulff's report, 15.07.1614: LVVA 673-1-1283, fol. 99v.

³¹⁹ Kopicki, *Monety Zygmuntia III Wazy*, 21.

³²⁰ Portugal (ger. *portuglöser*) is a derivative for the *portuguez* – designation for a 10 cruzado gold coin from Portugal. This large gold coin (ca 35 grams) was a popular object of imitations in the cities of the Hanseatic League, often struck for representative and commemorative purposes.

the previous years. Among other Commonwealth schillings, the Riga schillings can be recognised by the reverse side, which featured the small coat of arms of Riga and inscription containing full denomination and/or abridged Latinised version of the minting town of Riga, issue year, the mint master's mark,³²¹ for instance: SOLIDVS CIVI RIGENSIS [15]95.

The coinage could resume only after receiving royal confirmation, however, it was only on 17 April 1589 that Riga was confirmed with its city rights and privileges.³²² The delay could be associated with the so-called 'Calendar riots' of Riga (1584–1589). The revolt started as civil unrest against the introduction of the Gregorian Calendar, which was requested by king Stephen Báthory. The citizens saw this as a threat to their freedoms, which had already been betrayed by the Riga City Council who gave in to the monarchical requests to hand over some of the Lutheran property to the Jesuits in 1582. Thus, from the very beginning, a religious aspect went hand in hand with the serious political crisis, discontent with the corrupt Riga City Council and burgrave, who rejected the interests of the majority – guilds, and citizens. In July–September 1589, all hopes for enlarging the electorate body of the Riga City Council on the basis of the Great and Small guilds, as well as reducing the role of burgrave had been drowned in the blood of the main actors of the uprising. With the arrival of commissioners – Leo Sapieha and Severin Bonar, who had been authorised by the Sejm to bring order in the matters of Riga, peace prevailed in Riga.³²³

The earliest coinage of Riga under Sigismund III Vasa predated the confirmation of the Riga City privileges. This hints at the probability that a separate mandate was handed out to settle the issue. Plausible evidence of it is provided by Otto Schenking³²⁴, Bishop of Cēsis (1590–1625).³²⁵ According to Schenking's letter dated 16 March 1592, Sigismund III ordered the Riga City Council to publish a new mint mandate. This had to be carried out during the next Livonian diet in Cēsis, that is, in 1588.³²⁶ The mandate has not been traced, but in the words of Schenking, it stated that:

³²¹ The location of the mint master's mark was not constant.

³²² Dogiel, *Codex Diplomaticus*, 5:329–30. (nr. 198). Neighbouring Dorpat was granted its privileges on 1 July and 28 December, 1588, however, without receiving minting right. Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 91; Leimus, *Das Münzwesen Livlands*, 62.

³²³ Straubergs, *Rīgas vēsture*, 340.

³²⁴ Otto Schenking (1547–1637) was a descendant of noble family from Courland, converted to Catholic faith in 1580, studied at the universities of Königsberg, Jena, Cracow and Vilnius. He is regarded as one of the central actors in the re-catholicisation of Polish Livonia. O. Schenking's upbringing and authority obviously permitted him to act as mediator in other fields as well. Schenking's output in the monetary issues is limited to three letters dating from 1592: O. Schenking's letter, 16.03.1592: LVVA 673-1-1283, fol. 12r-v; O. Schenking's letter, 27.09.1592: LVVA 673-1-1283, fol. 14r; O. Schenking's letter, 17.10.1592: LVVA 673-1-1283, fol. 15r.

³²⁵ Roman Catholic Diocese of Cēsis was established in 1582.

³²⁶ Hagemester writes that Livonian diet of 1588 was summoned in Riga; In Cēsis diets convend starting from 1596. In 1598 Sejm made a decision to summon diet sessions in Cēsis henceforth. Heinrich von Hagemester, "Auszüge ais Livländischen Landtags-Verhand-

“Each gold, silver and *paiement* coin (at the pain of losing all money that is to be received or exchanged) should be circulating in the country exactly like in the Crown Poland and the Grand Duchy of Lithuania”³²⁷

The document merely required observing unitary exchange principles to those of the Polish Kingdom and GDL. The only new detail was a warning against the mistreatment of the mandate at the pain of loss of all exchanged amounts of money. The source, however, does not openly state the handing over of the minting right. Whether the mandate assigned coinage right or not, it was certainly granted separately from the general confirmation of town rights and privileges.

Based on the primary judicial accounts and hoarding data one can conclude that the arrival of Polish rule extended Riga’s central role in monetary politics over much of the former territories of Livonia or the Duchy of Livonia. It was, however, a trade-off between Riga and the Commonwealth interests, since Riga retained largely executive rights in monetary matters with the income from coinage. Furthermore, Riga coinage would come under scrutiny. Various written accounts, with the earliest records dating from 1588, bear evidence of possible Riga mistreatment of the privileged monetary status both within the Duchy and towards its neighbours (see 3.1). The transition from the Livonian monetary system to the Polish monetary system went hand in hand with the royal interests in taxation from portorium, and most likely was extended to other spheres of economic life. Both Livonian and Polish schillings were compatible in the new monetary system, whereas old, Livonian schillings, in particular, the Free City of Riga schillings occupied a noticeable share in everyday transactions throughout the Polish rule. The new exchange rates as well as the accountancy regime suggest a rather flexible coexistence of the Livonian and Polish currency in Riga and the Duchy of Livonia in the early years.

lungen, Convents-Recessen und andern Actenstücken, für die Zeitraum v. 1562–1710.,” *Mittheilungen aus dem Gebiete der Geschichte Liv-, Ehst-, und Kurlands* 2 (1842): 11.

³²⁷ “Daß alle Muntz ahn Golt, Silber, vnnd ander Pagymendt (bey vorlust aller Summen so etwan anderß mochten entffangen oder außgeben werden) Nicht anderß alhir Im Lande solten gebe vnnd genge sein als In der Kron Polen vnnd Großfürstenthumb Littawen.” O. Schenking’s letter, 16.03.1592: LVVA 673-1-1283, fol. 12r.

Chapter 3. THE AGE OF CONTROVERSIES

In this chapter, the legal and monetary conditions in Riga during the reign of Polish king Sigismund III are addressed. In historiography, opinions about the monetary history under the rule of Sigismund III have been widely divided, although most would agree with Szwagrzyk's statement that it was a very dynamic and complex period.³²⁸ The authors also have not reached a consensus on the outset of the monetary crisis.³²⁹ The studies of the Riga mint material unfold a stream of shortages in monetary management and policy, which undermined the stability of the monetary system in the later half of the 1590s. Aside from this debate, a significant amount of written evidence from the LVVA depository allows a detailed examination of Riga's role in the regional context and towards the coinages of the Commonwealth, and their closest neighbours. Moreover, they emphasise problematic issues concerning other mints. The major undertone of these relations is that of regularly clashing interests, in which the cooperative perspective in the agency of Riga mint has been paid little regard.

3.1 The intrusion of 'Lithuanian groschen' in the Duchy of Livonia

The capitulation of Riga in 1581 marked permanent changes in the local monetary market. Being the administrative and economic centre of the Duchy of Livonia, Riga was perfectly suitable for taking up the coinage tasks as well as implementing monetary regulations in the Duchy. Riga became the focal point of the monetary policy, where the first regulations were proclaimed and issued in the name of the king, and where the monetary problems were usually settled. Monetary issues were discussed also at the Livonian diets (ger. *Landtag*, pol. *Sejmik*), which were summoned every second year in Cēsis.³³⁰

³²⁸ Szwagrzyk, *Pieniądz*, 122.

³²⁹ Belarusian, Lithuanian and Polish numismatists hold the opinion that the period under Sigismund III was a crisis period for the monetary system. Riabtsevich, *Numizmatika Belarusi*, 182.; Grimalauskaitė and Remecas, *Money in Lithuania*, 198. Szwagrzyk advances a theory of monetary chaos in the Commonwealth, which was a result of the influx of low-quality neighbouring country issues, economic downturn and monetary particularism of the Commonwealth market, i.e. the extensive number of active mints and diversity of production, moreover, various group activities in speculations with coin quality went beyond the authorities' control. Szwagrzyk, *Pieniądz*, 122–24.; Similar views on the declining coinage quality owing to monetary particularism and "internal weakening of the Kingdom's financial control" is expressed by Reyman: Reyman, *Mennica Olkuska*, 358.; Żabiński is the critical source to understanding the unfolding of crisis: Żabiński, "Kryzys monetarny."

³³⁰ According to the *Constitutiones Livoniae* (1582), the king had to summon biannual *Gerichtslantag* (the highest court). David Kirby, *Northern Europe in the Early Modern Period: The Baltic World 1492–1772* (New York, London: Routledge, 2014), 155.

The new system permitted free circulation of currency within the Commonwealth territories, which posed a challenge to the Riga mint and local monetary market. Some of the earliest written records of the research period allude to the exact issue: the consequences of opening of monetary borders in Polish Livonia and the measures taken to confine the dispersal of problematic issues. In the early years of Sigismund III grievances reached the royal court on the various misconducts of Riga. In the autumn of 1588 representatives of the Livonian nobility arrived at the court of the newly elected monarch complaining about the improper use of the Riga City Council's authority. The City Council, to the detriment of all other provincial inhabitants, was allegedly setting exchange rates and weights of currency in Rigan interests. In his answer, Sigismund III maintained that the Riga City Council had no such authority and ordered the setting of coin value as his governance saw fit in future. Hence, the Riga City Council had to permit monetary exchanges at previous rates in Riga and elsewhere in the Duchy of Livonia.³³¹ On January 1/2, 1589, the king issued his repeated order likewise demanding to set exchange rates of Hungarian gulden and silver thaler coins to 56 Polish groschen (*Polonicos*) and 35 Polish groschen, respectively.³³²

In 1592, the subject was once more placed on the agenda. A detailed insight in the complexities of the problem had been put forward in the ensuing correspondence between Otto Schenking, president (later voivode and bishop) of Cēsis,³³³ Riga City Council and Jürgen von Farensbach (1551–1602).³³⁴ According to Schenking's letter (16 March 1592), the source of the monarchical discontent was disapproval of Lithuanian groschens in Riga. The incorrectly recalculated or otherwise introduced taxation of Lithuanian groschen was a cause of mounting concern in the land.³³⁵ Schenking continues that Riga had turned down all published complaints with fierce words. However, repeated violations of mint ordinance had consequences. Almost no representative (*Legation*) from the Duchy of Livonia had been invited to the Sejm. Schenking

³³¹ Sigismund III to the Riga City Council, 29.08.1588: LVVA 673-1-1-1283, fol. 4r. See Appendix 6.

³³² Published in: Dogiel, *Codex Diplomaticus*, 5:328–29.; Two copies of the same edict have been preserved in handwritings – LVVA 673-1-1-1283, fol. 5r-v and LVVA 673-1-1-1283, fol. 6r.

³³³ In the Commonwealth, voivode (lat. *Palatinus*) was the principal commander and civic administrator of a province (voivodeship). J. von Farensbach was the first to hold the office of voivode of Cēsis Voivodeship (1598–1621).

³³⁴ Detailed biography of J. von Farensbach (1551/52–1602) is written by Estonian amateur historian Andres Parve, "Jürgen Farensbach (1551/52–1602). Ühe Eestimaa päritolu väepealiku sõjateest.," *Kaitseväe Ühendatud Õppeasutused toimetised* 8 (2007): 27–165. https://www.ksk.edu.ee/wp-content/uploads/2011/03/KVUOA_Toimetised_8-Parve.pdf Accessed: April 8, 2022.

³³⁵ "Wir haben auß E. Gunsten Schreiben vernommen, waß massen sie Endtlichen entschlossen, abzuschaffen den grossen landbeschwer, welcher sich erreiget auß vbersetzer oder sonsten eingefurter Werdirung der Littawschen Groschen"; O. Schenking's letter, 16.03.1592: LVVA 673-1-1-1283, fol. 12r.

therefore advised the City Council to collect thalers and Hungarian guildens from private persons no differently than the official exchange rate in the rest of the Commonwealth. Additionally, he urged Rigans to be aware of the renewed coinage of Hungarian guildens in the Dutch Republics, formerly unknown coins to the local market, and advised to keep the exchange rate of incoming *rosenobles*³³⁶ low enough to have them reminted into Hungarian guildens equal to those accepted in Poland.³³⁷

Jürgen von Farensbach, a much experienced and decorated general from Livonia, who climbed to the rank of Commander-in-Chief of Livonian forces later in his career, took a keen interest in the development of the problem. He believed that due to the relevance for the whole province, the subject had to be discussed with his majesty. After approaching Sigismund III, Farensbach received an order to summon the court at the following Livonian diet, for which his majesty would dispatch delegates.³³⁸ Until then, he ordered the City Council and burgrave to carry out an inquiry on the “burghers and others rejecting their obedience by such misconduct and usury, lest they keep indulging in such perilous occupation.”³³⁹

In the Livonian diet of Cēsis in 1592 the City Council emissaries were asked to testify in the case. According to the *Instrvctio* of emissaries dated 15 July 1592 Lithuanian groschen had been brought to Livonian province in large sums at the exchange rate above their real value in GDL and Poland. Their entering in Livonia could not be allowed without causing serious losses. More so, the intrusion of Lithuanian coins was threatening to destabilise the 1580 mint ordinance to the detriment of the whole society and increase thaler price above 6 marks.³⁴⁰ Moreover, the delegates ought to mention that “the rural population has to be supplied with enough of the available small change for the upcoming winter.”³⁴¹

The above-mentioned sources trace the main problem concerning the intrusion of the Lithuanian groschen, which had been overvalued or exchanged above the intrinsic value. Now, let me try to examine the problem of Lithuanian

³³⁶ Rosenoble (also *noble*, *rose noble* or *angel*) was a highly successful English gold coin first introduced in circulation in 1344.

³³⁷ “Hier wer Vnser meinung, daß weil dieselbigen / Vber Meer zu Riga fur lieser Landt Wahren eingefuret werden, daß man nicht sollte sie hoher annemen, als man sie an Vngerische gulden zu Riga widerumb konte umbmuntzen, damit Ihn der Kron Polen angenehme Muntz bey vnß, ohn vnßern schaden bekant vnnd gange sein Moge. Wor Ihnne wir der Stedt Im Nederland Vorsorge, auß Ihren Newlich gefertigen Vngerischen gulden erspuren können Da doch vormahls solche species monetæ nicht seinn Inns Landt gekommen.” Ibidem, fol. 12r-12v.

³³⁸ J. von Farensbach to the Riga City Council, 8.03.1592: LVVA 673-1-1283, fol. 10r-v.

³³⁹ “[...] damit derselben Burgern vnnd andern so Ihrer Bottmessigkeit vnterworffen durch solche vngebuer vnnd wucherei keinn gefehrlicher schade beiegnenn moege.” Ibidem, fol. 10v.

³⁴⁰ Instrvctio darnach die auf dem vorstehenden Wendischen Landtagk sich fürnemblich zurichten, 1592: LVVA 673-1-132, fol. 25–27.

³⁴¹ Ibidem, fol. 26r.

groschen first from the perspective of written sources and then proceed with the archaeological data survey. According to the ordinance of the Warsaw Sejm (1580), groschen had to be minted from 5 $\frac{3}{4}$ lot silver alloy with 106 pieces in Cracow weight mark. 1 groschen was exchanged for 3 'new' or 6 'old' schillings.³⁴² In Vilnius, the groschen had been minted only for two years, in 1580 and 1581.³⁴³ In other words, their issue had been negligible. There is a noticeable absence of these coin issues in Latvian coin hoards.³⁴⁴ In fact, the issue rates of Riga groschen could be even greater, since they had been minted for 4 consecutive years, from 1581 to 1584. Therefore, it is highly unlikely that the term 'groschen' was used in its narrow sense, denoting a single denomination. Rather, the sources were revealing various groschen denominations, in particular, half-groschen and 3-groschen.

As testified by the hoards from the Polish period (1581–1621), there had been a massive inflow of Lithuanian 3-groschen and half-groschen into Polish Livonia. Of 38 Latvian hoards of the period, 23 contain 3-groschen and $\frac{1}{2}$ groschen at varying degrees.³⁴⁵ Lithuanian coinage is represented with issues from different periods: coins minted before the creation of the Lublin Union (1569) – during the reign of Alexander Jagiellon (1492–1506 of Poland from 1501), Sigismund I the Old (1506–1548) and Sigismund II August (1548–1572), and the coinage of the kings of the Commonwealth Stephen Báthory and Sigismund III. Some of these coins may have entered Livonia during the early Livonian war years (1559–1560) with the arrival of Lithuanian mercenaries. The massive intrusion of Lithuanian groschen is indicated by Latvian hoards dating to the mid-1560s.³⁴⁶ The second wave of groschen inflow, including the most recent issues, gained momentum in the 1580s.

An even more imposing distribution rate of Lithuanian groschen has been pictured in the analysis of Estonian hoards of the period (*tpq* end of 16th century – 1629). Lithuanian $\frac{1}{2}$ groschen (1501–1566) are found in almost all 61 finds of the earliest hoarding period (1600–1611), while their proportion in hoards fluctuates between 21.4 – 94.6%. Generally, the same periodisation of groschen arrival can be suggested,³⁴⁷ although the intensity of more recent issues inflow was lower here than on the Latvian side, as they have been unearthed at a comparably much smaller number.³⁴⁸

In Lithuania, hoards have already been interpreted and put in a wider perspective by numismatist Eduardas Remecas.³⁴⁹ When analysing the monetary

³⁴² See Leimus, *Das Münzwesen Livlands*, 54.

³⁴³ Grimalauskaitė and Remecas, *Money in Lithuania*, 192.

³⁴⁴ Only one 1581 groschen has been found in Latvian Polish period hoards. Ducmane and Ozoliņa, *Monētu depozīti*, 132., no 151.

³⁴⁵ Ducmane and Ozoliņa, 28, 129–44.

³⁴⁶ Ducmane and Ozoliņa, 115., nr. 120.

³⁴⁷ Kiudsoo, "Eesti mündiaarded 17. sajandist.," 13–14.

³⁴⁸ See 4.6.

³⁴⁹ Eduardas Remecas, "Lietuvos Didžiosios Kunigaikštystės ir Livonijos piniginiai ryšiai XVI a. (iki 1581 m.)," *Gimtasai kraštas* 18, no. 1 (2020): 5–9. This article slightly modifies

relations between GDL and Livonia, Remecas pays attention to the insignificant monetary exchange between both territories, which was mainly attributed to the differences in monetary systems. This however changed in the latter half of the 16th century. Remecas distinguishes two active exchange phases. The first one was associated with the intrusion of the Commonwealth mercenaries in Livonia during the Livonian War.³⁵⁰ The second was the result of monetary reforms and political changes – carrying out the monetary reform in 1580 and implementing new terms in Polish Riga.³⁵¹ In the last decades of the 16th century, Lithuanian coins would spread throughout modern-day Latvia and Estonia en masse, and being well in use during the first decades of the 17th century.³⁵² The political and monetary integrity contributed to the establishing of ever-closer economic relations between Riga and its economic hinterland in northern Lithuania.³⁵³ This had clear monetary implications. On the broader scale, GDL economy was becoming more integrated in the major economic social developments in Europe “determined by the increased role of the Baltic Sea as the most important trade intermediary for European countries.”³⁵⁴

Despite the suspension of their coinage, Lithuanian ½ groschen were not demonetised (withdrawn from circulation as legal means of payment).³⁵⁵ Based on the Lithuanian calculations, half-groschen issue rates had been comparably high, averaging 2 million coins a year (table 3.1.1). Obviously, there were huge reserves of these coins by then and the opening of the Livonian market gave them a ‘second opportunity’.

The following table 3.1.1 draws a constant image of ½ -groschen quality, although, there are indications that starting from 1558 ½-groschen had been produced with decreased fineness, 5.5 lot.³⁵⁶ 1564 ½-groschen, which were minted in the second Lithuanian mint in Tykocin, according to Lithuanian numismatists had been minted of lower fineness than Vilnius ½-groschen.³⁵⁷ Because the problem of Lithuanian groschen evaluation could be related to their

some of the ideas previously stated in the unpublished article: Eduardas Remecas, “Denezhno-kreditnie otnoshenija mezhdou Velikim knjazhestvom Litovskim i Livonijej v 16 veke (do 1581 g.)” (2019).

³⁵⁰ Remecas, “Livonijos piniginiai ryšiai,” 7.; Remecas refers to: Leimus, *Das Münzwesen Livlands*, 54.

³⁵¹ Remecas, “Denezhno-kreditnie otnoshenija,” 4.

³⁵² Remecas, 6.

³⁵³ Darius Žiemelis, “The Structure and Scope of the Foreign Trade of the Polish–Lithuanian Commonwealth in the 16th to 18th Centuries: The Case of the Grand Duchy of Lithuania,” *Lithuanian Historical Studies* 17 (2012): 99, 101–2.

³⁵⁴ Žiemelis, 100. In the same time period of commercialization of agriculture Loewe traces major shifts in Lithuanian politically-economic structure, which brought the “decline of a major power in the eastern Europe and its emergence as the granary of western Europe.” Karl von Loewe, “Commerce and Agriculture in Lithuania, 1400–1600,” *The Economic History Review* 26, no. 1 (1973): 23.

³⁵⁵ Remecas, “Denezhno-kreditnie otnoshenija,” 4.

³⁵⁶ Grimalauskaitė and Remecas, *Money in Lithuania*, 173.

³⁵⁷ Grimalauskaitė and Remecas, 180.

unequal quality, one might need to consider a well-documented problem of the debased Silesian ½-groschen from Świdnica (1517–1526), which had been issued in massive amounts. As many as 9.5 million of these coins had been circulating in GDL,³⁵⁸ and even despite the taken measures, opening of 15 purchasing centres in GDL alone, they occupied a substantial share of the monetary base until the early 17th century.³⁵⁹

Table 3.1.1 Lithuanian ½-groschen coinage (1495–1565)³⁶⁰

Ruler	Minting years	Issue rates	Fineness, gross weight
Alexander (1492–1506)	1495–1506	15–20 million	6 lot, ~ 1.25 g
Sigismund I (1506–1548)	1508–1529	25–30 million	6 lot, ~ 1.25 g
Sigismund II August (1544–1572)	1545–1565	48–61 million	6 lot, ~ 1.25 g

The dissemination of a limited number of Lithuanian issues shows that only those issues had been accepted which were more similar to the current units in Livonian monetary market. Remecas claims that both ½-groschen and 3-groschen were similar in size and weight to Livonian schillings and ferdings, respectively.³⁶¹ The reciprocal relations between Livonian schillings and Lithuanian ½-groschen have been suggested with the Lithuanian coins finds from Northern Lithuania, which felt some entry of Livonian schillings in the local economy during the 1530s–1540s. Lithuanian colleagues explain this in the context of a break of half-groschen coinage in Vilnius from 1529–1545. Demand for Livonian issues disappeared as soon as the Vilnius mint commenced coinage of ½-groschen.³⁶²

Although the latter explanation might be partially true, the former claim of similarities between Livonian and Lithuanian issues should be rejected completely. Estonian numismatists suggest that ½-groschen more likely could be exchanged against 2-schilling of Riga, produced in 1563 and 1564. Their weight was slightly above (1.3–1.4 g) half-groschen (1.25 g), which possibly compensated for the lower fineness (5.5 lot) of 2-schilling.³⁶³

Another possibility is to look for causes of speculations in the light of monetary value relations. As shown by Ivar Leimus, Lithuanian groschen were extremely undervalued in exchange with Livonian schillings: 1 Lithuanian groschen (6 lot) was possibly exchanged for 5 Livonian schillings (1 lot). Being unable to

³⁵⁸ Gumowski, *Mennica Wileńska*, 57.

³⁵⁹ Grimalauskaitė and Remecas, *Money in Lithuania*, 170, 184–85.

³⁶⁰ Source: Grimalauskaitė and Remecas, 162–63, 165–67, 181.; Gumowski estimates of the latest, 1558–66 ½-groschen quality are slightly lower, i.e. 5 ½ lot silver. Gumowski, *Mennica Wileńska*, 90.

³⁶¹ Remecas, “Livonijos piniginiai ryšiai,” 7.

³⁶² Grimalauskaitė and Remecas, *Money in Lithuania*, 170.

³⁶³ Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 96.

control the quality of Livonian issues GDL initiated discussions with the Master of the Livonian branch and Archbishop of Riga of introducing unitary monetary standards in Livonia based on Lithuanian equivalents.³⁶⁴ This plan was never realised. Under Polish rule, Livonians rather seem to have benefitted from the comparably low Lithuanian groschen value. Amidst the inflation of silver – the 1580 Ordinance initiated a silver price increase from 30 to 35 groschen per thaler, – good coins were withdrawn from the Livonian market, Lithuanian issues filled the gap in the valuable middle-size coin market.

It is possible to conclude that the fierce disputes over Lithuanian groschen in Livonia and at the royal court were not genuinely new. The problem could have been boiling since the early Livonian war years. The 1580 Ordinance tried to integrate Lithuanian groschen in the reformed monetary system by setting the exchange rates with Polish groschen, however, that did not seem to exhaust speculative risks in monetary markets, due to differences in quality standards and values as well as monetary diversity of the Duchy of Livonia. The whole problem, however, proves to be more complex than the actual coverage in the records.

3.2 Case study No 1: Charges against the Riga City Council (1597)

The opening of the Livonian monetary border with the Commonwealth, as well as adjusting the local account system to the new values of coins took a while and at times was problematic. The transition period from one accounting system to another was not set. Furthermore, the scarcity of information on the values among the populace could probably add to the confusion and raise the risks of speculations. The Riga City Council could be exercising its uncontested position in Livonian monetary matters by implementing values otherwise unapproved by royal decrees. In the light of formerly expressed complaints against Riga and merchants, one can look at the trial of 1597. Riga was prosecuted for not observing the state orders and minting right, charges which had been circulating at least from the late 1580s.

On 8 June 1597 Zacharias Boll (~1597–1609),³⁶⁵ a mint master from neighbouring Vilnius wrote a letter to his colleague and friend in Riga, Henrich Wulff I. Boll was informing Wulff about the bad news he had received from a good friend, that a citation (invitation to the court) was being sent to Riga regarding the quality of new Riga coinage. In addition, Boll wrote about the

³⁶⁴ In the instalment letter of mint master Christoph Ramm, Wilhelm of Brandenburg, Bishop of Riga stipulated coinage of ½-groschen from 5 ½ lot silver alloy and 168 pieces in weight mark. Leimus, *Das Münzwesen Livlands*, 54.

³⁶⁵ There are four Zacharias Boll letters addressed to H. Wulff I, which are kept at the LVVA. Boll signed his letters as the mint master of Vilnius. However, the issue dates of these letters contradict the accepted periodisation of his office in Lithuanian numismatics: 1599–1604. Based on the dating of these letters, I propose to extend his term of office from 1597 until 1609.

recent discussions in the Warsaw Sejm over the low quality of Jelgava coinage.³⁶⁶ At the end of the letter, Boll assured to spare no efforts to track down the author of the unfounded accusations.³⁶⁷

Similar issues were covered in the 11 and 12 June letters written by Vilnius mint warden, Christoff von Tharnaw.³⁶⁸ Tharnaw repeated warnings about the incoming citation, which had been revealed to Z. Boll a few weeks earlier by Reinhold Brakell³⁶⁹ during his stopover in Vilnius from his recent visit to the Warsaw Sejm (see 1.1). Because of the problems of the mint, Riga's delegates had not been received well by his majesty. Both mint master and Tharnaw were unable to find a reason for this call to the court. They expressed full support for the Riga mint master and distrust concerning such charges.³⁷⁰ In regards to coinage quality, the main proof was the loan from Riga mint to the value of 20 000 zloty (17 142 thalers) extended to a young Hlebowitz (Jungenn hern Hlobowitz)³⁷¹ against collateral. The lent coins had been tested and found to be good.³⁷²

The citation was produced on the third day before the celebration of St. Adalbert's day (20 April) and signed by the king's secretary Mattias Moira.³⁷³ The tone of the letter is very formal and gets straight to the point. Members of the Riga City Council, burgomaster, and burgrave were summoned to appear at the Sejm of Warsaw or the royal court within 6 weeks at the pain of losing all of their positions as well as movable properties and real estate. The citation had been issued at the request of the treasurer of Lithuania.³⁷⁴ The three principal accusation points were: firstly, counterfeiting coins – coins were not minted according to the mint ordinance and *Constitutio* of the Commonwealth (an act of Sejm) and were different in weight and quality; secondly, Riga was reportedly denying the outflow of thalers and third, Lithuanian coins were not exchanged at the established exchange rates. In addition, Riga was accused of

³⁶⁶ Z. Boll to H. Wulff, 8.06.1597: LVVA 673-1-1369, fol 32r.

³⁶⁷ Ibidem, fol. 32v.

³⁶⁸ C. von Tharnaw to H. Wulff, 11.06.1597: LVVA 673-1369, fol. 2r-3v; C. von Tharnaw to H. Wulff, 12.06.1597: Ibidem, 28r–29v.

³⁶⁹ Ibidem, fol. 28r; Reinhold Brakell was a member of the Livonian delegation to Warsaw (1597), which consisted also of Otto Dönhof and David Hilchen. Johann Friedrich von Recke and Karl Eduard Napiersky, eds., *Allgemeines Schriftsteller- und Gelehrten-Lexikon der Provinzen Livland, Ehstland und Kurland*, vol. 2 (Mitau: J. F. Steffenhagen und sohn., 1829), 297.; The official delegation was accompanied by Hans Friederich, H. Wulff's son-in-law.

³⁷⁰ Tharnaw to Wulff, LVVA 673-1-1369, fol. 2r-3v.

³⁷¹ 'Hlebowitz' name does not appear in other monetary records. He could be identified with Mikołaj Hlebowicz (1632†). Mikołaj fought in the battles of Riga and Kirchholm (1605), later in 1620–32 castellan of Vilnius. His father, Jan Janowicz Hlebowicz, in 1580–1586 was the great treasurer of Lithuania.

³⁷² Ibidem, fol. 2v.

³⁷³ *Citatio wegen der Muntze*, LVVA 673-1-1369, fol. 15r-v.

³⁷⁴ It was brought to Riga by the servant of Treasurer of Lithuania, Stenzlaus Maßloffsky. Tharnaw to Wulff, LVVA 673-1-1369, fol. 2v.

preferring to exchange thalers with Muscovy and lands outside the Commonwealth, rather than the Lithuanian treasury, causing great misfortune and derogation of the Commonwealth economy and Vilnius mint. The damage costs were estimated at 8000 Hungarian guildens. The objective of the citation was to claim compensation for the losses.³⁷⁵

Before the court proceedings, the Riga City Council sent secretary Basilius Grandaw on a diplomatic mission to Vilnius.³⁷⁶ Grandaw was instructed to discuss the matter with various court members. First, to compare the testimonies with mint master Boll, who was selected as *pro delatore senatus*³⁷⁷ in this case. The instruction expressed unshaken trust in the Vilnius mint master, who would testify against the insinuations in front of the Warsaw court. Second, the Vilnius mint master should testify against the false Jelgava coins, as he did in the previous conversation with the Grand Treasurer of GDL at the Warsaw Sejm.³⁷⁸

Afterwards Grandaw was to request an audience with the Lithuanian treasurer. During the discussions of the principal points of citation, Grandaw was to follow these instructions: regarding the minting privilege (*ius cudendi*), the secretary should confirm that Riga enjoyed privilege since long past and they had been granted with the king's confirmation; to prove that, Grandaw should bestow the treasurer with a portugal of the Master of the Livonian branch, Wolter von Plettenberg (1494–1535).³⁷⁹ Regarding the quality of the Riga coinage which had to be equal to Lithuanian issues, the secretary should refer to the test results: the Riga coinage considerably exceeds not only the quality of the Jelgava (Courlandic) coins but also Lithuanian coins to some degree (*die Wildische etzlicher massen bonitate sua intrinsica vbertrifft*).³⁸⁰ Regarding the allegations of obstructing the outflow of reals to Lithuania as freely as to Moscow, Grandaw should blame private profiteering with reals. Despite being set at 28 groschen in Vilnius, private individuals had been exchanging reals for 27 groschen. Otherwise, the City Council assured that in Riga reals were exchanged similarly as in Vilnius, for no more or less than 28 groschen.³⁸¹ Besides, from Riga reals were transported not only to Moscow but everywhere

³⁷⁵ *Citatio* wegen der Muntze, LVVA 673-1-1369, fol. 15v.

³⁷⁶ *Instructio* to B. Grandaw, 20.06.1597: LVVA 673-1-1369, fol. 58r-61; A draft of the *Instructio*, n.d: LVVA 673-1-1369, fol. 6r-12r.

³⁷⁷ The used terminology here is uncertain.

³⁷⁸ Unrelated: in early 1591, a case was opened against a peasant Otto Teuffels from Jelgava in the Duchy of Courland (60 km south of Riga). The peasant was caught paying for goods with some counterfeits. During the interrogation Teuffels responded that he had sold some oats in a Lithuanian market for which he was paid with these coins. This is just a separate case, and it does not allow to establish the scale of such cross-border connections between peasants or peddlers. This sort of exchange could account only for limited amounts of the circulating money. Marshall of Jelgava Christoffer Bistramb to the Riga City Council, 5.01.1591: LVVA 673-1-1283, fol. 8r-v.

³⁷⁹ “[...] mit einem alten Plettenbergischen Portugallößer der Ihrer Gnadh. verehret sein soll.” LVVA 673-1-1369, fol. 59r.

³⁸⁰ LVVA 673-1-1369, fol. 59r.

³⁸¹ *Instructio* to B. Grandaw, 20.06.1597: LVVA 673-1-1369, fol. 59v.

else. Regarding the third accusation point, Grandaw should reassure the treasurer that Lithuanian coins were exchanged at their exact value or 28 groschen for one real.

The third eminence on the Grandaw's visiting list was the Lithuanian chancellor. After a proper greeting, the secretary had to hand in a piece of the Riga City Council's writing with a bottle of wine and ask for help to preserve the given rights by his majesty, that refined scheme (*Bubenstück*), as the Riga City Council called it, did not prevail.³⁸²

At the end of his mission, Grandaw was to deliver a detailed report on his mission as well as a special report for the mint lords and Riga mint master. Both documents might be lost forever. They were not listed in the Riga mint file registry, which was compiled in the 17th century.³⁸³

Although the Riga City Council expressed complete mistrust in the case, the preparation to defend was the top priority. The Riga City Council invested a lot of resources to familiarise the most eminent court members with their opinion and possibly change their mood before the trial began. Grandaw's mission was not limited to paving the road for defence, but also to prepare an offence. The envoy was to find the identity of the denouncer (*delatore*) and to receive cancellation receipt (*Quittung*); the city on its part was seeking compensation by demanding reimbursement of all costs from the denouncer or his successors, as well as making sure he apologised to his majesty.³⁸⁴

The meeting of the court was set for 9 July in Vilnius. According to the treasurer's *Quittung*,³⁸⁵ members of the court commission were: the royal interrogator (*Instigatoris*), secretaries of Lithuanian treasury and Riga Basilius Grandaw, Grand Treasurer of GDL Demetry Chalecki (1590–1598),³⁸⁶ and Vilnius mint master Zacharias Boll.³⁸⁷ The court proceedings have not been preserved in much detail apart from the *Quittung* of Demetry Chalecki. Chalecki interrogated the mint master of Vilnius about whether he was the denouncer and if he had observed any differences in the quality of Riga coins and 3-groschen. The Vilnius mint master did not approve of any allegations. Moreover, he renounced testifying against the quality of Riga coinage at any time, unlike Polish and Courlandic issues of which he had testified in the Sejm (earlier the same year). The coinage of Riga was equal to the established rates by the Sejm ordinance and that of Vilnius both in fineness and weight.³⁸⁸

³⁸² Ibidem, fol. 60v.

³⁸³ Registratur in Müntz Sachen, n.d.: LVVA 673-1-1294.

³⁸⁴ LVVA 673-1-1369, fol. 60r.

³⁸⁵ Littauische Schatzmeisters *Quittung*, 9.07.1597: LVVA 673-1-1369, fol. 17r-18v.

³⁸⁶ Grimalauskaitė and Remecas, *Money in Lithuania*, 199.

³⁸⁷ LVVA 673-1-1369, fol. 17r.

³⁸⁸ “[...] die Rigische muntze vnnd dreygroschen *de grano et pondere*, nach der *ordination* des Reichstages, vnnd dieser Wildisch muntze gutt vnnd gerecht wehren, vnnd darzu sich nicht bekandt, das ehr inkein mahl vff dem Reichstage von derselben Rigische Müntze was wiederwertiges solte geredet haben, ohne der Polnisch vnnd Curlendisch muntze in welcher ein *defect* zu sein ehr worgegeben.” LVVA 673-1-1369, fol. 17v.

Afterwards Demetry Chalecki would interrogate Riga's secretary on the ban of thaler export and the devaluation of Lithuanian coinage. He responded by saying that Lithuanian coinage was exchanged at the same rate in Riga as in Lithuania, i.e. thalers were exchanged for 28 Lithuanian groschen or 35 Polish groschen to any foreign country. After hearing from the Vilnius mint master and the secretary of Riga, the *Instigator* would state that he did not know the reasons for the citation whatsoever. Therefore, having found no disagreeable evidence against Riga, Chalecki decided to drop charges against Riga city and its mint master. Thus, with the power entrusted to him, the aforementioned citation was declared void.³⁸⁹ In case of future charges of the ban on thaler and real export, Chalecki ordered the interrogator to be discouraged from issuing citation.

To sum up, charges against Riga had been completely unfounded as it had been suspected from the beginning by Vilnius mint master and warden. It seemed to be a vulgar attempt to raise money from the comparably well-to-do enterprise for the benefit of an unnamed beneficiary. Only a small group of persons tied to the mint (mint overlords together with the mint master, warden, and state officials) could have access to such information and possibly capitalise from it (by distorting the facts) be it for private or the mint's interests. In either case, the 1597 charges against Riga highlighted the tensions within the monetary circles of the Commonwealth, which would be on the rise due to the difficulties in the silver supplies and inflation.

3.3 The fate of the late 16th century Riga, Vilnius, and Tallinn mints

In late 1595 “for very serious reasons” mint master H. Wulff I received a loan of 10 000 thalers from the mint lords Caspar zum Berge and Nicolaus Ecke.³⁹⁰ Apparently, the mint master, who was in charge of supplying the mint with necessary materials and precious metals, could not purchase silver at an acceptable price. The offered loan consisting of the silver price plus the yearly interest rate of 5%, was obviously below the market price of silver. Before that, the mint master acquired two smaller loans from private persons at the total sum of 5000 thalers. The largest amount of 6000 marks (1000 thalers), was indebted

³⁸⁹ LVVA 673-1-1369, fol. 18r.

³⁹⁰ Nicolaus Ecke to the Riga City Council, 26.11.1595: LVVA 673-1-1461, fol. 3; For example, in 1594 typographer Nicolaus Mollinus received a municipal loan in amount of 400 thalers at the yearly interest rate of 6 percent. Ojārs Zanders, *Tipogrāfs Mollīns un viņa laiks: pirmās Rīgā iespiestās grāmatas, 1588–1625* (Riga: Zinātne, 1988), 53.

to the Bishop of Cēsis, O. Schenking.³⁹¹ Both loans were secured with H. Wulff's gold and silver pledged to the city treasury.³⁹²

As can be read in one of the several notes of the pledge, the mint master was able to redeem most and particularly the valuables of the pledge.³⁹³ Still, there were serious concerns as to his repayment of the debt to the mint lord, which measured 4000 thalers. The ensuing conflict with mint lord Caspar zum Berge (d. 1604) cast a dark shadow over the mint master's management skills of finances. Based on his previous year's experience with the mint master, zum Berge was reluctant to take the post for the second term. In his letter of complaint to the Riga City Council (28 November 1599),³⁹⁴ zum Berge accused the mint master of a lack of diligence toward his duties and leading a disorderly lifestyle, which, he suspected, had brought economic hardship to the mint. The mutual disagreements took a rather drastic turn when the mint master decided to deprive zum Berge of his salary (*Accidentien*, ampts gebuer) ½ groschen for each fine mark struck. Caspar zum Berge had serious doubts of Wulff's fitness for the office, making plain and clear to the Riga City Council members that the city could be served much better by a more competent person.³⁹⁵ The Riga City Council promised to make an inquiry concerning the mint master's fitness for the position and satisfy zum Berge's call for a raise in his salary. It was also decided to cut the Schlagschatz rate to 3 groschen for each fine mark minted in order to bring the mint in better shape.³⁹⁶ And last, the Riga City Council opted to satisfy the creditor's interests by auctioning the mint master's property.³⁹⁷ Apparently, the mint master's faults had not been so grave to call for the termination of his contract.³⁹⁸

³⁹¹ H. Wulff's debt and pledge to the Riga City Council, 1595–1604: LVVA 8-4-62, fol. 52–68; Viktors Dāboliņš, “Die Dynastie der Rigaer Münzmeister Wulff (1557–1659),” *For- schungen zur baltischen Geschichte* 13 (2018): 33.

³⁹² The deposit – cutlery and jewellery – was weighed and taxed by mint warden Lambert Goldenstedt. Silver- and gold-plated silverware weighed 80 M 6 lot (16.2 kg) and was estimated at 4 M for each lot. In sum: 5144 M. LVVA 8-4-62, fol. 67.

³⁹³ H. Wulff's debt and pledge to the Riga City Council, 1595–1604: LVVA 8-4-62, fol. 53.

³⁹⁴ Mint lord Caspar zum Berge to the Riga City Council, 28.11.1599: LVVA 673-1-1278, fol. 12r-14r.

³⁹⁵ “[...] daß durch einer andern viel duchtigerenn Persohnenn dieser guetenn Stadt mehr Kondte gedienet sein, vnnd deroselbenn bestes befurdertt werdenn.” LVVA 673-1-1278, fol. 13.

³⁹⁶ Decision of the city council, 26.11.1599: LVVA 673-1-1278, fol. 10v.

³⁹⁷ *Ibidem*, fol. 10v.

³⁹⁸ Perhaps it was more a politically than economically motivated decision. To cite Anna Ziemiańska, “Burgrave was perceived by the citizens as “a king's man”, a threat to the city's autonomy, embodiment of control and pressure.” Ziemiańska, *Ryga*, 81–82. Under the Polish rule the body of mint lords was formed of burgomaster and burgrave. This position secured the Polish king direct knowledge on the finances of the Riga mint. Naturally, under such division of minting control, the City Council could be seeing C. zum Berge with suspicion.

The repayments of the debt to the mint lord zum Berge³⁹⁹ was frozen for the next 8 years. The mint master's debt to private creditors reached almost 6000 marks or 1000 thalers in 1604.⁴⁰⁰ Thus, within 10 years the mint master managed to cut his financial liabilities by almost 10 000 thalers, which despite the setbacks was a clear sign of his solvency. It may be said that it was worthwhile taking the risk, however, without the Riga City Council's backing – decreasing Schlagschatz from the initial 1-year to 9-year period and keeping him in the office – the outcome could have been potentially ruinous for the mint master.

The weight of debt could be manageable, at least to the degree which did not endanger a comfortable burgher's lifestyle. A couple of real estates transactions had been registered in the local rent book during this period.⁴⁰¹ The mint master indulged in merchandise, mostly with the colonial goods. He had a business partnership with his colleagues in the Vilnius mint (see below). These are just a few examples that prove that the disagreement with the burgrave zum Berge was only a temporary setback in H. Wulff's career as a mint master. It is therefore hard to take the words "for very serious reasons" as a sign that the mint had been in trouble due to serious disruptions in the local and foreign monetary markets. The above-mentioned examples point to the notion that his credit liabilities could not be confined to the mint alone, but to his activities as an entrepreneur. The overstretch of financial liabilities, investments, acquisitions, and some miscalculations were more likely to cause him trouble.⁴⁰²

Despite the critics of the mint master's work and methods, no delays can be observed in the output of schillings. From 1588 schillings were issued annually. So did the minting of 3-groschen, which had been minted on an annual basis from 1588 until 1600. Furthermore, in the 1590s the mint was regularly producing ducats.⁴⁰³ The short-term trend in minting activity of 1598–1600, for which there is accountable data, shows a marked increase in the amount of processed silver: from 1.402 tonnes of pure silver in 1598 to 3.159 t in 1599 and 6.371 t in 1600 (Fig. 4.2.1). Given the fact that 1598 only traces coinage from 30 September, theoretically, with such pace, the 1598 issues may well have exceeded the 1600 result. The high time of silver processing may have lasted for longer and perhaps even more impressively. Unfortunately, there is no earlier source than the mint book of 1598–1603 to document this passage in the early decades of the Riga mint. These are rather contrasting figures when compared with the evidence of the closest Baltic region actors in the monetary market, the Vilnius and Tallinn mints.

The primary evidence of the situation in the Lithuanian monetary market are the letters of Vilnius mint master and warden, dispatched mainly prior to the

³⁹⁹ This resulted in the increase of debt to 5600 thalers.

⁴⁰⁰ H. Wulff's debt and pledge to the Riga City Council, 1595–1604: LVVA 8-4-62, fol. 55.

⁴⁰¹ Dāboliņš, "Die Dynastie," 35–36.

⁴⁰² It cannot be excluded that at times H. Wulff confused his own pocket with the public finances deposited at the mint.

⁴⁰³ Haljak, *Livonian Coins XIII–XVIII Century. Part II*, 89.

trial process of 1597.⁴⁰⁴ The correspondence often blended professional work with details of extensive merchandise activities on both sides. On 8 June, Zacharias Boll approached his Rigan colleague to send 100 good bitter oranges and fresh salmon for which he could find good clients.⁴⁰⁵ Naturally, Boll's merchandise interests were fixed on supplying the mint with raw materials. On 15 April, Boll forwarded the request of Hans Dile, his die-cutter to send a couple of hundred melting crucibles of a certain type.⁴⁰⁶ In return, he promised to send one tonne of mead to the Riga mint "as soon as the roads improved".⁴⁰⁷ Two months later Boll regretted to inform that he was unable to do what he promised since there was little on offer for no good price.⁴⁰⁸ In the letter from 12 June Vilnius mint warden Tharnaw informed about the fate of the dispatch: "We have received wine, bitter oranges, Brustkuchen (?), marmalade – everything in a single bag; unfortunately, bitter oranges were kept in the hay, which is why they heated up and many went bad."⁴⁰⁹

The day before the Vilnius mint warden Tharnaw wrote to H. Wulff to inform Jordann Götthe, Wulff's son-in-law, that almonds had not been sold yet, but with mint master Boll he promised to spare no energy to sell them all.⁴¹⁰

It seems that the resale of the colonial goods offered a good opportunity to make additional income, which was greatly needed given the Vilnius mint struggle to make ends meet. The work at the Vilnius mint, in the words of warden Tharnaw, was going "sluggishly", the principal reason for which was the shortage of silver and because the mint tenant had not been installed yet. Mint master Boll's 1597 trip to Warsaw did not meet expectations either, since he was not able to purchase silver due to the high thaler price.⁴¹¹ It was an extremely hard time for Tharnaw and the mint servants, without the work he made no income and was forced to borrow whenever he could. To make things even worse, there was high inflation of daily products in Vilnius mounting every day: "Everything edible was so expensive everywhere [...] and what cost a single penny a year ago now had to be bought for ten pennies, it was the divine will of

⁴⁰⁴ Z. Boll to H. Wulff, 15.04.1597: LVVA 673-1-1369, fol. 30r-31v; Z. Boll to H. Wulff, 8.06.1597: LVVA 673-1-1369, fol. 32r-33v; Z. Boll to H. Wulff, 30.10.1603: LVVA 673-1-1369, fol. 46r-47r; Z. Boll to H. Wulff, 26.01.1609: LVVA 673-1-1283, fol. 83r-84r; Vilnius mint warden Christof von Tharnaw, 11.06.1597: LVVA 673-1-1369, fol. 2r-3v; C. von Tharnaw to H. Wulff, 12.06.1597: LVVA 673-1-1369, fol. 28r-29v.

⁴⁰⁵ Z. Boll to H. Wulff: LVVA 673-1-1369, fol. 32v.

⁴⁰⁶ LVVA 673-1-1369, fol. 30v.

⁴⁰⁷ Ibidem, fol. 30v.

⁴⁰⁸ LVVA 673-1-1369, fol. 32v.

⁴⁰⁹ [...] haben denn Weynn, Pommerantzen, Brustkuchenn, Marmelatt, alles in eyner Pudell entpfang[en], vndt ist Schade das die Pommerantzen in heu gelegen worden. Dann dasselbige hatt sich erhitzt das der Pommerantzen Viell verstorbenn." LVVA 673-1-1369, fol. 28r.

⁴¹⁰ LVVA 673-1-1369, fol. 3r.

⁴¹¹ LVVA 673-1-1369, fol. 30r

the dear Almighty God.”⁴¹² Despite all the hardship, the mint resumed coinage later that year and worked with some success until 1603, when the mint master fled the pest infested city.

The written evidence of Swedish-controlled Estonia bears less illustrative and dramatic episodes to our understanding of the period. The fate of the Riga and Tallinn mints can be explained within the scope of state monetary politics, implemented in Polish Livonia on the one side, and Swedish Estonia, on the other side of the border. In Polish Livonia, the state monetary policy favoured the Riga mint. Tartu, which was eager to defend its minting right, was prohibited in its actions. A decree of 1 January 1589 stipulated that only the Riga coinage could be used as legal means of payment in the Duchy of Livonia.⁴¹³

Tallinn citizens had sworn allegiance to the Swedish king Erik XIV on 6 June, 1561. In the wake of the ratification of capitulation (2 August 1561), both Livonian and Swedish monetary systems were synthesised based on the division of thaler in exact amount of mark units – 4 Tallinn and 4 Swedish mark; 1 Mark was divided into 8 Swedish öre or 4 Tallinn (Livonian) ferdings. As noted by Ivar Leimus, the almost identical weight marks of Stockholm (210 g) and Riga (208.1 g) simplified Tallinn’s integration into the Swedish monetary system.⁴¹⁴ Similar to the minting right of Riga, Tallinn coins had to bear the image of king on the obverse side of coins. The coinage was resumed in 1561 after large financial support was extended to the weakened Tallinn mint from the Swedish mint chamber. However, Tallinn mint was nowhere as successful as Riga mint, because of the constantly rising thaler price in the Swedish mainland and Tallinn, and the import of debased Swedish coinage, which played a more pronounced role in the everyday transactions than the Polish issues in the Duchy of Livonia.⁴¹⁵ After the first active decades, in the 1590s the local coin emission declined. The high silver prices of the mid-1590s discouraged the mint master of Tallinn, Hans Stippelt, from minting coins for two years.⁴¹⁶ In addition, to avoid the artificially low exchange rates in Estonia in the 1590s, the good quality old ferdings and öre coins were being increasingly exported to Riga, where they were highly priced and reminted as 3-groschen. In light of these events, observation of the Swedish monetary order not only hindered the coinage of local currency but also incurred losses to the holders of the coins. The Tallinn Town Council, assisted by other towns, attempted to implement a unitary monetary standard in the rest of the dual monarchy. The proposal of 7 February 1596, drafted by the Tallinn Town Council, approached his majesty Sigismund III asking for permission to mint 3-groschen in accordance with the

⁴¹² “Denn es is alle Essende ware so theur allhier [...] Vnndt was mahn Vor Jharemm Vor eynem Pfennigk geKauft hat, Das muß mahn Itzundt vor Zehenn Pfennige Zahlenn Der liebe allmechtige Gott wölle solches nach seynem gotlich[en] willen werd[en].” LVVA 673-1-1369, fol. 2v.

⁴¹³ Leimus, *Das Münzwesen Livlands*, 62.

⁴¹⁴ Leimus, 45.

⁴¹⁵ Leimus, “Das Münzwesen Revals im 17. Jahrhundert.,” 171.

⁴¹⁶ Leimus, 178.

Polish minting standard.⁴¹⁷ The proposal made sense as in 1594 Sigismund III was crowned the king of Sweden. In reality, though, Sigismund III met with fierce opposition in Sweden, which clashed with the question of handing Estonia to the Polish kingdom.⁴¹⁸ The opposition, led by Duke Charles held that “Estonia has cost many a Swedish life as well as an untold amount of money.”⁴¹⁹ Upon his ascension to the throne, Sigismund III had given general assurance to the Swedish Estates that “nothing should be severed from the Swedish Crown and given to Poland.”⁴²⁰ In the atmosphere of mistrust and the civil war which erupted in Sweden in 1597, any prospects of implementing changes in the minting right of Tallinn must have been postponed. The Estonian province had to keep the former monetary order.⁴²¹ The Tallinn mint was closed in 1597 and did not resume its activity until 1620.⁴²²

From being one of the most important Hanseatic cities, in Swedish times Tallinn turned into a “sleepy provincial centre”.⁴²³ There is a great volume of studies delivered by Estonian and Swedish historians, which explain the change of fortune with the Swedish-Muscovite rivalry over the control of Russian trade.⁴²⁴ After the occupation of Narva in 1558, Muscovy finally acquired direct access to the Baltic Sea. The monopoly of Livonian ports had been lifted, and Russian trade was immediately switched from Tallinn to Narva. Whereas after 1581, when Narva became Swedish, “the trade was channelled along routes which did not pass through Narva”⁴²⁵, including land routes to Riga and even Archangel.⁴²⁶

The comparison of the Riga mint with its closest competitors in the Baltic monetary market shows that by the mid-1590s competitors had not been supplied with precious metals satisfactorily, and suffered the pain of inflation. As to Riga, the written evidence does not allow to establish a meaningful link between the extensive 1595 loan to the Riga mint and monetary market difficulties. There were yet unexhausted municipal reserves and trust in the mint’s solvency, which was the opposite in Vilnius and Tallinn. Moreover, unlike Sweden, the Commonwealth monetary authorities seemed to be more consistently stipulating anti-inflationary principles and strengthening the

⁴¹⁷ Leimus, 179.; Ivar Leimus, “Tallinns 3-groschen 1596 – varför och av vem?,” *Myntstudier*, no. 1 (2009): 21–22.

⁴¹⁸ Attman, *Baltic markets*, 153–55.

⁴¹⁹ Attman, 155.

⁴²⁰ Attman, 156.

⁴²¹ Leimus, “Das Münzwesen Revals im 17. Jahrhundert.,” 178–80.

⁴²² In 1620, the very rare öre coins were minted. See Haljak, *Livonian Coins XIII–XVIII Century. Part II*, 162., nr. 1241

⁴²³ Leimus, “Das Münzwesen Revals im 17. Jahrhundert.,” 171.

⁴²⁴ The principal work on the topic: Attman, *Baltic markets*.

⁴²⁵ Attman, 162.

⁴²⁶ Attman, 162.

issuer's position. One of the major successes of Riga's diplomacy was the declaration of Riga privileges, on 31 May 1593⁴²⁷:

„Und wenn auch schon früher das Recht, Münzen zu schlagen (ohne uns und unserem Schatzkammer irgendein Recht vorzubehalten), mit allen seinen Nutzen von unseren seligen Amtsvorgängern der Stadt Riga zugestanden ist, was auch von uns bestätigt worden ist, dennoch, weil wir mehr auf den Vorteil der Stadt achten wollen, versprechen und geloben wir für uns und unsere Amtfolger, dass wir ein ähnliches Recht, Münzen zu schlagen, keinen anderen Städten oder Personen in Livland zugestehen werden (mit Ausnahme dieser, denen es schon früher von uns und unseren Amtsvorgängern zugestanden worden ist).“⁴²⁸

With this document, the king pledged himself and his successors that no other town or person in the Duchy would enjoy the minting privilege with the exception of those who had been previously granted such rights by Sigismund III or his predecessors. This was reportedly done to increase Rigan advantage. The extension of privilege effectively crowned Riga's efforts to prevent Tartu's competition. Hence, Riga became the undisputed producer of coinage in the Duchy of Livonia.

3.4 Heading toward bullion and monetary crisis

In contrast to the grim situation in the Tallinn and Vilnius mints, the current state of affairs in the Polish-ruled Riga seemed less troubling. In 1598, for the first time in almost 13 years,⁴²⁹ the silver price was raised from 35.5 to 36 groschen per thaler. There were plenty of issues of schillings and 3-groschen. Apart from the participation in the 1597 Warsaw Sejm talks about the debasement of 3-groschen, there is a lack of evidence that Riga actively considered reorganising the monetary system.

Riga did not suffer shortages of bullion until late 1601, which saw a drop to 1.462 tonnes, a nearly four-fold decrease in the amount of processed silver from the previous year (see 3.3). Naturally, it could be related to unfavourable seasonal conditions, such as bad harvest or long winter, which hindered the inflow and outflow of goods in the port of Riga. But that was supposed to have limited effects in time. The impression of a deepening of the crisis in the monetary system is suggested by the complete termination of 3-groschen emission in late

⁴²⁷ Published in: Dogiel, *Codex Diplomaticus*, 5:344. “Et si iam ante ius cudendae monetae iure nullo Nobis, thesauraque nostro reservato, cum omni eius emolumento Civitati Rigensi, a Divis Decessoribus nostris concessum sit, quod & a Nobis confirmatum est, tamen amplius commodis Civitatis prospicere cupientes, Nos simile ius cudendi monetam, excepti iis, quibus iam ante a Nobis id, Decessoribusq; nostris concessum est, nullis aliis vel Civitatibus, vel personis in Livonia concessuros, pro Nobis, nostrisque Successoribus spondemus, & pollicemur.”

⁴²⁸ Translated by Kai Tafenau.

⁴²⁹ In 1585. See 1.1.

1600. The fact that it was not an event of local character, is furthermore supported by the evidence of other Commonwealth mints, which struggled to observe minting standards as much as the devaluation of 3-groschen (see 3.5).

In times of distress, high-value coins were first to be withdrawn from circulation (e.g. hoarded), making their coinage highly unreasonable. Mints would economise either by ending the coinage or by minimising resource consumption, that is, by switching to the coinage of cheaper small change, which is exactly what the Riga mint chose to do. In 1601 the schilling output reached a staggering 7.3 million. In the following two years, additional 5.18 and 4.45 million schillings were produced (Table 4.1.1).

The estimated schilling output data was high even compared to the peace time standards, thus allowing for an early suggestion that they were partially compensating for shortages of other means. The idea is exemplified by studying the silver supply structure. In the fiscal period (October 3, 1601 – January 16, 1603) only 0.3 tonnes out of 2.3 tonnes of silver, had been reminted from pure silver, e.g. silver bullion, thalers, and Spanish reals. The rest, 2 tonnes of silver, had been extracted from undisclosed supplies.⁴³⁰ Because of the bullion shortages and high prices, only the cheapest pieces of everyday exchange possible could be available, like Livonian schillings, defective or foreign coins. It is noticeable that the fineness of the melted coins (*paiement*) in 1601 was a constant 2 lot 3 quentin.⁴³¹ The fineness hint at the recoinage of the 1580–1590s Riga schillings, although it is still slightly below the estimated fineness of schillings (see 2.2).

The initial cause of the bullion crisis lay in the north. Duke Charles of Södermanland had been able to concentrate power in Sweden into his hands by championing the Protestant cause against his catholic uncle Sigismund III, a king of Sweden-Poland. At Stångebro in 1598, the duke's army defeated loyalist troops and exiled the king himself. Charles was the first to take decisive military steps to assert his rights in the disputed lands of Estonia and Polish Livonia.⁴³² In August 1600, Duke Charles disembarked in Tallinn to finalise the allegiance with the Estonian Estates and towns. Later that year Duke Charles' army started the invasion of Polish-held territories of the Duchy of Livonia. On December 27, 1600, the Swedes stormed Tartu and by early 1601 the castles of Cēsis, Valmiera (Ger. Wolmar), Koknese, Piebalga (Ger. Pebalg), and Rēzekne (Ger. Rositten) in Polish Livonia had been conquered. In May 1601 Swedes imposed a sea blockade on Riga and attempted to invade Riga. The arrival of the Polish troops prompted Swedish forces to lift the siege on 25/26 September. By the end of 1601, Swedes were forced to retreat from all the captured lands and towns. In 1602–1603 plague and famine took its toll. At the same time,

⁴³⁰ Dāboliņš, "The Mint Book," 93.

⁴³¹ Das Neuwe Muntz Buch, 1598–1603: LVVA 673-1-1284, fol. 41r-42v; following two years only record pure silver amounts produced in schillings.

⁴³² Attman, *Baltic markets*, 170–71.

continuous crop failures led to some of the worst humanitarian catastrophes ever recorded in Livonian history.⁴³³

Regardless of the misery and regular disruptions in communication and commercial networks, the mint was in operation all through the crisis years. Still, the costs were high for the mint to bear. The mint lost all of its apprentices and journeymen during the plague. Restoration of work back to normality took time. The Riga City Council received complaints on the quality of coins that had not been round enough, for which the mint master was held accountable. In his report of January 30, 1605, mint master H. Wulff⁴³⁴ wrote that this could be true, but similar coins could be found among foreign coins as well. The mint was struggling to handle the loss of employees and teach skills to inexperienced employees. However, despite irregularities in their shape, the mint master assured the councillors that the 2-schilling and 3-groschen of Riga were good money.⁴³⁵ Lowering of the Riga schilling quality had the potential for much graver consequences. Schillings of the Duchy of Livonia became one of the discussion subjects in the upcoming monetary commission of Warsaw, the first major assembly of such kind in the period.

3.5 Commission of Warsaw (1604)

On January 28, 1604, Sigismund III dispatched a mandate to the Riga City Council and burgrave demanding Rigans to send delegates for the commission which would be held shortly at the further notice given by the royal treasurer (Appendix 7). His majesty explained the necessity to hold such a meeting with other invited delegates from the senate, nobility, port towns, and the king's deputies after seeing no progress in the domestic monetary market despite the taken measures against the inflow of low-quality foreign coins and trespasses against the mint privilege, whereby the wealth of empire was being exhausted. The "evil" spread and became stronger with every day. His majesty sought the advice of learned men in order to find the tools to solve the difficult situation and reorganise correctly the monetary system.⁴³⁶

Upon further request by burgrave and mint lord Nicolaus Ecke, mint master H. Wulff drafted a reform proposal that would serve the needs of the city and

⁴³³ Guntis Gerhards, "Avotu liecības par Lielo badu Vidzemē (1601-1602)," in *Vēsture: avoti un cilvēki: Humanitārās fakultātes 22. starptautisko zinātnisko lasījumu materiāli = Proceedings of the 22nd International Scientific Readings of the Faculty of Humanities*, vol. 16 (Daugavpils Universitāte.: Saule, 2013), 97–104.; Marten Seppel, "1601.–1603. aasta nāljahāda Eestimaal, I: kronoloogia, ikalduse ulatus ja sissetulekute langus.," *Tuna. Ajalookultuuri ajakiri*, no. 2 (2014): 33–49; Marten Seppel, "1601.–1603. aasta nāljahāda Eestimaal, II: asustuse vähenemine, nāljaabi ja kannibalism.," *Tuna. Ajalookultuuri ajakiri*, no. 3 (2014): 25–43.

⁴³⁴ H. Wulff report, 30.01.1605: LVVA 673-1-1283, fol. 57r-58v.

⁴³⁵ LVVA 673-1-1283, fol. 57.

⁴³⁶ King Sigismund III appeal to the city council of Riga, 28.01.1604: LVVA 673-1-1283, fol. 19r.

the Commonwealth. H. Wulff recommended increasing the silver price from 36 groschen to 38 groschen per thaler. Next, H. Wulff proposed to cut minting expenses by debasement of the most widespread coins (table 3.5.1), but first introducing the decrease of silver thaler fineness from 13 lot 2 quentin to 13 lot in Cracow mark (4% cut). The silver content of 3-groschen was to decline by 8.2%, groschen and ½ groschen were to lose 13.9% and 15.7% of silver content, respectively, while schillings around 13%.⁴³⁷ Given the proposed exchange rate, 24.06 g fine silver would be paid in 3-groschen. Hence, H. Wulff undervalued 3-groschen, the purpose of which was to discourage 3-groschen exchange and foster their arrival in melting pots. Groschen fractions (1/2 groschen – 21.78 g fine silver; groschen – 22.39 g fine silver) and schillings (20.19 g) were clearly overvalued in relation to the new thaler (23.42 g fine silver). Potentially, this would grant owners of small change the upper hand in exchange with larger units.

Table 3.5.1 H. Wulff's debasement proposal for the 1604 Warsaw Commission

The 1580 Ordinance ⁴³⁸			H. Wulff's proposal, 1604			Debase-ment rate (%)
Deno-mination	Fine-ness (lot)	Weight (number of coins per weight mark)	Deno-mination	Fine-ness (lot)	Weight (number of coins per weight mark)	
Thaler	13 ½	7	Thaler	13	7	3.7%
3-groschen	13 ½	82	3-groschen	13	86	8.2%
Groschen	5 ¾	106	Groschen	5	107	13.9%
½ groschen	5 ¾	212	½ groschen	5	220	15.7%
Schilling	2 7/8	178	Schilling	2 ½	178	12.7%

A well-grounded proposition for the Commission was prepared by the emis-saries of Royal Prussian cities.⁴³⁹ According to the compilers, stability of the currency, prices, salaries, and the welfare of society was the central goal of a state and monetary reform. The common good and private interests were served best through proper restitution of monetary order. The bad order (*falsche ordnung*) brought everything down with it, the inflation of all things and shortages of products. In the opinion of the authors, nothing was as harmful to a

⁴³⁷ H. Wulff's reform proposal, n.d.: LVVA 673-1-1283, fol. 21 (in German); LVVA 673-1-1283, fol. 22 (in Latin).

⁴³⁸ Source: Żabiński, *Systemy pieniężne*, 105.

⁴³⁹ Rathschlag von der münzordnung in konigreich Polen, 5.07.1604: LVVA 673-1-1283, fol. 26r – 30r (in German); LVVA 673-1-1283, fol. 31r-32v (in Latin).

kingdom or country as counterfeits.⁴⁴⁰ This view is illustrated by the example of the 1528 monetary treaty between the Polish Kingdom and Royal Prussia, which established uniformity of minting standards. The authors argued that the decrease in coin quality reduced Gdańsk's income by 1/3 (18 000 Polish florins), which amounted to 12 000 Hungarian gulden at that time. Consequently, this brought about the rising prices of all things. Counterfeits, metaphorically speaking, were compared to an illness, which harmed the body of currency (*die Krankheit ist die Verderbung der muntz*). The unsound coin required special investigation and proper treatment to serve the common good. Healthy coin was composed of three parts: material (*Materia*), value (*würde*) and weight (*gewicht*). This concept was borrowed from the canonical treatise on money and its nature, colloquially known as *On money* ("de Asse", 1514) by the French scholar Guillaume Budé. Subsequently, currency was manipulated in three different ways, the worst of which was overvaluation, because it brought the devaluation of small change and overall inflation. There was only one way to cure this illness – by treating the causes and returning to the previous minting standards of the 1529 ordinance. The authors offered several remedies – first, to mint schillings and groschen according to the previous standards, second, to abolish other small change and those which were not part of the Polish monetary system; in their opinion, this applied to foreign coins and 3-groschen of Riga.⁴⁴¹ Similarly, the Constitution of 1527, forbade foreign coins. Third, because of the increase of gold and thaler prices above the values stipulated in the 1528 treaty, they should be debased. This led the authors to the conclusion that there was no better solution than the first remedy. However, being weary of the fact that Poland possessed no deposits of precious metals and it was dependent on imported money, the authors suggested introducing the following mechanisms: introduce a public warden or controller post,⁴⁴² which would decide on the good and bad coins; check the weight of gold, each principal city should be equipped with gold weights, whereas 'light' coins should be cut in pieces or melted and later reminted. In the fourth point, the authors addressed the well-known problem of hard coins, which changed value several times over time (i.e. with premium). The 1520 law prohibited speculations with money among private persons on pain of death, reserving rights to the mints alone. The authors directed attention to foreign cities, which established special exchange banks (*Wechsel banker*), as another possibility of solving the problem. Also, they suggested exchanging bad coins at the rate of unminted silver. The exchange of currencies should be free of charge, a small bill should be paid only for the work of a cashier. The bill should be constant for a certain amount, for instance, 10 groschen for 100 Hungarian florins. Before the exchange of money,

⁴⁴⁰ "Darumb kan durch keinen Krieg oder andern Vnfall ein Konigreich vnd Landt mehr verwüestet vnd verherget werden, als durch verfalschung der muntz." LVVA 673-1-1283, fol. 26r; This idea is paraphrased later once more.

⁴⁴¹ This is an unfounded allegation. There has not been found any proof for the arbitrary debasement of Riga 3-groschen.

⁴⁴² This post, actually, was created in 1598. See 1.1.

all merchants should be subject to such expertise, moreover, it should be introduced in all toll stations and border control stations.

In contrast to the pragmatic, accounts-based proposal by Riga mint master Wulff, his Prussian colleagues approached the reform from a theoretical perspective revisiting the heritage of monetary theory. First, it explored the historically and supra-naturally predetermined structure and functions of money, secondly, discussed the ideas of reform and third, devised a practical ‘healing’ programme. The authors identified two basic types of counterfeits – those of private persons and institutionally supervised corruption of coins. Although the authors referred only to one classical author of contemporary monetary theory, the French economist Budé, the stated ideas here are also reminiscent of Nicolaus Copernicus (1473–1543) reasoning expressed in his three treatises (1517–1526).⁴⁴³ These studies originally were presented on behalf of the Prussian estates during the discussions on the introduction of unitary (Polish) standards in the newly acquired fiefdom of Ducal Prussia (1525).⁴⁴⁴

Thus, while the whole argumentation was built upon strict theoretical principles, the original contribution to the debate was the forwarded examples from the monetary past of Prussia and the Polish Kingdom. As such the reform proposal was orthodox, alluding to natural logic, and having high regard for the return to the *status quo ante* position, which manifested in appreciation of old-time legal acts and theories. The only display of ‘modernity’ was the encouraged developing of banking in the fight against speculations and low-quality coins.

The Commission met in Warsaw on 5 July 1604 and held meetings until 15 July. The Warsaw Commission was a carefully documented process of events leaving a large, but mostly unpublished body of document copies, transcripts, and translations in Polish and Latin, many of which today are kept at the Latvian State Historical Archive.⁴⁴⁵ The Commission decisions *Sententia*

⁴⁴³ Nicolaus Copernicus, “N.[icolai] C.[opernici] Meditata XV Augusti anno domini MDXVII’ (1517),” in *Die Geldlehre des Nicolaus Copernicus: Texte, Übersetzungen, Kommentare; in memoriam Kurt Braunreuther 1913–1975*, ed. Erich Sommerfeldt (Berlin: Akademie-Verlag, 1978), 24–31.; Nicolaus Copernicus, “modus cudendi monetam,” in *Die Geldlehre des Nicolaus Copernicus: Texte, Übersetzungen, Kommentare; in memoriam Kurt Braunreuther 1913–1975*, ed. Erich Sommerfeldt (Berlin: Akademie-Verlag, 1978), 33–37.; Nicolaus Copernicus, “Monete cudende ratio per Nicolaum Copernicum,” in *Die Geldlehre des Nicolaus Copernicus: Texte, Übersetzungen, Kommentare; in memoriam Kurt Braunreuther 1913–1975*, ed. Erich Sommerfeldt (Berlin: Akademie-Verlag, 1978), 48–67. The treatises with detailed overview of the historical background is provided here: Hans Schmauch, *Nikolaus Copernicus und die Preussische Münzreform*. (Gumbinnen: Krauseneks Verlag und Buchdruckerei, 1940).

⁴⁴⁴ Volckart, “Early Beginnings of the Quantity Theory.”

⁴⁴⁵ King Sigismund III appeal to the Riga City Council, 28.01.1604: LVVA 673-1-1283, fol. 19r-v; Treasurer Joann Firley’s letter to the Riga City Council, 12.05.1604: LVVA 673-1-1283, fol. 24r; Rathschlag von der münzordnung in konigreich Polen, 5.07.1604: LVVA 673-1-1283, fol. 26r-30r; “Summa consilii de restituenda re monetaria in Regno Polonia quod ad commissionem a S Mte Regia varsavia in diem 5 July Anno 1604 institutam

*Dominora Commissariorum in negotio rei monetariae*⁴⁴⁶, are of particular interest for the current research as it follows up the discussions and procedures through the eye of the protocolist (?), thus greatly enhancing understanding of this important event and the schilling's future.⁴⁴⁷

The Commission identified danger to the monetary stability in the dissemination of silver thalers and gold coins of inadequate quality and small change. The Commission proclaimed a ban on all foreign small change, except for old Bohemian groschen and Hungarian schillings⁴⁴⁸, which were permissible in circulation.⁴⁴⁹ The Commission also considered putting Riga schillings on the list of forbidden coins, because they were found to be of very low quality.⁴⁵⁰ Everyone was ordered to dispose of all the forbidden coins by December 1604. None were to be pardoned for ignorance. The guilds having been caught with foreign coins, would be punished. Unless these coins were minted in the most recent times, mint wardens had to exchange coins at the 1600 exchange rates.⁴⁵¹ The delegates from GDL and Prussian cities expressed the will to drop coinage of small change in the Polish Kingdom mints for longer. In their opinion, it would help to identify shortages of the local coinages.⁴⁵²

Although the Prussian and Lithuanian delegates were keen to return to the monetary system established in 1528, Sigismund III ordered to establish new minting standards closely following the 1580 Ordinance. Afterwards two coinage debasement options were discussed. The first would be based on the mint price set at 36 groschen per thaler,⁴⁵³ the second – for the mint price of 38 groschen per thaler.

Internunti Civitatis gadanensis et istrus et reliquarum maiorum Civuitatum Prussia nomine medium attulerunt” LVVA 673-1-1283, fol. 31r-34v ; Protocoll of the Warsaw Commission, 8-15.07.1604: LVVA 673-1-1283, fol. 35r-40r; “Sententia dominorum Commissariorum in negotio rei Monetaria Varsovia diebus July 1604 expedita”, LVVA 673-1-1283, fol. 41r-42v; “Brevis informatio de rei monetaria utilitate, in quo potissimum vertetur et quid ad eam in Republica retinene[dam] requiratur: tum qua in com[m]oda ex depravatione monetae oriantur: qu[ae] Causae sint hujus depravationis, et qua ra[tione] ei occurrendum” LVVA 673-1-1283, fol. 48r-56v.

⁴⁴⁶ “Sententia Dominora Commissariorum in negotio rei monetaria diebus July Anno 1604 expedita”: LVVA 673-1-1283, fol. 43r-47v.

⁴⁴⁷ Lithuanian numismatists are familiar with some of the ideas shared in this document: Ivanauskas and Douchis, *Lietuvos monetų kalybos istorija*, 124.; Grimalauskaitė and Remecas, *Money in Lithuania*, 198–99.

⁴⁴⁸ Actually, Hungarian denars. They were named 'schillings' owing to their similarity with Polish schillings.

⁴⁴⁹ LVVA 673-1-1283, fol. 43v.

⁴⁵⁰ Ibidem.

⁴⁵¹ Ibidem.

⁴⁵² Ibidem, fol. 44v.

⁴⁵³ Only 9 groschen would be paid in Schlagschatz. Ibidem.

Table 3.5.2 Debasement options discussed during the 1604 Warsaw Commission

Denominations	Option 1		Option 2	
	Fineness (lot)	Weight (number of coins per weight mark)	Fineness (lot)	Weight (number of coins per weight mark)
6-groschen	13 ½	43	13 ½	45 1/6
3-groschen	13 ½	86	13 ½	90 1/3
Groschen	5 ¾	122	5 ¾	127 1/3
½ groschen	5 ¾	250	5 ¾	260 2/3
Schilling	2 7/8	192	2 7/8	200

Yet another, third option, was considered to fill the market with the necessary small change for the people of low purchasing power. Copper coins would be minted of pure copper “taking after the example of other lands” and issued at the MP of 14 groschen per mark of copper in three denominations: (1) Ternar (pl. *gwarnikow*) – 84 pieces in weight mark, (2) Double-penny (pl. *dwupienięznych*) – 126 pieces, (3) Denar (pl. *pieniążków*) – 252 pieces.⁴⁵⁴

The Commission was united in the opinion that the royal minting regalia had to be defended against the abuse of mints which had been the cause for the closure of crown mints in the former Sejm (1601).⁴⁵⁵ The Commission was looking for the best ways of reopening the mints, which should be discussed in the following Sejm. Emissaries suggested the king first open mints in the Polish Kingdom, which were provided with silver deposits from Olkusz and Hungary; secondly, in Royal Prussia with its port towns, where the foreign silver and gold arrived; third, in GDL and fourth, in Livonia, “the most distant province with many ports”.⁴⁵⁶

In order to attract silver to the mints emissaries warned about the melting of old coins, especially thalers and gulden of local origin. They also wanted to restrict speculations with thaler and gulden values by merchants, forbidding exchanging these coins among themselves during the fairs; the exchange with hard money should be supervised by the royal warden in the largest Commonwealth towns and during the fairs.⁴⁵⁷

To strengthen control over the local coinages, mint masters and mint wardens should become royally assigned officials, likewise, the mint would earn protection similar to that of nobility; mint master and warden ought to visit the royal treasurer once a year and submit proofs of produced coins, and report on the foreign or false coins so that the king could be informed and stop offences.⁴⁵⁸

⁴⁵⁴ “Sententia Dominora Commissariorum in negotio rei monetaria diebus July Anno 1604 expedita”: LVVA 673-1-1283, fol., fol. 45r.

⁴⁵⁵ Ibidem, fol. 45v.

⁴⁵⁶ Ibidem.

⁴⁵⁷ Ibidem.

⁴⁵⁸ Ibidem, fol. 46v.

There were discussions on how to limit expenses for the luxurious lifestyle among the noblemen and less-well-to-do individuals, which was maintained largely with imported goods and therefore resulted in the outflow of bullion; four groups of local craftsmen ought to be strengthened in response: confectioners, fabric production, tanners, weaponry. The members of the Commission also expressed the necessity to pass anti-luxus legislation, at least, which prohibited excesses in clothing.⁴⁵⁹

The so-called *decisions* was merely a report on the course of commission discussions. It is not certain how much of the considered subjects were actually supported and successfully implemented. However, it unveiled a plethora of monetary-related problems, in which the reform of minting standards had been only one of the many issues on the discussion table.⁴⁶⁰

The 1604 Warsaw Commission had limited abilities to reach its goals. For certain, the idea of minting copper coins was not accepted. The first Commonwealth copper coins were issued much later, only in 1650.⁴⁶¹ This, however, was a rather shortlived attempt compared to the so-called *boratynka*⁴⁶² coinage in 1659–1668, which reached massive scale flooding the central and eastern European monetary markets. The Commission did not succeed in implementing a ban on the circulation of the Riga schillings, or at least to the extent which prohibited their coinage. Riga continued issuing schillings without any delay. Of the several proposals for minting standards discussed at the Warsaw meeting, the second option seems to have been adopted and is mostly popularised in Polish and Lithuanian numismatic literature. The most authoritative source to date is Zbigniew Żabiński's *Monetary Systems on Polish Territories* (1981). His conclusion are repeated by Grimalauskaitė and Remecas:

“However, the only thing which was successfully implemented was devaluation of coins by the Warsaw Commission for the first time in 1604. The three-groats and six-groats were devalued by 10%, the groats by 18%, and the shillings by even 60%.”⁴⁶³

The main questions are: how trustworthy are these figures? Was there a uniform small-change reform and can one apply these figures for the Riga coinage as well? First, one can note the inaccurate usage of the term ‘devaluation’. What they must have had in mind was debasement, the decrease of intrinsic value

⁴⁵⁹ Ibidem, fol. 46v-47r.

⁴⁶⁰ The idea of the Commission has been summarised by Mikołajczyk as yet another attempt to keep the previous monetary system from destruction, and maintain favourable conditions in international monetary markets.⁴⁶⁰ Mikołajczyk, *Einführung*, 63.

⁴⁶¹ Zagórski, *Monety dawnej Polski*, 161; Paszkiewicz, “Podobna jest moneta,” 116; Tadeusz Kalkowski, *Tysiąc Lat Monety Polskiej* (Krakow: Wydawnictwo Literackie, 1974), 248–49.

⁴⁶² Copper schilling named after their initiator Tito Livio Burattini (1617–1681).

⁴⁶³ Grimalauskaitė and Remecas, *Money in Lithuania*, 199. Source: Żabiński, *Systemy pieniężne*, 110.

rather than the reduction of the nominal value of coins. Second, ½-groschen is not mentioned in the noted Lithuanian and Polish publications.

Żabiński refers to two sources in his estimates: David Braun’s monograph and Gumowski’s *The History of the Krakow Mint* (1927). Unfortunately, the second author’s monograph is unavailable. Gumowski’s study of the Vilnius mint schillings⁴⁶⁴ shows that his main source had been Zagórski,⁴⁶⁵ who in turn relied on Braun. Hence, the first-hand evidence of 1604 standards for Polish numismatists was David Braun. According to Braun, local thalers were appreciated at no more than 38 groschen.⁴⁶⁶ The income from Schlagschatz was decreased from 20 groschen to 10 groschen 12 pfennigs.⁴⁶⁷

Table 3.5.3 Minting standards of the 1604 Warsaw Commission according to David Braun⁴⁶⁸

Denomination	Fineness (lot)	Weight (number of coins per weight mark)	Fine silver weight (g)
6-groschen	13 ½	45 1/6	3.77 g
3-groschen	13 ½	90 1/3	1.884 g
Groschen	5 ¾	127	0.571 g
Schilling	2 ¾	“nach proportion” ⁴⁶⁹	

Further, to evaluate the debasement rates offered by Żabiński, one needs to contrast 1604 standards with 1580 minting standards. To ease the task, the given minting standards are expressed in the fine silver content of each denomination (net weight). The number of schillings in weight mark are not stated, therefore they are not included in the following table.

Table 3.5.4 Comparative view of 1580 and 1604 groschen minting standards (in fine silver weight)

Denomination	The 1580 Ordinance (g)	1604 Warsaw Commission (g)	Debasement rate (%)
6-groschen	4.118	3.77	8.45%
3 groschen	2.06	1.884	8.55%
Groschen	0.684	0.571	16.52%

⁴⁶⁴ Gumowski, *Mennica Wileńska*, 132.

⁴⁶⁵ Zagórski, *Monety dawnej Polski*, 30.

⁴⁶⁶ H. Wulff’s supplication, 13.01.1609: LVVA 673-1-1283, fol. 79v; Braun, *Ausführlich-Historischer Bericht*, 70.

⁴⁶⁷ Braun, 70.

⁴⁶⁸ Braun, 70.

⁴⁶⁹ According to the minting standard of Polish groschen, 3-groschen and 6-groschen.

The debasement results in Table 3.5.4 points out to Braun as the direct source of Żabiński's calculations, although the latter rounded up debasement levels by approx. 1.5%. Finally, as to the debasement rate of schillings, they are reckoned independently because Braun did not state the minting standard of schillings explicitly.

Braun's formulation of schilling standard "*nach proportion*" has proven to be rather challenging to scholars, and it demands some elaboration. Gumowski's understanding is as follows. He proceeds by counting groschen in 1 weight mark of pure silver: $201.8 \text{ g} / 0.57 = 353$ pieces.⁴⁷⁰ Given the groschen and schilling exchange rate: 1 : 3, 1059 pieces of schillings could be produced from 1 weight mark of pure silver. Hence, the silver content in schillings was 0.19 grams a piece. Unfortunately, the final calculations and arrival of the gross weight are not demonstrated transparently. He estimates 0.9 g of gross weight or 220 pieces in weight mark.⁴⁷¹

Żabiński approached the problem differently, by reckoning the number of schillings in weight mark, which was done by multiplying groschen output in weight mark: $127 \times 3 = 381$. Thus, the average schilling weight is much lower (0.53 g) and silver content – only 0.091 grams a piece.⁴⁷² The net silver content decreases from 0.204 to 0.091, which constituted 60% debasement of schillings.

Both approaches yield very different results, which shows confusion about the understanding of the "proportionality" principle. It should be understood that "proportion" was not established by value relations, but by the ME parity between groschen and schilling (353 groschen = 1060 schillings) in weight mark, as demonstrated in Gumowski's calculations. Therefore, on a methodological level, Gumowski's approach was correct, although it fell short on technical issues. Meanwhile, Żabiński was 'indifferent' of the fact that schillings and groschen were not minted of the same silver alloy. Either way, both results prove to be inconclusive.

Given the long minting history of the Riga schillings, it is reasonable to direct discussions over the metrological data of reformed coins based on the written materials of the Riga mint. The most important record is a small undated note by mint master H. Wulff I.⁴⁷³ The major observation to be made is that the offered minting standards (6-groschen is not included) are identical to the second option (Table 3.5.2) discussed by the 1604 Warsaw Commission and the groschen minting standards stated by Lithuanian and Polish colleagues.

Wulff's note can be assumed as the missing piece in the discussion of domestic schilling quality. The average gross weight of schillings (1 g) and fine silver content (0,181 g) indicate an approx. 11% debasement rate. Furthermore, this debasement rate is suggested by numerous mint accounts and coin finds

⁴⁷⁰ Actually, it makes 354 pieces in weight mark.

⁴⁷¹ Gumowski, *Mennica Wileńska*, 132–33. The gross weight of schilling should be calculated differently: $0.19 \text{ g} \times 16 \text{ lot} / 2.75 \text{ lot} = 1.10 \text{ g}$.

⁴⁷² $381 \text{ pieces} \times 16 \text{ lot} / 2.75 \text{ lot} = 2216 \text{ pieces}$; $201.8 \text{ g} / 2216 = 0.091 \text{ g}$.

⁴⁷³ "In der Cron Pohlen wart gemuntzet nach angeordneter Commißion Anno [1]604": LVVA 673-1-1283, fol. 74r.

from subsequent years.⁴⁷⁴ This brings me to the conclusion that the Riga schillings were debased by a mere 11%, which closely followed the debasement pattern of 3-, and 6-groschen coins.

The debasement pattern of the Riga schillings can be contrasted with the metrological data collected and analysed by the Polish numismatists Zbigniew Żabiński and Edmund Kopicki. There were short-lived attempts in Bydgoszcz and Malbork mints in 1613–1614 to produce schillings with average gross weight of 0.53 g and 17.2% fineness, which means that 381 schillings were minted from weight mark of 2.75 lot silver alloy. They are of slightly smaller size, around 16–17 mm in diameter and weight reduction by almost half.⁴⁷⁵ Hence, one can estimate the silver content of Polish schilling at 0.091 g.⁴⁷⁶ This reconstruction puts the debasement rate at 55.4%⁴⁷⁷, which is slightly short of 60% as suggested by Żabiński. Consequently, it can be concluded that the authorities were indeed ‘indifferent’ to the parity principle based on equal or close ME of schillings, and authorised coinage of highly overvalued specimens, i.e. inflationary money.

Table 3.5.5 Introduced minting standards by the 1604 Warsaw Commission⁴⁷⁸

Denomination	Fineness (lot)	Weight (number of coins in weight mark)
6-groschen	13 ½	45 1/6
3-groschen	13 ½	90 1/3
Groschen	5 ¾	127 1/3
½-groschen	5 ¾	260 2/5
Schilling (Riga, Vilnius)	2 7/8	200
Schillings (Crown Poland)	2 ¾	381

Contrary to inflationary Polish schillings, differences in the Riga schilling debasement rates can be explained to establish intrinsic and value parity between groschen down to schillings. In terms of intrinsic value, reformed groschen (0.57 grams of fine silver) was almost equal to 3 Riga schillings (3 x 0.18 = 0.56 g) and 2 half-groschen (2 x 0.278 = 0.55 g). They bore less even relation with 3 groschen (1.885 g) – 9 schillings (1.629 g). It means that in exchange with the Riga schillings, 3-groschen had to be exchanged with premium (1–2 schillings).⁴⁷⁹ 3-groschen retained similarly disproportionately high intrinsic

⁴⁷⁴ In Riga the exact minting standard was observed with minor changed until 1611; Viktors Dāboliņš, “Riga Mint in 1621,” *FROM ORE TO MONEY, MINING, TRADING, MINTING, Proceedings of the Tallinn (2018) Conference*, Collection Moneta, 202 (2018): 119.

⁴⁷⁵ Kopicki, *Monety Zygmunta III Wazy*, 44.

⁴⁷⁶ 2.75 lot x 201.8 g / 16 lot = 34.68 g; 34.68 g / 380 = 0.091 g.

⁴⁷⁷ 0.091 g x 100% = 9.1 / 0.204 g = 44.60% (the silver content retained).

⁴⁷⁸ See also Table 1.2.1.

⁴⁷⁹ Still, 3-groschen, like any other hard coin, was less likely to be exchanged with schillings.

value also in relation with groschen and ½-groschen. It means that the governing principles of 3-groschen mintage differed from those of small-change mintage. Possibly, the necessity to acquire hard currency in foreign markets, especially, in the 17th century, when the economic prospects in western markets were becoming less favourable for Polish production, was the factor to be reckoned with. The adopted minting standard of 3-groschen could be aiming at 3-groschen export, while simultaneously discouraging their everyday usage in the domestic market. In other words, as argued by Mikołajczyk, the reform was carried out with two hardly compatible necessities to serve at a time – to keep the small change at such a state as not to break the whole mint system apart, and to maintain beneficial relations with the foreign monetary markets.⁴⁸⁰ The result of this reform was the upgraded position of the Riga–Vilnius schillings in the monetary structure, which previously stood on the same low-value ladder as kwartniki and had been expelled from the exchange with groschen.⁴⁸¹

3.6 The coinage of schillings (1604–1616)

The Warsaw Commission did not seem to encourage positive changes in the small change market. Based on the coin finds and catalogues,⁴⁸² schillings were the only currency minted in Riga. Mint master H. Wulff I was upset about the coin quality of the Polish and Lithuanian lands. In his report to the Riga City Council from 30 January 1605, the mint master paid attention to the fact that many Polish 3-groschen, which had been in everyday use in Riga, were short of 3-9 pieces in 1 weight mark.⁴⁸³ The issuers of Polish schillings also were not committed to the task of following the minting standard, reportedly being short of 17–18 coins per weight mark. Ever greater weight problems had been observed among Lithuanian half-groschen; up to 40 pieces more had been counted in 1 weight mark.⁴⁸⁴ As the half-groschen were minted in Vilnius up to 1565 from a rather stable minting standard, this allegation could be dismissed as exaggeration.⁴⁸⁵ However, considering the fact that they had been in circulation for four decades and more, they could be heavily worn. Equally detrimental to the quality of the coins was the precious metal instability and the resulting insecurity-led withdrawal of better specimens.

⁴⁸⁰ Mikołajczyk, “Rozmiary Produkcji Menniczej,” 63.

⁴⁸¹ According to Mikołajczyk, the rigid and hierarchical structure of the Commonwealth monetary system created by the 1580 ordinance was maintained from thaler down to ½-groschen. Mikołajczyk, *Einführung*, 48.

⁴⁸² Haljak, *Livonian Coins XIII–XVIII Century. Part II*; Kruggel and Gerbaševskis, *Die Münzen*.

⁴⁸³ H. Wulff’s report, 30.01.1605: LVVA 673-1-1283, fol. 57v.

⁴⁸⁴ *Ibidem*, fol. 58r.

⁴⁸⁵ According to Ivar Leimus testimony, the average weight of ½-groschen held in the Estonian History Museum coin collection (> 200 pieces), is 1.15 grams. It means a decrease in the weight of around 14 pieces (V. Dāboliņš and I. Leimus e-mail conversation, 2 March 2020).

The complaints about coinage weight were persistently expressed on all sides and frequently achieved little if anything. In pre-modern society minting was done ‘by weight, not by tale’, i. e. a more or less constant number of coins were minted from a weight mark. When checking the quality of coinage, it was customary to observe the same principle, collect a number of the same issues and measure their weight. Because the level of technological development did not permit regular size for each coin a margin of +/- 2 coins (*remedium*) was admissible per weight mark. The permissible weight difference of 16th century ½-groschen and supposedly even more of small change was larger, since not all of the Commonwealth mints possessed functioning mechanic rolling presses at that time which increased production quality and standardisation of output (see 6.1–6.2).

The Warsaw Commission confirmed mint price at 38 groschen per thaler. However, by the end of 1608 the silver market price reached 40/41 groschen, a rather significant increase of 5–8%, which weighed heavily on the minting costs. This most likely preconditioned 1606 Riga schillings proof decrease from 2 lot 3 q 2 d to 2 lot 3 q 1 d.⁴⁸⁶ After that the Riga schilling fineness remained constant. In 1610 the silver content in schillings was decreased equally by the same minimal 2% threshold, from 2 lot 3q 1 d to 2 lot 3 q.⁴⁸⁷ The constant output of schillings gives the impression that debasement absorbed the silver price rise rather successfully.

In the following case study from 1608–1609 I shall demonstrate how vulnerable the Riga mint and schilling mintage was to mint price fluctuations. The whole case is built upon two supplications. The first was exchanged between the worried citizens of Riga and the Riga City Council on 13 January 1609, in which the former complained about the hardship which befell due to the lengthy warfare. Besides the everyday troubles, townspeople suffered shortages of small change in the town.⁴⁸⁸ As the mint master was unable to carry on with the mintage without suffering losses, the townsfolk were having no less trouble, which resulted in the rupture of daily subsistence (*abbruch an vnsere nahrung entstehett*). Despite the desire of some citizens to hand over silver spoons and waistbelts to the city (to be melted and reminted), they were discouraged from doing this.⁴⁸⁹ Finally, the Riga citizens and inhabitants approached the Riga City Council begging to find a solution to the heavy burden.

The mint master did not hesitate a day to handle the serious matter. In a letter dated the same day H. Wulff led his esteemed Riga City councillors

⁴⁸⁶ Riga mint notes, n.d.: LVVA 673-1-1280, fol. 30.

⁴⁸⁷ Ibidem, fol. 30.

⁴⁸⁸ “Bey welcher vnserer noth denn auch noch dieser mit einfelt daß bißanhero, wie auch noch, daß kleinen *pagamente* fast mangel inn der Statt befunden, welche den daher vervrucht wirdt, den die Müntze nun fast lange Zeit stille gelegen, inn deme sich der müntzer beschwehrt, daß er ohne großen schaden die müntze nicht könne fort stellen.” Riga citizen supplication to the Riga City Council, 13.01.1609: LVVA 673-1-1283, fol. 77r.

⁴⁸⁹ Ibidem, fol. 77r.

through every detail of his reasoning behind the arrest of the mintage.⁴⁹⁰ Wulff saw the principal problem in the great price increase of Hungarian gulden in Riga and other places. In Lübeck, gulden was priced at 3 marks 20 schillings, which converted in Riga mark, reached 11 marks 24 schillings (70 groschen), or an increase by 28.5 schillings for gold. The result was the devaluation of silver coins, which led to widespread speculations of Dutch merchants and other foreigners, who flocked to the city making a profit at the expense of locals' losses. The second problem arose from the higher value of Lithuanian groschen (4 Lithuanian groschen = 5 Polish groschen); in Lithuanian issues thaler was valued at 56 groschen. Wulff's point of concern was that whenever there was exchange of gulden or thalers in Lithuanian units, it incurred great losses to Livonians. 1 gulden was purchased for 56 Lithuanian groschen in Riga, but if someone needed small change (1/2 groschen), it was sold for 51 ¾ groschen, which proves that there was an actual lack of small change.⁴⁹¹

Obviously, Livonians could be spared some trouble by raising the mint price. But that would arguably encourage continuous silver price increases. The rise of silver market prices was inseparable from the events in the Polish Kingdom, where the pressure of silver price was obvious – in 1611 and probably even earlier thaler hit the 44 groschen level.⁴⁹² Neither the mint masters of Poland, nor of Riga were able or willing to mint. Livonians were forced to be content with what was available in the market – Lithuanian and other issues at their own cost.⁴⁹³ On top of all negations, someone spread rumours of the mint master's wicked intentions, as if he had intended to stop minting to get payment.⁴⁹⁴

But the situation was not all that hopeless. H. Wulff wrote that he coinage of schillings could be resumed under the condition that he some profit was made. Following exchange rates were to be introduced. These prices, as can be seen below, were very low or even below market prices, and requiring some disciplinary measures to be observed:

“In accounts:	
1 Reichsthaler	40 Polish groschen
1 real	39 Polish groschen
1 ‚Kaufmans’ thaler	35 Polish groschen
1 florin	30 Polish groschen
6 ‚Kaufmans’ thalers	7 florin
1 thaler	28 Lithuanian groschen = 35 Polish groschen

⁴⁹⁰ H. Wulff's supplication, 13.01.1609: LVVA 673-1-1283, fol. 79r-81r.

⁴⁹¹ Ibidem, LVVA 673-1-1283, fol. 79v.

⁴⁹² Żabiński, *Systemy pieniężne*, 110., Table 64.

⁴⁹³ Ibidem, LVVA 673-1-1283, fol. 80r.

⁴⁹⁴ “[...] Ich verstanden das meiner mißgönner einer sich Verlauten lassen mit diesen worten, Kan Ich Heinrich Wolff nicht mehr schaden thun, so soll doch die Müntze stille stehen, womit Ichs aber verschuldet, Vnddt die burgerschafft mein entgelten sollen [...]“ Ibidem, fol. 80r.

4 Lithuanian groschen	5 Polish groschen
1 thaler	5 mark 30 schillings
3-groschen	18 schillings
1 groschen	6 schillings
1 Lithuanian groschen	7 ½-schillings
2-schilling	2 schillings
2-pfennig	1 ½-schillings
In coins:	
1 Reichsthaler	41 groschen
1 real	40 groschen
1 lot silver	18 groschen” ⁴⁹⁵

In a short while, the Duchy of Livonia was making progress in stabilising its domestic monetary market. According to the notes of mint warden Lambert Goldenstedt, minting of schillings resumed in little less than a month, on 4 February 1609.⁴⁹⁶ Goldenstedt explained schilling coinage with the necessity to observe the new decree “*Nach der New Ordnung*”. The content of the document remains largely unknown. Except for the rise in Schlagschatz rate, from 3 to 4.5 groschen per fine mark, no interventions in schilling standard can be observed. However, it could be giving a licence to mint from decreased fineness of silver (see 5.3). The Riga schilling quality was not exemplary, as one can read in a short note dated 30 December 1609. Mint lord Frantz Nyenstedt was said to protest against schillings for being irregularly cut and struck, and not white enough. Besides, the fineness of schillings had been too low.⁴⁹⁷ In his defence H. Wulff informed the Riga City Council that the warden and everyone else, who was knowledgeable in coinage, should understand that with such high volumes some irregular coins could go into circulation unnoticed.⁴⁹⁸ Interestingly, Polish private numismatist Dariusz Marzęta has also arrived at the same conclusion of the low quality of 1609 Riga schilling issues.⁴⁹⁹ In hindsight, arbitrary or non-arbitrary changes in schilling quality might affect minting intensity after all (10.26 million) (see 4.1). The comparably high emission results from 1609 onwards give the impression of greater silver availability or decreased minting costs.

⁴⁹⁵ Ibidem, fol. 80r-v.

⁴⁹⁶ L. Goldenstedt’s notes, 4.02.1609: LVVA 673-1-1286, fol. 23.

⁴⁹⁷ L. Goldenstedt’s notes, n.d.: LVVA 673-1-1280, fol. 31v.

⁴⁹⁸ H. Wulff’s report, n.d.: LVVA 673-1-1280, fol 32r.

⁴⁹⁹ “The mint production quality from 1609 onwards was extremely uneven. Sometimes specimens of very good condition are problematic for attribution due to lettering and numbering, let alone interludes in the legend.” (Produkcja mennicza od roku 1609 była wyjątkowo niestaranna. Niekiedy nawet na egzemplarzach w bardzo dobrym stanie zachowania trudno ustalić jakie są niektóre litery czy cyfry, a tym bardziej przerywniki legendy.) Dariusz Marzęta, “Szelągi ryskie Zygmunta III Wazy – dwa katalogi | Blog Numizmatyczny,” *Blog Numizmatyczny Dariusz Marzęta* (blog), accessed May 13, 2022, <http://blognumizmatyczny.pl/2020/09/10/szelagi-ryskie-zygmunta-iii-wazy-dwa-katalogi/>.

Having reached the threshold of 1609 schillings, we can now discuss the problematic attribution of their producer (and beyond, to 1621 issues). Both the compilers of Livonian coin catalogues⁵⁰⁰ and several eminent numismatists⁵⁰¹ have been attributing their coinage to mint lord Otto von Meppen. His production is recognised by a fox as his signature mark. Although the author of the current Thesis has not been able to trace roots of this notion,⁵⁰² in the most recent studies of written accounts, it has been tested wrong on several points. There is no evidence in the history of the Riga mint of the mint lord being assigned with practical tasks of minting coins. This notion has a high probability of being borrowed from Polish (or Lithuanian) monetary history, in which the mint authorities executed their power by placing personal mint marks or coat of arms. Livonian monetary history does not bear evidence of a similar power display in its coinage. The histories of the Wulff family and the Riga mint provide additional evidence to the power relations and structural changes in the Polish period. They both testify to lively and continual relations throughout the Polish rule lasting long into the Swedish era. Not without his critics among the colleagues, Henrich Wulff was legally in charge of the mint throughout his lifetime, that is being manifested by his signatures on the mint documents until 15 July 1614. If we discuss the candidacy of Otto von Meppen, the main counter-argument is that he was not among the living in 1609 anymore. O. von Meppen had deceased by 1599 at the latest.⁵⁰³ Regardless of discrepancies in the datings, whoever advanced the idea of O. von Meppen, emphasised the fact of shifting mint marks on Riga coins. Indeed, placing a ‘fox’ on the 1609 issues signalled a notable change in the coinage design (and mint hierarchy). Until 1607, the Riga coins had been signed with a lily. The meaning of this switch is still debated.⁵⁰⁴ As to the mint mark, recognised as a fox, it is being suggested that we are dealing with a case of “talking arms”. The heraldic element of a fox-resembling animal could be an allusion of German “Wulff” (eng. wolf) which stands for the name of the noted Riga mint master Henrich Wulff.

In 1611, after the death of Charles IX, a truce was signed between the Commonwealth and Sweden.⁵⁰⁵ The price of thaler in Riga stabilised around 42 groschen, meanwhile in Poland the thaler exchange rate was higher – 44 thaler. Despite the high market price, there was a strong political will (in Vilnius?) to

⁵⁰⁰ Kopicki, *Monety Zygmunta III Wazy*, 18.; Kruggel and Gerbaševskis, *Die Münzen*, 15.

⁵⁰¹ Mrowiński, *Monety Rygi*, 50.; Tatjana Berga, “Monētu kultuvju darbība Latvijas teritorijā (13.–18., 20. gs.),” *Arheoloģija un etnogrāfija* 29 (2016): 123, <https://doi.org/10.22364/aue.29>.

⁵⁰² Probably it is this work: Edmund Kopicki, *Katalog podstawowych typów monet i banknotów Polski oraz ziem historycznie z Polską związanych 1506–1632*, vol. 2 (Warszawa: Polskie Towarzystwo Archeologiczne i Numizmatyczne, 1976), 239.

⁵⁰³ Viktors Dāboliņš. Riga mint master Henrich Wulff I (ca 1564–1614/1615). Forthcoming.

⁵⁰⁴ Dāboliņš. Riga mint master Henrich Wulff I (ca 1564–1614/1615). Forthcoming.

⁵⁰⁵ The truce was renewed for the period up to 29 September 1616. Attman, *Baltic markets*, 181.

re-establish the old fineness of 1580. The quality of the Riga schillings was fixed to 2 lot 3 q 2 d/2 lot 3 q 3 d.⁵⁰⁶ There was repeated discontent regarding the coinage quality. On 7 May 1612, the mint lord ordered the replacement of the defected and broken coins.⁵⁰⁷ Around 1614/1615, once again warden shared his disaffection with the schilling fineness and weight to the Riga City Council, which expanded into a wider dispute over schilling quality minted in the recent decade.⁵⁰⁸ Henrich Wulff stood unshaken by any accusations, referring to different misconducts in the assaying and book-keeping process.⁵⁰⁹ Perhaps in effort to avert attention from the Riga schillings, Wulff focused on the greater problem of the encompassing decline of coinage quality in the Commonwealth. On 15 July 1614, H. Wulff complained to the Riga City Council that because of the debasement of the coinage in the Commonwealth, not only 3-groschen and groschen, but also the Riga schillings were bought up with the less worthy Lithuanian and Polish coins and taken out of the province for profit, i.e. melted and reminted in debased coins.⁵¹⁰

After the second longest arrest of coinage under H. Wulff's tenure, the call for the debasement of schillings was renewed. In 1615 alone schillings were debased on two occasions. On 23 September 1615, mint lord Berent Dolmann arrived at the mint and in the presence of mint warden, Lambert Goldenstedt ordered to mint 7 more schillings in weight mark.⁵¹¹ The same was repeated on 28 November, when the Burgomaster and mint lord Nicolaus Ecke ordered to mint 4 more pieces in weight mark.⁵¹² In the following year, 1616, fluctuations in schilling quality became even more widespread (table 4.1.3). By the time mint master Martin Wulff II received an invitation to the 1616 Warsaw Commission, the schilling debasement process seemed to be getting beyond control.

3.7 Commission of Warsaw (1616)

Once again, the debasement of coinage emerged on the agenda of state policy. Upon the request of estates, Sigismund III summoned a monetary commission, which met in Warsaw from 7 to 17 October 1616.⁵¹³ The Commission mainly addressed the small change question, and the necessity to improve the monetary

⁵⁰⁶ L. Goldenstedt's notes, n.d.: LVVA 673-1-128 3, fol. 30r, 31v; According to Goldenstedt's testimony, one post of schillings was minted from 2 lot 3 q 2 d silver alloy, while another was minted from 2 lot 3 q 3 d. See H. Wulff's report, n.d.: LVVA 673-1-1280, fol. 32r.

⁵⁰⁷ "Mit dem Herr MüntzMeister auf þultzick werden Wegen der Muntze Imhe Eine Zettel geben, dem Mangell vnd gebrochen dar aus zu ersehen, vnd is dho mahl das Jahr ver Muntzt." L. Goldenstedt's notes, n.d.: LVVA 673-1-1280, fol. 31v.

⁵⁰⁸ H. Wulff's report, n.d.: LVVA 673-1-1280, fol. 32r-v, 36r; Draft of H. Wulff's report, n.d.: LVVA 673-1-1280, fol. 33r-35r.

⁵⁰⁹ Ibidem, fol. 32v; more about the last issue in Chapter 5.3.

⁵¹⁰ H. Wulff's report, 15.07.1614: LVVA 673-1283, fol. 99r.

⁵¹¹ Riga mint book, 1598–1603: LVVA 673-1-1287, fol. 5r.

⁵¹² Ibidem, fol. 5v.

⁵¹³ Warsaw Commission's decisions, 17.10.1616: LVVA 673-1-1283, fol. 106r-110v.

system. Thus, the Commission was primarily occupied with testing the quality of the recently issued coins: orts (quarter-thalers) of Gdańsk, 3-pölkers⁵¹⁴ of Conrad Bremer (see 3.8), groschen and dreipölkers of Cracow, 6-groschen of Malbork, and from foreign issues – schillings or the so-called ‘*Schreckenbergers*’⁵¹⁵ of Campen, Deventer and Zwolle. The Commission tested the quality of the recently, in 1616, struck schillings of Vilnius and Riga mint. The production quality of schillings had been identical in both mints – of 2 lot 3 pfennig fineness and containing 220 pieces in 1 weight mark.⁵¹⁶

On 9 October, his majesty summoned the Commission members for a discussion with the Prussian delegates from Toruń and Gdańsk, to decide on the most appropriate organisation of coinage in the Commonwealth and the incorporated territories. It was suggested to mint thalers of 14 lot fineness and 7 pieces in weight priced at 46 groschen per piece. The commissioners saw it worthwhile to arrest the small change production for the time being.⁵¹⁷ They would be replaced with 5 other denominations each minted of equal 13 lot fineness (Table 3.7.1). 10 groschen from each fine mark struck would be paid in Schlagschatz. Finally, from each fine silver mark minted in 3-groschen 15 groschen were designated for material expenses (coal, steel, and iron) and mint master’s salary, and 12 groschen for each fine silver mark minted in 6-groschen, 10-groschen and 30-groschen.⁵¹⁸

Table 3.7.1 First reform project of the 1616 Warsaw Commission

Denomination	Fineness (lot)	Weight (number of coins per weight mark)
30-groschen	13	10 7/12
20-groschen	13	15 7/8
10-groschen (ort)	13	31 ¾
6-groschen	13	53
3-groschen	13	106 ½

This envisioned revision of the monetary system foresaw a renouncement of previous monetary structures which consisted of worthy standard units, middle-size denominations (6- and 3-groschen) as well as billon coins (groschen, ½-groschen, schillings, etc). The new denomination structure would be made of

⁵¹⁴ In the Commission records, dreipölkers are systematically called ‘*dreykreuzer*’ in analogy with the dreikreuzer of the Holy Roman Empire.

⁵¹⁵ “Kamper schilling, so zu Deventer Campen vnnnd Schwoll gemünzt, vnd hierzu lande Schreckenberger genant werden, deren gehen 39 Stuck auf eine Mrk. halten fein 9 lot 0 q 2 d Kombt auß einer Mrk fein f. 13 20 gl 5 d” Ibidem, fol. 107r.

⁵¹⁶ Ibidem, fol. 106v-107r; Ceplite, “Numismatika,” 128.

⁵¹⁷ “[...] alle kleine Müntzsorten (die dreikr[euzer] mit eingerechnet) für ein Zeit lang eingestelt [...]”. Ibidem, fol. 108r.

⁵¹⁸ Warsaw Commission’s decisions, 17.10.1616: LVVA 673-1-1283, fol. 108r-109v.

thaler, renewed złoty (30-groschen or *Gulden stuck*) and złoty fractions. The perception of full-bodied currency as a guarantee of monetary stability was deeply engraved in the mentalities of Prussian monetary officials. The same sympathies were manifested in the 1604 monetary reform proposal (see 3.5). The project seems to be only part of the discussions as discussion of small change units came later.

On 17 October 1616, the Treasurer of Polish Kingdom Mikołaj Daniłowicz (1558–1624) and Court Marshal Mikołaj Wolski (1600–1616) instructed the Commission to draft the second (part of the) reform proposal.⁵¹⁹ The Commission introduced a less costly and radical reform proposal based on the commonly used denominations and silver price set at 46 groschen per thaler. It was put together by 7 state officials, mint masters, and wardens, among whom was Martin Wulff II from Riga.⁵²⁰ The allocated sums for the remuneration of mint master and the expenses differed along the denominations, but unlike the first draft, the projected Schlagschatz income was lower (between 3 gr and 6 gr 6 β) and mint master's salary – higher (between 15 and 18 gr). The problem with these standards (Table 3.7.2) is that they have not been introduced in the numismatic literature. The Commission, as noted by Martin Wulff II, could not reach final decision regarding the small change (see 1.2).

Table 3.7.2 Second reform project of the 1616 Warsaw Commission⁵²¹

Denomination	Fineness (lot)	Weight (number of coins in weight mark)
Groschen (dreipölker)	7 ½	128
'Einfache' groschen	5 1/8	137
½-groschen	4	222
Schilling	2 3/16	213

According to David Braun, the main source regarding the results of the 1616 Warsaw Commission, following minting standards had been implemented with the king's confirmation. The table below shows that completely different coin values had been resettled with thaler price officially rising to 45 groschen. There is a general agreement within the Polish and Lithuanian scientific communities about these minting standards.⁵²² The main feature of this monetary system reform was the official introduction of ortstaler and dreipölker, whose coinage previously had been limited only to a few mints. Whereas smaller units, such as groschen, half-groschen, and schillings, obviously devaluated in respect of the rising thaler price.

⁵¹⁹ Ibidem, fol. 110r.

⁵²⁰ Ibidem, fol. 110v.

⁵²¹ Based on: LVVA 673-1-1283, fol. 110r.

⁵²² Grimalauskaitė and Remecas, *Money in Lithuania*, 199; Żabiński, *Systemy pieniężne*, 112; Mikołajczyk, *Einführung*, 64.

Table 3.7.3 Third reform project of the 1616 Warsaw Commission⁵²³

Denomination	Fineness (lot)	Weight (number of coins in weight mark)
10-groschen (ort)	13	31 4/10
6-groschen	13	52 ½
3-groschen	13	105

The general opinion about the Warsaw Commission results maintains that no actual changes took place in the schilling coinage quality. However, based on the notes of the Riga mint warden Hans Goldenstedt, Riga did introduce minor changes. In just two weeks after the closing of the Commission, on 3 November, Riga launched the minting of schillings from 2 lot 3 pfennig silver alloy⁵²⁴ as prescribed in the second reform proposal. It was augmented with the necessity to follow the schilling minting standards of Vilnius schilling production.⁵²⁵

3.8 The 1616–1617 and 1620 dreipölkers of Riga

Dreipölkers pose a great terminological and historiographical challenge, when it comes to the Polish Riga numismatics. The extent of the problem has been revealed only recently during the intensive studies of Riga mint sources. More casually than *dreypölkter*, in written sources this coin is termed *dreykreutzer* – from the analogy of a popular Holy Roman Empire coin of the same name, *ferding* – from the similar value with former Livonian *ferdings* and more frequently, by *groschen*. While the first terms give more or less unmistakable apprehension of the discussed denomination, the latter term is a major source of confusion, since, as it has been shown previously (see 3.1), it was a general designation of groschen family coins (½-groschen, 3-groschen, 6-groschen). The Warsaw Commission 1616 records even designates ‘single groschen’ type (*ein-fache groschen*) as a means to distinguish it from the new groschen, i.e. dreipölkers (Table 3.7.2). By way of studying local archival accounts, this section reconsiders the chronology of dreipölkter coinage in Riga and its relations to schillings.

The history of dreipölkter coinage in the Commonwealth dates back to 1614 when the Bydgoszcz mint issued the first coins of the new denominations and

⁵²³ Based on: Braun, *Ausführlich-Historischer Bericht*, 75. See also Table 1.2.2.

⁵²⁴ “Vonn Anno 1615 denn 4 February bis auff dieser Zeitt Anno 1618 denn 22 Aprili. Wie es sich zwischen der Zeitt mit die Muntze verhalten hatt”, n.d.: LVVA 673-1-1280, fol. 37r; Copy of the same source in Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 64r.

⁵²⁵ “Ao 616. Denn Nouemb. Durch befehl E.E. Raths weiln man muntzet in der wilda – 2 lott 3 pfenning, vnnd vnser schilling Ihnen solten gleich werden gehalten, so soll man ihnen gleich auch Muntzen, da man hatt gemuntzet gemuntzett 2 lott 1 q 1 d so soll man auch Muntzen 2 lott 0 q 3 d.” Ibidem, LVVA 673-1-1280, fol. 37r.

Cracow mint, which followed suit later that year. The usual explanation for their introduction is sought in the context of the massive intrusion of the so-called *Apfelgroschen* or dreipölkers in Polish territories, primarily from the Drezdenko (Ger. Driesen) mint, whose coinage was actively protested by the Polish authorities since their appearance in 1612.⁵²⁶ The main feature of 1/24 thaler was the coat of arms of Brandenburg on the obverse and royal orb with the number 24 inscribed on the reverse. According to the Imperial minting ordinance of Augsburg (1551), Reichsguldiner or thaler was divided in 24 groschen equal to 72 kreuzers in current money. Hence, based on their exchange rate 1/24 thalers were often marked with an additional number '3' and at the same time became denominated as groschen. The introduction of dreipölkers into the Commonwealth monetary system followed a simple principle, which was based on the historically determined exchange rate of 1 Polish groschen to 2 German kreuzer. Thus, 3-kreuzers were automatically calculated in 1.5 Polish groschen or poltorak, which is the Polish term of the same meaning – one-and-half. By looking at Bydgoszcz and Cracow mint production, one can note how eagerly both mints replicated the same visual attributes of dreipölkers or 3-kreuzers to enhance their circulation.

Based on the pure silver weight of groschen, 0.571 g of silver a piece, dreipölkler was supposed to hold as much as 0.85 g of pure silver. However, the test results of Bydgoszcz issues by mintmaster Conrad Bremer (1614–1616?), who was responsible for the coinage of the first dreipölkers in the Kingdom of Poland⁵²⁷ showed a significant offset in quality standards. The Warsaw Commission tests of 1616 issues indicated a minting standard of 7 lot 1 q 2 d with 130.5 pieces in weight mark.⁵²⁸ It means that dreipölkler contained merely 0.71 g of silver. The following issues from 1615 had been tested on the same day, 7 October, providing a slightly improved impression of their quality (0.724 g silver) – 130.5 pieces in weight mark and 7 lot 2 q silver alloy. There was yet another type of 1616 dreipölklers of 7 lot 2 q fineness and 127.5 pieces in weight mark, which had been signed with the coat of arms of the Crown treasurer Mikołaj Daniłowicz.⁵²⁹ Generally, their coinage quality didn't raise any objections.

Additionally, 1615 and 1616 Cracow issues were tested yielding almost identical results – 7 lot 2 q 2 d in fineness and 120 pieces from weight mark.⁵³⁰ There were no significant differences between early Cracow and Bydgoszcz issues.

⁵²⁶ Paszkiewicz, "Podobna jest moneta," 100.

⁵²⁷ Graf Colonna-Walewski, "Beiträge zur Geschichte der polnischen Münzstätten 1558–1624," *Zeitschrift für Numismatik* 12 (1885): 234.; After the reopening in 1607, Bromberg mint become the most prolific and inventive mint in the Commonwealth, and the actual monopolist in the Polish Kingdom monetary market.

⁵²⁸ Warsaw Commission's decisions, 17.10.1616: LVVA 673-1-1283, fol. 106r.

⁵²⁹ *Ibidem*, fol. 107r; 110r.

⁵³⁰ *Ibidem*, fol. 106v.

Based on these figures, gross weight of dreipölder averaged 1.6 grams, which corresponds to 1.6–1.7 g given by Polish numismatist Kopicki for the early issues.⁵³¹ The main indicator of the coin, pure silver content, was fluctuating between 0.71 and 0.75 grams. For instance, one 3-groschen contained 1.68 g fine silver and three groschen – 1.71 g, whereas 2 dreipölder (= 3-groschen) contained – 1.44 grams of pure silver. Thus, dreipölder were not good for exchange with groschen or 3-groschen.

Dreipölder also fell behind the quality of imperial 3-kreuzers, which were equal to 8 lot silver alloy and 121.5 pieces in weight mark.⁵³² This indicated a distinctive advantage over the Imperial equivalents in exchange. Hence, dreipölder was a typical inflation money. Moreover, dreipölder quality was constantly declining. By 1619 fineness of Bydgoszcz issues reached 6.5 lot, meaning that silver content had decreased to 0.49 g of pure silver per piece.⁵³³ For the 1620 issues the Riga mint master Martin Wulff II registered the fineness of 6 lot 3 q 2 d and 160 pieces in weight mark, indicating a slightly enhanced quality, which was later corrected to 164–165 pieces in weight mark (0.55–0.52 g pure silver in the piece).⁵³⁴

The markedly lower fineness of Bydgoszcz dreipölder over the analogous imperial issues and other domestic groschen coins, allowed their emissions to reach “enormous”⁵³⁵ levels and to be out of competition. Only the introduction of most rigid measures would save mints from heavy losses. Gumowski provides a case of Bydgoszcz silver agents, who arrived in Vilnius making easy money from exchanging dreipölder with freshly issued Vilnius groschen. After seeing heavy losses, the mint was forced to interrupt its operation.⁵³⁶

It is impossible to assess the amount of these financially attractive, but monetary stability-threatening coins reaching Riga and the Duchy of Livonia. Unlike the Vilnius mint, Riga did not seem to have closed its doors to these coins. On the contrary, it embraced their appearance by issuing their own 1616–1617 *groschen* as well from 28 February 1618, though irregularly, starting their recoinage in production of schillings.⁵³⁷

With few noticeable exceptions, in Latvian numismatics, Riga dreipölder have not attracted much attention. Anton Buchholtz (1848–1901) attributed only 1620 issues as dreipölder. But he noted close similarities of these coins with 1616 and 1617 groschen.⁵³⁸ Decades later Latvian numismatist Rasma

⁵³¹ Kopicky, *Monety Zygmunta III Wazy*, 68-71.

⁵³² *Cracow valuation*, n.d.: LVVA 673-1-1283, fol. 93r.

⁵³³ Gumowski, *Mennica Wilenska*, 137.

⁵³⁴ Ibergelhen Iberschlag von der Muntz, 11.07.1621: LVVA 673-1-1283, fol. 143r; Mikołajczyk gives even smaller weight of fine silver: 0.500 g per piece. Mikołajczyk, *Einführung*, 64.

⁵³⁵ Gumowski, *Mennica Wileńska*, 134–36.

⁵³⁶ Gumowski, 135.

⁵³⁷ *Das Münzbuch*, 1615–1622: LVVA 673-1-1287, fol. 60r.

⁵³⁸ Tatjana Berga et al., *Dr. phil. Antona Buhholca Baltijas monētu un medaļu kolekcijas katalogs*” (*Dr. phil. Anton Buchholtz Sammlung baltischen Münzen und Medaillen von*

Ceplīte observed similarities between the 1616 and 1620 issues in terms of size and visual appearance.⁵³⁹ In her study, Ceplīte neglected the 1617 issues. Perhaps it was done for the reason that these coins are extremely rare, enough to have second thoughts concerning their genuineness. Ceplīte noted that in written sources 1620 dreipölkers are also called “silver groschen”, however, she failed to explain that aspect.⁵⁴⁰ In the 2016 published coin catalogue of dreipölkers, Ukrainian authors without any further explanations placed the 1616 and 1617 Riga groschen next to the 1620 dreipölkers.⁵⁴¹ Gunnar Haljak remained faithful to the previous tradition and attributed only the 1620 issues to dreipölkers.⁵⁴²

The metrology and chronology of the Riga dreipölkler mintage has not been covered sufficiently. Unlike the other issues of the period, Riga mint officials have left practically no evidence to rely on. The fineness of the 1616–1617 Riga issues can be established indirectly from the ratio between the gross weight of produced coins and the weight of fine silver, which is 7.5 lot silver alloy (46%).⁵⁴³ This ratio can be observed throughout the records of the mint book of Riga 1615–1622. Though weight is not stated anywhere, it could not possibly differ much from Cracow and Bydgoszcz issues, whose weight fluctuated between 122–130 pieces. It allows suggesting that these coins could be modelled after the early Bydgoszcz or Cracow dreipölkers. The standard of 1620 dreipölkers was lowered to 7 lot silver fineness and 158 pieces in weight mark.⁵⁴⁴ Even though there was a noticeable decline in their quality, the Riga dreipölkers were more valuable than the same year issues of Bydgoszcz mint but significantly worse than 1619 Vilnius dreipölkers.⁵⁴⁵

On the visual side, 1616–1617 Riga dreipölkers did not bear identical resemblance with Polish dreipölkers, rather indicating the dual character of this coin. The obverse features the royal orb with the number 24 inscribed on it and legend, which reads as follows: “GROSS ARGE CIV RIG”; here GROSS stands for abridged GROSSVS, Latinised version for groschen. The 1620 issues replicate Polish dreipölkers in every measure, also the legend MONE NOVA CIVI RIGE has clear parallels with other Polish dreipölkler legends. Notwithstanding the visual particularism of 1616–1617 and 1620 issues, in the

Heinrich Johumsen”) (Rīga: Rīgas vēstures un kuģniecības muzejs, 2011), 132., Nr. 2973–2979.

⁵³⁹ Ceplite, “Numismātika,” 135.

⁵⁴⁰ Ceplite, 137.

⁵⁴¹ V.V. Nechitajlo and E.I. Zamehovskij, *Katalog monet XVII st. 1/24 talera karbovanih u Rech Pospolitej i na povjazanix iz neju teritorijah* (Kyiv: Huss, 2016), 108–10.

⁵⁴² Haljak, *Livonian Coins XIII–XVIII Century. Part II*, 96.

⁵⁴³ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 15r, 16r, 17r, 18r, 19r, 20r, 21r, 23r, 39v.

⁵⁴⁴ Ceplite, “Numismātika,” 137.; Ibergelhen Iberschlag von der Muntz, 11.07.1621: LVVA 673-1-1283, fol. 143r.

⁵⁴⁵ According to M. Gumowski, Vilnius dreipölkers were minted of 7.5 lot silver and 128 pieces in weight mark. Gumowski, *Mennica Wilenska*, 137.

Riga mint book all of these coins come under a common designation “*Silber groschen*”.

How to explain the coinage of 1616 and 1617 dreipölkers? The coinage of 1616 issues possibly is best explained within the context of their timing. According to the Riga mint book, the 1616 ‘groschen’ coinage started on 25 August and lasted until 22 October.⁵⁴⁶ In total, 2.796 M 7 lot 3 q (0.564 t) were processed. In this period, dreipölkers were minted for one day each week. Looking at these dates, they are very close to the period (7–17 October 1616) of the Warsaw Commission, which was attended by mint master Martin Wulff II in person. The exact time of his departure and arrival is unknown, but there is a high possibility that coins were minted during his absence, most probably under the surveillance of the warden. This might help to explain not only the design specifics of these coins but the fact that they were not tested during the coin trials in Warsaw. In the next year, dreipölkers were minted only on 31 May, which also explains why the design pattern, no matter how inaccurate it may be, was not changed. 426 M 9 lot (0.086 t) of pure silver were produced in dreipölkers using the 1616 die pairs, only having changed the date. The motivation for these coinages remains unclear, but judging by the output figures, they were made for local market needs (see 3.10–3.11). At the same time, 1616–1617 issues hypothetically represent a case of the uncoordinated coinage of dreipölkers. The rather dubious coinage of 1620 dreipölkers, as will be shown in chapter 3.11, gives some credence of such a case.

3.9 Problems with hard currency

On 27 February 1617, Sweden signed the Peace Treaty of Stolbovo, ending the Ingrian War with Muscovy (1610–1617). The war had been a military disaster for Sweden, which lost much of the occupied territories. Still, the Muscovites renounced all claims to Estonia and Polish Livonia and handed over the provinces of Muscovite borderland (Kexholm, Ingria, and Karelia) around the Gulf of Finland.⁵⁴⁷ The Poles had been more successful during the Time of Troubles (1598–1613).⁵⁴⁸ In the Truce of Deulino (11 December 1618), Poland acquired Smolensk, Chernihiv, and Novhorod-Siverskyi – territories around the rich River Dnieper and Desna basins. At that moment, Riga was one of the beneficiaries as these territories came under the direct control of Riga merchants.

⁵⁴⁶ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 15r, 16r, 17r, 18r, 19r, 20r, 21r, 23r, 39v.

⁵⁴⁷ Attman, *Baltic Markets*, 199.

⁵⁴⁸ Poles had open warfare in Muscovy and had a Polish backed False Dimitry installed on the throne. The Polish occupation of Moscow lasted from 1610 to 1612, when the national uprising started and ended with the election of the new tsar Michael Romanov (r. 1613–1645). The Muscovite-Swedish alliance (1609–1610) feared a decisive loss in the battle at Klushino on 24 June 1610.

The Treaty of Stolbovo emboldened Sweden's territorial ambitions over the Duchy of Livonia. In June 1617, Swedish warships entered the Gulf of Riga and stormed the military fortress of Daugavgrīva (Ger. Dünamünde), which controlled the passage to Riga. Riga was blockaded from the sea but being short of sufficient land forces, further Swedish advances were stalled. In September a truce was signed with the Commonwealth, which was valid until November 1620.

The truce offered a brief, but not necessarily untroubled respite for the city and its economy. On 18 April 1617, Sigismund III issued a universal to the local municipal authorities (*starosten*⁵⁴⁹, voivodes and judges) addressing the looming problem of debasement of the coinage.⁵⁵⁰ The monarch identified the driving force of debasement in the inflation of precious metals triggered by the "avarice of private persons".⁵⁵¹ There were practically no measures left to keep the value of coins without burdening merchandise and causing damage to merchants except for taxing these coins according to their values: 1 Hungarian florin – 75 groschen, thaler – 45 groschen, and Spanish real – 44 groschen.⁵⁵² The monarch restated that the offenders of the law would be punished following the Piotrków statutes (1496), that is, a fine of 30 Hungarian florins and loss of the exchanged sum for the benefit of the treasury.⁵⁵³

On 8 December 1618 Sigismund III issued another universal.⁵⁵⁴ New measures had to be implemented to fight unorderly exchange of coins, which was a cause of increasing silver and gold prices and "immeasurable harm to common well-being"⁵⁵⁵. It was decided to reinstate the previous years' mandates, ordinances and universals dealing with the currency. The monarch strictly prohibited the overvaluation of thalers and Spanish reals. It was forbidden to exchange Hungarian florins or ducats of appropriate quality above 77 groschen per piece. Anyone trespassing the exchange rates would be fined 4000 guildens.⁵⁵⁶

The universal paid special attention to the recently arriving Dutch gulden thalers. His majesty emphasised the fact that these coins were in an improper ratio to the silver price (i.e. overvalued) and could be evaluated at 22 groschen

⁵⁴⁹ *Starosten* or *starosta* can have two meanings. The first, a governor (of fiscal and judicial abilities) of a royal district and the second, a tenant of a royal domain.

⁵⁵⁰ Konigliche Muntz Edict, 18.04.1617.: LVVA 673-1-1283, fol. 120r-121v, 124r-124v (a copy in German); LVVA 673-1-1283, fol. 122r-124v (in Polish).

⁵⁵¹ It was a symptomatic rhetoric used all around Europe in times of monetary troubles.

⁵⁵² *Ibidem*, fol. 121v.

⁵⁵³ *Ibidem*.

⁵⁵⁴ Universall wegen der Müntze, 08.12.1618.: LVVA 673-1-1283, fol. 128r-v (original, in Polish); *Ibidem*, 126r-v, 130r (copy, in German); *Ibidem*, fol. 127r-v, 129r-v (copy, in German).

⁵⁵⁵ *Ibidem*, fol. 126r.

⁵⁵⁶ Noblemen and peasants were prosecuted differently: "[...] dehnen so Ritterstandes sein *forum* auff in *Tribunal inter causas Fisci iux constitōem et moneta factam*, dehnen aber so *plebeis conditionis* sein *post curiam ad instantiam Instigatoris ex delatione cuius ius assigniren*." *Ibidem*, fol. 126v.

or 23 groschen at the most. These coins according to anonymous reports had been minted mostly in the Low Countries: Zealand and Friesland, as well as in the cities of Zwoll, Kampen, Deventer, Bremen and the mints of the duchy of “Kenertz vnd Bullion”⁵⁵⁷, purposefully for payments in Commonwealth territories.⁵⁵⁸ Large quantities of these coins reached the Commonwealth through the port towns, where merchants, factors, and ship owners purchased grain from the great land owners (magnates).⁵⁵⁹ His majesty ordered the great landlords to exchange these coins for no more than 24 groschen. Otherwise, the import and exchange with these coins would be treated as a criminal act, and punished with the loss of property and death sentence.”⁵⁶⁰

In addition, local municipalities were forbidden to accept or import all sorts of low-quality coinage from neighbouring mints and ports. The king specifically forbade any transactions with 6-groschen, 5-groschen,⁵⁶¹ and schillings.⁵⁶² While the Pomeranian dreipölkers, which had been introduced in the Commonwealth territories, had to be exchanged for 1 groschen henceforth. Anyone participating in their import or exchange above the stated value was subjected to the punishment of the loss of property and the death sentence. At the end of the text, the monarch reiterated the need to follow the mandate obediently to overcome the noticeable hardship of the common good.⁵⁶³

It is no coincidence that unlike the earlier emphasis on the rising price of precious metals and debasement of small change, the monarch was now preoccupied with the decreasing quality of large denominations. The large-scale trade of grain, (the so-called *Vistula Trade*), was the main artery of precious metals. In the years around 1618–1619, this trade was flourishing better than in almost two decades.⁵⁶⁴ In 1618 grain export measured 220 000 metric tonnes.⁵⁶⁵ The extreme rise in trading activity not only brought lots of hard currency to the treasury but also bore the risks of exchange values at uneven levels. The above-mentioned universals, as well as several other documents found in the Riga mint

⁵⁵⁷ The Duchy of Bouillon and probably the episcopal Duchy of Cambrai. I am most thankful to prof. Borys Paszkiewicz for this attribution of mints.

⁵⁵⁸ Ibidem, fol. 126v.

⁵⁵⁹ Magnates or the great landowners, of course, were not the only category of local grain producers, who engaged in the Vistula trade. But apart from the lesser aristocracy, minor nobility, peasants and tenant farmers, their share was significantly higher and they “could produce a large and regular surplus, even in bad conditions or under poor management.” Norman Davies, *God’s Playground: A History of Poland. Vol. I The Origins to 1795*, Revised, vol. 1 (New York: Columbia University Press, 2005), 201.

⁵⁶⁰ Ibidem, fol. 130r.

⁵⁶¹ Unclear denomination.

⁵⁶² Ibidem, fol. 130r.

⁵⁶³ Ibidem, fol. 130v.

⁵⁶⁴ Davies, *God’s Playground*, 1:221.

⁵⁶⁵ R. W. Unger, “Integration of Baltic and Low Countries Grain Markets, 1400–1800,” in *The Interactions of Amsterdam and Antwerp with the Baltic Region, 1400–1800: De Nederlanden En Het Oostzeegebied, 1400–1800*, ed. W. J. Wieringa, Werken (Dordrecht: Springer Netherlands, 1983), 1.

archives,⁵⁶⁶ were dedicated primarily to the same problem – the uneven quality of imported hard currency and small change. Sigismund III and his advisors took the necessity to educate his subjects seriously to heart since the treasury was suffering no small losses due to the phenomenon, which could be termed as ‘monetary illiteracy’ or having little expertise or knowledge of the current values of monetary units. This, of course, required extensive and intensive work of explanation within every strata of society.

As testified by the Riga mint archive sources and various coin finds of the period, Spanish reals and thalers of the Holy Roman Empire and the Dutch Republic were extensively circulating coins in the domestic market.⁵⁶⁷ On 21 June 1617, Sigismund III addressed a letter to the Riga City Council, in which he stated that: “We have found that from Holland, Germany, and elsewhere, a large number of 6-groschen and lots of other foreign sorts are imported into our city of Riga”⁵⁶⁸. Therefore, it is possible to suggest that to a certain degree Riga was exposed to the influx of the same problematic western European coins as the rest of the Commonwealth.

In addition, the mint book of 1615–1622 gives evidence of the ever-growing price of hard currency. The Riga mint offered the exchange rates agreed by the Riga City Council. Nevertheless, burghers often showed little respect for that since they “did not want to buy reals for the given price and [required] that the mint master pays x price” – the formulation which regularly repeats in the Riga mint book records.⁵⁶⁹ The mint master was in no position to dictate the rules for merchants who could find customers for precious metals among citizens and trading partners in the east. Thus, now and then, in the mint book (1615–1622) one can read of another re-evaluation of reals. This, of course, was done in agreement with the Riga City Council. However, sooner or later inflation was hurting every member of the society. In his letter to the burgrave and the city councillors (24 April 1619) mint master, M. Wulff II mentioned the rising exchange rates on a daily basis and discontent among merchants, because the good money of the city was returned at an extra price.⁵⁷⁰ To overcome such

⁵⁶⁶ Regium Mandatu rei moneta exotica non admitten, 21.06.1617: LVVA 673-1-1283, fol. 125r (in Latin); King Sigismund III to Riga burgrave, 11.12.1618: LVVA 673-1-1283, fol. 132r (in Latin); Ibidem, fol. 131 (copy of the same document); King Sigismund III to the Riga City Council, 12.03.1620: LVVA 673-1-1283, fol. 135r (in Latin); King Sigismund III to the Riga City Council and burgrave, 23.05.1620: LVVA 673-1-1283, fol. 137r (in Latin); Ibidem, fol. 138r (copy of the same source); the Riga City Council to Nicolai Danielewicz, treasurer of Crown Poland, 24.05.1620: LVVA 673-1-1283, fol. 140r (in Latin); Ibidem, fol. 142r (copy of the same document).

⁵⁶⁷ Ducmane and Ozoliņa, *Monētu depoziiti*, 129–44.

⁵⁶⁸ “Compertiem habemus ex Hollandia Germania, alisq[ue] locis externis magnam sesquigrossorum, aliarumq[ue] sortium minutionem exoticarum copiam in Ciuitatem n[ost]ram Rigen importari [...]” My translation. Regium Mandatu rei moneta exotica non admitten, 21.06.1617: LVVA 673-1-1283, fol. 125r.

⁵⁶⁹ Das Münzbuch, 1615–1622: LVVA 673-1-1287.

⁵⁷⁰ “[...] der Wexell von tagen tu tagen Hoher steigt, Auch große vnordnung dadurch zwischen den Kauffleiten ein rißen thutt, wordurch den die besten Gelds der Muntze undt

‘evil’ (*Unheyll*) the mint master offered to reinstate values for certain hard coins in compliance with his majesty’s will.⁵⁷¹

As usual, the mint dealt with the constantly rising silver prices by debasement of the currency. In Riga, this was most visible in the case of schillings, as the other coins were minted irregularly. The debasement was not always transparent, however, starting from the end of 1616 in the mint documents one can notice references to the necessity to mint the Riga coins closely observing coinage quality in Vilnius: “On 13 January 1617, following the coinage quality in Vilnius at 2 lot 0 q 3 d fineness the City Council [of Riga] requests that coins should be minted of 2 lot 1 q 0 d fine silver so that our (schillings) are better by 1 d.”⁵⁷² This formula was brought up whenever addressing the need for debasement. The City Council had set the bottom line for the standard of the coinage, which can probably be seen as the immediate result of the Commission of Warsaw (1616).

Despite the heavy burden of ever-growing hard currency price, the Riga mint was not pushed into debt, on the contrary – minting was regular and the mint master and the Riga City Council showed constant flexibility in adjusting to the challenges of the day. In terms of schilling outputs and income from Schlag-schatz, the final seven-year period in the mint history of Riga was extremely vibrant and prosperous.

3.10 Minting of 1620–1621 schillings

In the final year of Polish rule, the Riga schillings had become an object of heated discussions. In a letter dated 1 July 1620, which was written in preparations for the court discussions about the Riga coinage, both mint lords Nicolaus Ecke and Berent Dolman instructed councillor Thomas Ramme about the current state of affairs of the mint. They wrote that due to the silver price increase, which had reached 57 and 56 groschen for thalers and Spanish reals respectively, the mint master was not able to carry on with schilling mintage. The mint master could not sustain rising expenses and he did not have any

dieser Stahtt zu trefflichen schaden verkehret warden [...]” H. Wulff to the Riga City Council, 24.04.1619: LVVA 673-1-1283, fol. 134r.

⁵⁷¹ “Rixthaller In der Bezahlung a –	49 g[roschen] stuck
Reiall In der Bezahlung –	48 g stuck
Printzenthaller In der BeZahl[ung]–	51 g stuck
Schwedische thaller In der Bezahl –	31 g stuck
Sehlandische thall[er] –	27 g stuck
Dewenter, Campen vndt shwol[le] –	25 g stuck
Dansker orter In der Bezah[lung] –	10 ½ g[roschen] st[uck]
Densche orter a –	10 g[groschen] stuck”
Ibidem.	

⁵⁷² “A[nn]o 1617 den 13 Januari durch befelig E E Rahtt weil In der Wilda warden geMuntz inß fein 2 lot 0q 3d so sol Mahn hir Muntzen Inß fein 2 lot 1 q 0 d daß die vnser 1 Pfennig besser seind.” Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 64r.

dreipölker to remind.⁵⁷³ Before moving forward with his argumentation and the proposed solution, it is necessary to broadly outline the context of the said problems.

Early signs of the approaching bullion crisis could be traced back to at least late 1619. There is an increase in the purchasing price recorded in the mint books as of 6 November. It was the first inscription in a series referring to the MP increase due to the citizens' reluctance to bring Spanish reals at the stated price.⁵⁷⁴ By 25 March 1620, the stream of affordable Spanish reals had dried up.⁵⁷⁵ For four consecutive weeks until 22 April,⁵⁷⁶ no coins had been produced at the mint. The standstill was terminated with an astonishing output of dreipölker coinage in the following five weeks.⁵⁷⁷ 1.163 tonnes of silver (Spanish reals) were processed altogether (Fig. 4.2.2). Obviously, at this stage the price of silver was not so much of an issue as the shortages of particular means of payment, which explains the extensive coinage of dreipölker.

At the background of such circumstances, mint lords gave new instructions. The Riga City Council had realised the potential of minting schillings after the Vilnius 2-pfennigs.⁵⁷⁸ According to the recent test results (10 May 1620⁵⁷⁹), Vilnius 2-pfennigs were minted from 2 lot 2 pfennig silver alloy and consisted of 348 pieces in weight mark. The Riga City Council permitted the output of 250 Riga schillings from weight mark, while maintaining identical silver alloy.⁵⁸⁰ And yet, in less than two months since the carrying out of these tests, Ecke had come to the knowledge that the situation in Vilnius coinage had become worse. According to the test results of 30 June, when three samples were taken of 2-pfennig, 362 and 363 pieces of these coins were minted in weight mark.⁵⁸¹ Meanwhile, silver price increased to 66 groschen per thaler and 62 ½ groschen for Spanish real.⁵⁸² The Riga City Council was forced to plea to his majesty and the treasurer for permission to mint schillings from 1 ½, 1 ¾, or

⁵⁷³ Mint lord Nicolaus Ecke and Berent Dolman to Thomas Ramm, 1.07.1620: LVVA 673-1-1369, fol. 42r.

⁵⁷⁴ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 109r.

⁵⁷⁵ *Ibidem*, fol. 119r.

⁵⁷⁶ *Ibidem*, fol. 121r.

⁵⁷⁷ Until 3 June 1620. *Ibidem*, fol. 123v.

⁵⁷⁸ LVVA 673-1-1369, fol. 42r.

⁵⁷⁹ Results of Vilnius 2-pfennig trials of 10.05.1620 and 30.06.1620, n.d: LVVA 673-1-1369, fol. 44r.

⁵⁸⁰ Nicolaus Ecke and Berent Dolman to Thomas Ramm, 1.07.1620: LVVA 673-1-1369, fol. 42r.

⁵⁸¹ LVVA 673-1-1369, fol. 44r.

⁵⁸² LVVA 673-1-1369, fol. 42r; Fineness of 2-pfennig is not given, but the fluctuations could be minimal, in the range of 2 lot 2 d to 2 lot 1 d, according to Martin Wulff's report to Riga council, 9.07.1621: LVVA 673-1-1283, fol. 143v. Two slightly different versions of this document survive – LVVA 673-1-1283, fol. 145r-v, 147r and LVVA 673-1-1283, fol. 146r-v. Martin Wulff's dispatch to Riga council, 23.07.1621: LVVA 673-1-1369, fol. 49r; Martin Wulff's dispatch to Riga council [Abridged version], 23.07.1621: LVVA 673-1-1369, fol. 54r.

2 lot silver alloy and 270 pieces in weight mark or to follow Vilnius mint and allow an exchange of thalers for 64–66 groschen. The Riga City Council expressed hope for the revision of the present order in the following Sejm session.

The aligning of schilling fineness to Lithuanian 2-pfennig followed simple calculations. One Polish groschen was exchanged for 3 Riga schillings or 4 Lithuanian 2-pfennigs. Expressed in silver content, this made 0.318 grams of silver in schillings against 0.304 grams of silver in 2-pfennigs. It was slightly cheaper to settle payments with Lithuanian 2-pfennigs than Riga schillings. Purchasing silver with 2-pfennigs was the cheapest investment in bullion and likewise helped to avoid the depletion of local monetary stocks.

In mint lords' opinion, decision-making at the court was hardly imaginable without money. To secure special rights for the municipality, they urged to prepare 10 to 30 portugals for the Crown treasurer and an additional 100–200 florins if not more for the most noble servant dealing with the mint. Should the quality of the Riga schillings be discussed and the fact of “lightening of hammer” (i.e. decreasing the weight of coins from 220 to 250 schillings in weight mark) come to the fore, the supplicants should answer that according to the mint master's report, the Riga City Council should produce even more schillings based on the necessity to follow the Lithuanian monetary standard.⁵⁸³ There was also anxiety regarding the possible reaction towards dreipölder coinage, which was produced without having obtained “special mandate”. Ecke and Dolman wrote that dreipölder were minted for no longer than three weeks before silver supplies ran out. They also recommended defending the Riga coinage by referring to the town's privileges. Riga did not need any additional ordinances, as their privileges justified following the crown's monetary standard anyway.⁵⁸⁴

Despite mint lords' pessimism about the current situation in the bullion market, the mint book entries indicate commencing of costly Spanish real recoinage in schillings just after the dreipölder coinage. The beginnings of the disputed Riga schilling coinage can be sought in this period. According to the earliest testimony – mint report of 9 July 1621, the coinage of Riga schillings from 2 lot 2 d silver proof and 260 pieces in weight mark commenced in June 1620 and continued to the very last day.⁵⁸⁵ A copy of the same report and identical date refers to “Ao. 620. Den 19 Augusti” as the starting point of their coinage.⁵⁸⁶ In a later source of 23 July 1621, M. Wulff recalls June as the

⁵⁸³ LVVA 673-1-1369, fol. 42v.

⁵⁸⁴ Ibidem.

⁵⁸⁵ Martin Wulff's report to the Riga City Council, 9.07.1621: LVVA 673-1-1283, fol. 143v; Martin Wulff's proposal to the City Council to increase schilling output to 278 7/64 in weight mark had not been accepted.

⁵⁸⁶ Martin Wulff's report to the Riga City Council, 9.07.1621: LVVA 673-1-1283, fol. 145v.

starting point.⁵⁸⁷ Another, fourth source, the mint book of Riga, registers the installment of the changed schilling output per weight mark (260 pieces) to 19 August 1620.⁵⁸⁸ Two different datings. How to explain this contradiction? It could not be a simple lack of consistency in record keeping, as the two dates are constantly repeated. Rather it could be associated with some monetary or income-related considerations.

At the request of the Riga City Council, on 25 November 1620, the mint for the first time began recoinage of dreipölkers, which indicated the arrival of large quantities of these coins in Riga mint.⁵⁸⁹ On the side marks of the mint book,⁵⁹⁰ one can read that the recoined dreipölkers contained 7 lot silver and 148 pieces in weight mark. The coins, as I am arguing in subchapter 5.5.1, mostly originated from the territories of modern Lithuania (and Poland). Local origin cannot be ruled out, since the minting standard largely corresponds with 1616 and 1617 dreipölkers.⁵⁹¹ The mint ran out of dreipölder reserves on 24 February 1621.

Dreipölder coins had become a rather significant alternative source of precious metal for one reason. Following the recent 1619 debasement, the average quality of dreipölder dropped to 0.500 g of pure silver.⁵⁹² Thus, one groschen was bought comparably cheaply in dreipölkers – for 0.333 g of pure silver,⁵⁹³ which was very close to 0.315 grams⁵⁹⁴ paid in schillings.

In early 1621 the mint could no longer acquire silver on the open market. One of the reasons accountable for the shortages of silver has been mentioned already – running out of dreipölkers. Aside from that, war was threatening Livonian shores as well. People started to conceal and save reserves for difficult times. It was the time that the Riga City Council opened the reserves and made the necessary steps to increase defensive capacities – commissioned training of militia, supplies with provisions, upgrading of walls and ramparts, etc.⁵⁹⁵ Only a minor part of its savings was made available to the mint. On 25 February, the Riga City Council launched reminting of the schillings, which were kept at the city treasury.⁵⁹⁶ These schillings had been minted from 2 lot 3 d silver alloy, containing 220 schillings in weight mark.⁵⁹⁷ With more or less confidence, one can trace the origin of these schillings to 1616. After running out of these so-called ‘heavy schillings’ (*Schwaren Schilligen*), on 17th March the mint resorted to dreipölder recoinage once more.⁵⁹⁸

⁵⁸⁷ Martin Wulff’s dispatch to the Riga City Council (Abridged version), 23.07.1621: LVVA 673-1-1369, fol. 54r

⁵⁸⁸ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 129v.

⁵⁸⁹ Ibidem, fol. 136v.

⁵⁹⁰ Ibidem, fol. 136v, 141r.

⁵⁹¹ Ibidem, fol. 39v.

⁵⁹² Mikołajczyk, *Einführung*, 64.

⁵⁹³ 0.500 g / 1.5 g = 0.333 g.

⁵⁹⁴ 3 x 0.105 g = 0.315 g.

⁵⁹⁵ LVVA 673-1-1285, fol. 34v; Straubergs, *Rīgas vēsture*, 374–75.

⁵⁹⁶ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 143r.

⁵⁹⁷ Ibidem, fol. 143r.

⁵⁹⁸ Muntze Rechnung von Ao 1620. Michaelis bis Ao 1621: LVVA 673-1-1285, fol. 32v.

Due to the prolonged shortages of silver and the problems to carry out the tasks of the mint according to the ordinance (*Nicht mehr Nach der Ordnung arbeiten konte*), the Riga City Council decided to ease the requirements for the mint master.⁵⁹⁹ On 31 March 1621, the Riga City Council signed a one-year rent contract with M. Wulff against the payment of 16 000 florins. The payment requirements had been considerably flexed since the mint master was to pay every quarter. During the previous 6 years (4 February 1615 – 31 March 1621) the fees were paid every week in the form of Schlagschatz.⁶⁰⁰ In addition, the mint master refused to pay the mint lords' yearly salary, which allowed a saving of an extra 300 Polish florins. However, the relative freedom to act more freely with the mint finances lasted only for a short while. The mint master managed to make only one quarterly payment and another for six weeks of work (until 12 August) before the arrival of the Swedish army at the estuary of the River Daugava on 1 August, which marked the end of an era in the minting history of Riga. Based on the terms reserved to him in the mint contract, the mint master terminated legal relations with the Riga City Council.⁶⁰¹

3.11 Case study Nr. 2: Charges against the mint master (1621)

As the last peaceful weeks at the mint passed away, the mint master was struck by the recent turn of events at the court. A royal citation, allegedly based on the testimonies of the treasury officers, was dispatched upon charges of counterfeiting the Riga schillings and dreipölkers, for which mint master Martin Wulff was held personally accountable.⁶⁰² Evidently, neither N. Ecke's efforts nor the Riga City Council's attempts to defend Riga's case at the royal court reached expected results. Upon request by the City Council, on 9 July Martin Wulff wrote a defence letter and additional report of the most recent coinages in Riga and the Commonwealth.⁶⁰³

M. Wulff denied any accusations, arguing that he had been installed in the city as the mint master (guarantor) of all the minted and un-minted silver in the city for which he had given the oath to follow every change in the Commonwealth mints faithfully as long as he held the position; coins had been checked by the warden and minted accordingly with the consent of the sworn mint lords. Regarding the 1620 dreipölkler coinage, the crucial moment was Riga's dis-

⁵⁹⁹ LVVA 673-1-1287, fol. 145r.

⁶⁰⁰ Dāboliņš, "Riga Mint in 1621," 121. (Table 3).

⁶⁰¹ "Ich aber 3 wochen zuvor Bihn hir gegangend, zum H Niclas Eken vnd H Berendt Dolman, vnd die Muntz Arendo aufgesaget laut den Contractt: auß Vrsachen weilm der Swede forhanden, und Ich Nicht Mehr Muntzen konte." *Das Münzbuch, 1615–1622*: LVVA 673-1-1287, fol. 146r.

⁶⁰² Citation letter, 9.06.1621: LVVA 673-1-1369, fol. 48 (Latin).

⁶⁰³ Martin Wulff's letter to the Riga City Council, 9.07.1621: LVVA 673-1-1369, fol. 34r-35r; Martin Wulff's report to the Riga City Council, 9.07.1621: LVVA 673-1-1283, fol. 143r-v, 148r; LVVA 673-1-1283, fol. 145r-v, 147r; LVVA 673-1-1283, fol. 146r-v.

covery about Bydgoszcz dreipölker being minted from a 6 lot 3 q silver proof and decrease of weight to 160 pieces in weight mark. Thus, following their example the Riga City Council ordered to issue Riga dreipölker from 7 lot silver alloy and 158 pieces in weight mark. Dreipölker had been minted for six weeks, from 22 April to 3 June, and the value of production (ME) was smaller than their Bydgoszcz counterparts – 18 fl 1 g 13 d against Bydgoszcz’s 18 fl 28 g 16 d.⁶⁰⁴ The same rules of action had been observed during the schillings’ coinage. After receiving the test results of Lithuanian 2-pfennigs (2 lot 1 pfennig silver alloy and 360 pieces in weight mark)⁶⁰⁵ the Riga City Council ordered to reduce schilling fineness accordingly.⁶⁰⁶ The Riga City Council declined mint master’s intention of establishing ME parity (i.e. “*Proportion*”) among Lithuanian 2-pfennigs and Riga schillings, wherefore the ME of Riga schillings reached merely 21 fl 22 g 3 d contrary to 23 fl 8 g 1 d of Lithuanian 2-pfennigs.⁶⁰⁷ The mint master argued that the Riga schillings and dreipölker were tested at every opportunity by the mint lords and the sworn warden. These coins could not be called or treated as counterfeits for the above-mentioned reasons and therefore M. Wulff requested to revoke the citation from his person.

On 23 July, the mint master produced another explication.⁶⁰⁸ Although the essence remained unchanged, still some new facts were brought to light. M. Wulff lamented being threatened with capital punishment and property loss because of the allegations of forgery of dreipölker and white schillings contrary to the mint order of the Commonwealth. M. Wulff maintained that “without a doubt, this *Citation* has ended up here at the impulse of envious people”.⁶⁰⁹ It was therefore his hope that the Riga City Council would release him from all the harm and threats that may befall him. The mint master also reminded the members about the outcome of the 1616 Warsaw Commission. Since thaler price had been raised to 46 groschen, it was proposed to mint dreipölker from 7 lot 2 q silver alloy with 130 pieces in weight mark, while schillings – from 2 lot 3 d silver alloy with 222 pieces in weight mark.

The Riga City Council ordered to produce its dreipölker under the pretext of promoting local commerce. However, the dearth of currency was so pronounced that none of the dreipölker would return to the mint, or circulate in the local monetary market (*Inmaßen kein einiger, der nach diesen fünf Wochen ge-*

⁶⁰⁴ LVVA 673-1-1369, fol. 34r.

⁶⁰⁵ These results are in slight contrast with previously noted figures, see 3.10.

⁶⁰⁶ “Hierauf ferner auf eines Erb: Hw: Raths befehlich einen Vberschlagk wegen der 2 pfenniger, wie man die Schillinge dem schrott vnd Korn nachmuntzen solte, gemacht” LVVA 673-1-1369, fol. 34v.

⁶⁰⁷ LVVA 673-1-1369, fol. 34v

⁶⁰⁸ Martin Wulff’s letter to the town council, 23.07.1621: LVVA 673-1-1369, fol. 49r-50v; few abridged versions of the letter: LVVA 673-1-1369, fol. 54r-v; LVVA 673-1-1369, fol. 55r-v.

⁶⁰⁹ “Diese Citation ist ohne allen zweiffel auß einraumen vnd angetrieb Mißgunstiger Leute Hergefloßen” – LVVA 673-1-1369, fol. 49r.

schlagen, zum vorschein zubringen sein wirdt).⁶¹⁰ The coinage of schillings was carried with the same intentions, with coins not worse than those of the Commonwealth, and even exceeding their quality. In the mint master's view, the citation was aimed at the latest schillings, which were minted closely following the minting standard of Lithuanian double pfennigs. However, despite the increased schilling output in weight mark, this did not establish "*Proportion*" with 2-pfennigs, which required lowering of schilling minting standard even more – to 2 lot 1 pfennig silver alloy with 278 7/64 piece in weight mark. One more aspect, which deserves special attention in his defence of the new coinage: if the mint did not produce any coins, nobody was willing to bring their coins in exchange. Due to the high silver price, the mint could not expect to sustain the costs of minting dreipölker and schilling other than by acquiring old silver.⁶¹¹

Here one can see that despite the attempts by the mint to encourage economic activity and intensify monetary transactions, the attempts were doomed. First, there was simply not enough of currency in the market, and secondly and most importantly, these attempts were hindered by the increasing silver market price.

Even though the coinage of 1620 dreipölker was futile, it allows to explain circumstance under which some of the latest groschen coins were produced. 1620 dreipölker issues, similarly to 1619 3-groschen, were characterised by one common feature – their production started after weeks of inactivity. Following delays in the mint from 1 to 15 May 1619,⁶¹² the Riga City Council ordered the minting of 3-groschen, which lasted from 15 May to 12 June.⁶¹³ This was repeated with producing dreipölker after weeks of inactivity in the mint in spring 1620. It seems that merchants on the one side, and the mint together with the Riga City Council on the other side, had come to a mutual agreement that silver would be delivered in exchange for the renewed coinage of groschen coins. The mint did not benefit much or anything at all from such arrangements, but at least it got the mint running, which appealed to the wider interests of the rich citizenry.

Here I shall offer some observations on the tactics of defendants and the problematic aspects of the Riga dreipölkers and schillings. M. Wulff's main point of defence was to remove personal responsibility and put it in the wider perspective of the Commonwealth monetary system. Riga had no exceptional privileges among other participants, and it was dealing within the confines of the law. The indecision of the 1616 Warsaw Commission had left room for local centres to mint at their free will (of course, that was only theoretical,

⁶¹⁰ Ibidem, fol. 49r.

⁶¹¹ "Die Mark feines Silber auch itzigen Werth nach, auf 20 fl anlaufft, Vnd wan man nicht Von alten Silber, daß auch bald ein ende nehmen würdt, muntzet, Die muntzkosten nicht erhalten, sondern die Muntzen gantz arrestiret vnd nidergelegt werden mußē." Martin Wulff to the town council, 23.07.1621: LVVA 673-1-1369, fol. 49v.

⁶¹² Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 95r-v.

⁶¹³ Ibidem, fol. 96r-97v.

provided that their quality was not lower than the official monetary standard or coinage quality in the Polish Kingdom and GDL). With the 1620 dreipöcker coinage Riga made no incentive to break away from the previous standard but only to follow in the footsteps of Bydgoszcz mint. The main motive to follow the trade of other mints was to promote local commerce.⁶¹⁴ Naturally, it could not be done without coins of exchange. In the coinage of schillings, the main importance was in establishing parity with Lithuanian schillings and later with 2-pfennigs. The problem, however, was not in the Riga City Council's or mint master's intentions but rather the neglect of the fact that the coinage and debasement of each coin had to be agreed upon by the king. Thus, by taking measures to limit monetary and economic shortages of the time, the mint master and the Riga City Council had unilaterally flexed the executive limits of the mint privilege. Lastly, the mint master renounced personal responsibility for the quality of coins, which had to be shared collectively among all participants – warden, mint lords, and the Riga City Council – involved in the minting. Unlike the 1597 accusations, which were finally lifted, the results of the 1621 citation remain unclear. Probably, the whole case was placed in stasis due to the arrival of war.

⁶¹⁴ Martin Wulff's dispatch to the Riga Council (Abridged version), 23.07.1621: LVVA 673-1-1369, fol. 54r.

Chapter 4. QUANTITATIVE MEASURES OF RIGA SCHILLINGS

In the 40 years of the Polish rule in Riga, schillings were minted for 37 years. In this indicator, the Riga mint could not be contested by any other mint in the Commonwealth. However, regularity was but one indicator of the success story of the Riga schillings. The topography of hoards and emissions, both examined on the basis of various coin find studies for over 60 years, have gained more importance in revealing their primacy. At the same time, surprisingly few attempts have been made to gain empirical evidence from the perspective of written sources. In this chapter, I shall perform systematic studies of documental sources and offer preliminary explanations of the quantitative results. Additionally, for the first time, this chapter maps schilling expansion based on the available inventories of hoards to compose a unified overview of the historical Commonwealth territories.

4.1 Emission rates of the Riga schillings (1598–1621)

Calculating yearly schilling output is primarily based on written records. The primary sources are Riga mint records – mint books, warden notes, calculations of Schlagschatz, etc., which are kept at the Latvian State Historical Archive. In the forthcoming paragraphs, I shall present the emission rates and discuss the main sources in the progressive line of their production and outline the basic principles of record keeping, which govern the possibilities of calculating issue rates.

The mint book of 1598–1603 is the earliest written source registering the Riga mint output.⁶¹⁵ The accounting was arranged uniformly, reporting on the period in which reminting of the incoming silver took place, the source and amount of extracted pure silver, and Schlagschatz. At the end of each page, the total amount of Schlagschatz is summed up. The book is not very specific, though it records gross weight of produced coins and processed amounts of fine silver.

Unlike other record keepers of the mint (mint master and warden), the mint lords reported the incoming silver sources. The following groups of silver dispatches were specified in mint book – Spanish reals (*reyalen, regalen*), thalers, mixture of various coins of low-value (*paiement*) and various old coinages. Another source specific is worth mentioning before proceeding with calculations. Accounting records were carried on a fiscal year basis. Unlike the calendar year, a fiscal year ended at the autumn equinox or Michaelmas (around 29 September), when the harvest festival was celebrated, taxes were levied, and accounts settled. From this divergence in the calendar tradition, making calcula-

⁶¹⁵ First publication of the source: Dāboliņš, “The Mint Book.”

tions for the solar calendar didn't seem right at first sight. The early calculation of the source was first based on these assumptions.⁶¹⁶ However, for practical reasons in the present study all calculations are applied to the commonly used solar calendar, as it permits further historical data comparisons.

Issue rates are calculated in the following manner: total amount of pure silver divided by average weight of pure silver in one schilling (0.204 g). The only changing variable was the amount of the reminted pure silver, while the quality of schillings was constant during these years, i.e. 2 lot 3 quentin 2 pfennig. The following table 4.1.1 displays output rate for 1598–1603, which reached 28.89 million. For this, 5.895 tonnes of pure silver had been used.

Table 4.1.1 Schilling output for 1598–1603

Emission year	Issue rate
1598 (30.09.–30.12.1598)	1 599 486
1599 (30.12.1598–29.12.1599)	6 245 429
1600 (29.12.1599–20.12.1600)	4 393 482
1601 (20.12.1600–31.12.1601)	7 183 422
1602 (9.01.–31.12.1602)	5 097 332
1603 (9.01.–1.10.1603)	4 378 730
Total	28 897 881 ⁶¹⁷

For 1604 and 1605 only incomplete emission rates can be reckoned based on the Schlagschatz figures registered in mint lord N. Ecke's accounts.⁶¹⁸ Schlagschatz or seigniorage calculations were drawn on a fiscal year basis for two consecutive periods: 1 October 1603 until 15 October, 1604 and 28 September 1604 until 28 September 1605. In the first period 4076 M 30 β had been collected,⁶¹⁹ while the latter period generated an income worth 2080 M 22 β.⁶²⁰ Unlike the previously studied mint source, these figures cannot be adjusted according to the solar calendar. Chronologically these figures cover the output

⁶¹⁶ Dāboliņš.

⁶¹⁷ The total issue rates differs from the previous calculations, which set the emission rate to: 29 442 390 pieces.

⁶¹⁸ The original N. Ecke's Schlagschatz accounts have not been preserved. These are copied figures. LVVA 8-4-62, fol. 84r.

⁶¹⁹ 300 marks were paid in the salary to the warden Lambert Goldenstedt.

⁶²⁰ Again, 300 marks had been deducted from the initial income in the yearly warden's salary.

of the mint over three years: final three months in 1603, probably all of 1604 and 9 months' output in 1605. In 1604 and 1605 only schillings were minted in Riga, however, from decreased fineness, 0.181 g silver in 1 coin. The equation of final calculations introduces the value of Schlagschatz, a constant sum of current money paid for each fine silver mark struck. At this time, it constituted ½-mark or 3 groschen.⁶²¹ Final calculations:

Year **1604**: $4076 \text{ M} / 0.5 \text{ (Schlagschatz)} \times 201.8 \text{ g} = 1\,645\,073 \text{ g}$; $1\,645\,073 \text{ g} / 0.181 \text{ g} = 9\,088\,804 \text{ schillings}$.

Year **1605**: $2080 \text{ M} / 0.5 \times 201.8 \text{ g} = 839\,488 \text{ g} / 0.181 \text{ g} = 4\,638\,055 \text{ schillings}$.

Calculations for 1606 are composed of two different sources. First, the mint lord Johan Schoman's⁶²² Schlagschatz accounts from 25 January to 4 October 1606 – 1826.83 M.⁶²³ For the rest of the year, I count on Schlagschatz calculations (11 October 1606 to 10 October 1607) compiled by the late mint lord Johann Schomann's heirs.⁶²⁴ In the period until 31 December, additional 1027.41 marks were charged. Thus, Schlagschatz income in 1606 extended to 2854.25 account marks. Before making final accounts, the fineness of schillings should be considered. In this year or perhaps in 1605, schillings had been debased to 2 lot 3 q 1 d silver alloy with 200 pieces in weight mark. An average schilling contained 0.177 grams of silver. Assuming technological advancement and the quality of the work at that time, it is questionable if such precision was ever achieved. As long as the principle of *al marco* had to be observed, accuracy was not the most relevant aspect of the production process; to make up for the lower quality issues, heavier coins could be minted. Still, most of the numismatic literature observes the fineness to the third figure behind the comma, e.g. 0.177 g.

Year **1606**: $2854.25 \text{ M} / 0.5 \times 201.8 \text{ g} = 1\,151\,975 \text{ g} / 0.177 \text{ g} = 6\,508\,335 \text{ schillings}$.

The upcoming four emission years are well provided with written sources. In the first place comes the late Johan Schomann's register. The following years, until 29 October 1610, are covered parallelly in two sources, mint lord Frantz

⁶²¹ From Goldenstedt's notes one can deduce that one mark (account unit) was paid for every second reminted schilling mark. Lambert Goldenstedt notes, 1607–1610: LVVA 673-1-1286, fol. 5-6.

⁶²² Johan Schomann (Schumann) was the senior of the Great Guild of Riga in 1590, 1594 and 1598; he died in 23 June, 1606. Böthführ, *Die Rigische Rathslinie*, 162.

⁶²³ J. Schoman's Schlagschatz accounts, 25.01.–4.10.1606: LVVA 673-1-1285, fol. 5-6.

⁶²⁴ Late Johan Schomann's Schlagschatz accounts, 11.10.1606–10.10.1607: LVVA 673-1-1285, fol. 7r-9r. In addition to these calculations of Schlagschatz we find some of the mint expenses – salary payment to the warden and purchases of wood. The mint was indebted to Schomann's heirs for 5103 marks 30 schillings.

Nyenstedt's Schlagschatz accounts⁶²⁵ and the notes by mint warden Lambert Goldenstedt.⁶²⁶ The presence of both sources is an invaluable testimony to the process of record keeping at the Riga City Council and the mint. It should be noted that mint books were essentially based on the delivered warden notes.⁶²⁷ However, both sources were different in their character, since only selected information was copied to the mint book.⁶²⁸ Whereas warden registered amount of received silver, coined silver weight, Schlagschatz and salary, mint lord Nyenstede only kept records of Schlagschatz. Again, it is clear, where the interest of the Riga City Council lay.⁶²⁹ For the yearly issue rates calculations, I can proceed as before. In 1607–1609 schilling quality was constant. At some point in 1610, the fineness declined from 2 lot 3 q 1 d to 2 lot 3 q. Expressed in silver content, the change was minimal, from 0.177 grams to 0.173 grams. Using the same sequences of calculations, following yearly figures can be acquired.

Table 4.1.2 Schilling emissions in 1607–1610

Emission year	Issue rate
1607 (10.01.–28.12.1607)	7 708 050
1608 (9.01.–3.06.1608)	1 043 119
1609 (4.02.–30.12.1609)	10 269 332
1610 (13.01.–29.09.1610)	7 664 787
Total	26 685 460

For the following years, there are two variables to rely on: the annual production of schillings (in weight marks) and the fineness of schillings. In **1611**, 54 202 weight marks with schillings had been produced.⁶³⁰ Schilling quality was increased temporarily to 2 lot 3 q 2 d or 0.181 grams of silver per piece.⁶³¹ In this case, I can calculate the output in several different ways. I will use this:

⁶²⁵ Frantz Nyenstedt's Schlagschatz accounts, 1607–1610: LVVA 673-1-1285, fol. 10r-13r.

⁶²⁶ L. Goldenstedt notes, 1607–1610: LVVA 673-1-1286.

⁶²⁷ Dāboliņš, "The Mint Book," 91.

⁶²⁸ There are quite many, though minor, differences in Schlagschatz figures recorded by mint lord Nyenstede and mint warden Goldenstedt.

⁶²⁹ Fr. Nyenstede's records are more descriptive over the usage of mint resources. Mint finances were extensively used for the Riga City Council's spending, various ordinary and extraordinary payments, salaries, orders etc. See chapter 6.4.1.

⁶³⁰ L. Goldenstedt notes, n.d.: LVVA 673-1-1280, fol. 31v.

⁶³¹ Ibidem, fol. 30, 31v.

54 202 M x 200 = 10 840 400 pieces. The amount of processed pure silver: 10 840 400 x 0.181 g = 1 962 112 g.

In **1612**, another 54 783 M 8 lot weight marks were minted in schillings.⁶³² In this year coinage cannot be traced on a regular basis. Only five of the original warden notes have been preserved for the period from 28 November to 31 December 1612.⁶³³ In this year, schillings were debased and minted from 2 lot 2 q 2 d silver alloy or 0.166 grams of silver in the coin. Using the same calculation sequences as in 1611, the total output for 1612 can be estimated at 10 956 700 schillings. 1.818 tonnes of silver were used altogether. Some defective schillings, possibly from 1611, had been withdrawn from the market and reminted in this year as well.⁶³⁴

1613 was another successful year for the Riga mint. From 1 January up to the end of the year (31 December) 56 286 weight marks with schillings had been minted.⁶³⁵ Since the schilling quality had been constant, I can use the previous calculation sequence. The total output for 1613 reached 11 257 200 schillings. 1.868 metric tonnes of pure silver had been reminted.

According to warden Lambert Goldenstedt's notes, in 1614 the mint was active from 8 January to 16 July.⁶³⁶ 24 775 weight marks with schillings were produced from 4451 M 12 lot 2 pfennigs of pure silver,⁶³⁷ which corresponds to 0.179 g pure silver in 1 schilling or 2 lot 3 q 2 d silver alloy. However, the mint warden remarks that schilling fineness was decreased by 1 q or 387 M 1 lot 3 q.⁶³⁸ Therefore, schillings were minted from 4064.64 pure silver marks, which corresponds to 0.164 g silver in the coin. Basically, they agree with the fineness of 1612–1613 schillings. Calculations of total output follow the same established pattern:

Year **1614**: 4064.64 M x 201.8 g = 820 244 g total weight of pure silver;
820 244 g / 0.164 g = 5 001 487 schillings.

The last source for this discussion part is a mint book, which goes in the case description under the title *Münzbuch 1615–1621*.⁶³⁹ To be more exact, it covers a timespan from 4 February 1615 to 25 March 1622. Despite the high complexity of the book-keeping, this is comparably more descriptive and insightful resource than many of the previously mentioned mint records. Based on the book-keeping organisation this book can be divided into three parts with

⁶³² Ibidem, fol. 30, 31v.

⁶³³ L. Goldenstedt notes, 28.11–31.12.1612: LVVA 8-4-59, fol. 36-40.

⁶³⁴ LVVA 673-1-1280, fol. 31v; This episode is described in chapter 3.6.

⁶³⁵ Ibidem, fol. 31v.

⁶³⁶ L. Goldenstedt notes, n.d.: LVVA 673-1-1280, fol 31r.

⁶³⁷ Ibidem, fol 31r.

⁶³⁸ "In diesem Werck zu geringe die M[ark] lotig – 1 q[uentin]" Ibidem, fol. 31r.

⁶³⁹ Das Münzbuch 1615–1622: LVVA 673-1-1287.

the demarcation set on 16 December 1615 and 28 February 1618.⁶⁴⁰ The composition of the earliest inscriptions is very simple. It records only produced amounts of schillings (*ist fer arbeittet*) and generated Schlagschatz with surplus income, from which expenses are deduced beforehand (*Vnkosten apgezogen ist Iberschos Vnd gewinß*).⁶⁴¹

In the second part, on a regular weekly basis, one can follow incoming silver source (*in alleß/Summa*), extracted silver amounts (*fein*), and charged Schlagschatz (*gewin/Thutt*). After extracting Schlagschatz, the mint master's salary and tax (*gebur*), the accountant usually registered a surplus (*Vnkosten apgezogen Bleibett Iber*). All these four positions formed what is called gross seigniorage, i.e. difference between Mint equivalent (ME) and Mint price (MP). Currency exchange services generated another good amount of income. This extra income was cashed from the exchanged schillings in hard currency (Spanish reals or thalers) and was added to the surplus (*Iberschoss*).⁶⁴² Both Schlagschatz and the surplus were cashed and controlled by the mint lords. In his 1620–1621 calculations mint lord F. Nynenstede registered the use of surplus. Large amounts, approx. 1/3 of surplus, for instance, was spent on weekly mint expenses, which are not identified more closely.⁶⁴³ The Riga City Council made a rather significant surplus from the debasement process, charging the exact amount of additional coins that had been minted from each fine silver mark. Usually, it was termed in similar words as can be read in the inscription from April 6, 1616: “[the surplus] of one quentin and 8 pieces for 510 fine silver marks amounts to 158 marks and 20 groschen.”⁶⁴⁴ Later the charged debasement share went back into circulation through the exchange with sound currency of Spanish reals, which was exchanged with the ever-changing commission fee. The taxed fee had a clear tendency of escalating, especially over the course of the final years: ½-,⁶⁴⁵ 1-,⁶⁴⁶ 1 ½-,⁶⁴⁷ 2-,⁶⁴⁸ 3-,⁶⁴⁹ and 3 ½ groschen.⁶⁵⁰ Thus, the Riga City Council ensured to make money with every transaction and movement of money. The last component of surplus also allows to explain the impressive growth of gross seigniorage in the succeeding years (Table 5.4.3).

In the third part of the book, the register form gets more condensed, reporting only incoming silver, extracted pure silver weight, the value of issued coins, and expenses on salaries. Collected surplus was increasingly exchanged

⁶⁴⁰ Ibidem, fol. 60r.

⁶⁴¹ Ibidem, fol. 3r.

⁶⁴² Also spelt Uberschoss/Vberschoss in the mint records.

⁶⁴³ LVVA 673-1-1285, fol. 31.

⁶⁴⁴ “Was dem quentin vnd 8 stuck betragtt thutt auff 510 m loth – 158 mark 20 groschen”
Das Münzbuch 1615–1622: LVVA 673-1-1287, fol. 9v.

⁶⁴⁵ Ibidem, fol. 13r; 14v; 65r-69v.

⁶⁴⁶ Ibidem, fol. 6r-12v; 13v-24r; 30r-62r; 70r-75r; 109r-111r.

⁶⁴⁷ Ibidem, fol. 24v-29v; 75v-89r; 126v-127r.

⁶⁴⁸ Ibidem, fol. 89v-92r; 111v-113v.

⁶⁴⁹ Ibidem, fol. 92v-108v.

⁶⁵⁰ Ibidem, fol. 114r-126r; 127v-145r.

with silver thalers than Spanish reals. Two other essential nuances can be observed: primary source of incoming silver is noted, and, secondly, – no additional surpluses are detected. The latter change in book-keeping obviously was related to the rising Schlagschatz rate, which grew by a factor of three in comparison to previous years' rates.

Data processing for 1615–1621 is more laborious due to a growing intensity of schilling debasements. The earliest schillings of 1615 were minted of the same fineness as the previous years' issues. By the fall of 1615, the Riga City Council made several changes in the schilling quality. The exact timing of implementing changes in quality is questionable. In the mint book, a report on changing minting standard is given for 1615–1618.⁶⁵¹ Compared with the accounts of the mint book there are noticeable chronological differences in both sources, which suggest a lack of synchrony between book-keeping and implementation of changes in the minting process. These differences give a more complicated view of the enactment of debasement. In some cases, differences might have been illusive as the changes had been registered on different occasions. It seems that the report inscriptions were based on the day debasement was confirmed, while the mint book registered the actual date, on which coins of appropriate quality were produced. See, for example, 25.11.1615 and 28.11.1615, and 3.11.1616 and 9.11.1616. There are no essential differences between the figures, except for the dates. The time lag could be explained with the necessary technical changes to be made. Interestingly, in several cases, mint book inscriptions suggest that the mint was producing heavier coins than given in the report. There are no other reasonable explanations for that except for the need to periodically swap lighter coins with heavier ones.

⁶⁵¹ “Bericht von Anno 1615 den 4 febru[ari] biß auf diese dei U A. 1618 den 18 Aprilliß. Vie sich zwisschen der Zeitt mit der Muntz verhalten hatt” Ibidem, fol. 63v-64v. This register could be a copy of a report drafted by mint warden Hans Goldenstedt – “Vonn Anno 1615 denn 4 Februarii bis auff dieser Zeitt Anno 1618 denn 22 Aprilis wie es sich zwischen der Zeitt mit der Muntze verhalten hatt”: LVVA 673-1-1280, fol. 37r-38v.

Table 4.1.3 Discrepancies in recording schilling debasements

Report, 1615–1618			Mint book, 1615–1622		
Time	Fineness (lot)	Number of coins in weight mark (pieces)	Time	Fineness (lot)	Number of coins in weight mark (pieces)
4.02.1615	2 lot 2 q 2 d	200	4.02.1615	2 lot 2 q 2 d	200
23.09.	2 lot 2 q 2 d	207	23.09.	2 lot 2 q 2 d	207
25.11.	2 lot 2 q 2 d	212	28.11.	2 lot 2 q 2 d	212
9.03.1616	2 lot 1 q 2 d	220	4.03.1616	2 lot 1 q 2 d	208
8.06.	2 lot 1 q 1 d	220	15.06.	2 lot 1 q 1 d	208
3.11.	2 lot 3 d	220	9.11.	2 lot 3 d	220
			27.11.	2 lot 3 d	208
			30.11.	2 lot 3 d	220
13.01.1617	2 lot 1 q	220	13.01.1617	2 lot 1 q	208

In the following output calculations, I will rely on the Report figures. For most of 1615 schilling issues can be based on the delivered gross weight of schillings, termed in the mint book as “*ist vor arbeitett*”. The charged *Vberschoss* amounts are not a trustworthy source of reference because they were not paid at a fixed rate. Starting with 23 September implementation of debasement are precisely recorded with the respective incomes. On this day the mint reported debasement of schillings by 7 pieces in weight mark, while another debasement, by 5 pieces, was undertaken on 28 November. Thus, for the sake of accuracy, 1615 schilling coinage is estimated in three periods:

- 1) 4 February – 16 September 1615. 53 057 weight marks x 200 = 10 611 400 pieces;
- 2) 23 September – 28 November. 21 403 weight marks x 207 = 4 430 421 pieces;
- 3) 28 November – 30 December. 10 127 weight marks x 212 = 2 146 924 pieces.

Year **1615** – 17 188 745 schillings had been minted. The weight of processed silver: 17 188 745 x 0.166 g = 2.853 tonnes.

In 1616 schillings were debased more frequently than ever before, both in terms of silver content and size. Schilling fineness in each period: 1) 2.625 lot; 2) 2.375 lot; 3) 2.312 lot; 4) 2.187 lot. In this year and ensuing years, calculations are based on fine silver marks processed. In the following calculations I make a separate count for each time frame before arriving to the total output and coined silver weight:

- 1) 3 January – 9 March 1616. 30 619 lot x 212 / 2.625 lot = 2 472 848 pieces;

- 2) 12 March – 8 June. $52\,949 \text{ lot} \times 220 / 2.375 \text{ lot} = 4\,904\,749 \text{ pieces}$;
- 3) June 8 – November 3. $91\,000 \text{ lot} \times 220 / 2.312 \text{ lot} = 8\,659\,169 \text{ pieces}$;
- 4) November 3 – December 30. $34\,144 \text{ lot} \times 220 / 2.187 \text{ lot} = 3\,434\,695 \text{ pieces}$

1616 Summa: 208 712 lot (2.632 tonnes) 19 471 461 pieces

Processed silver amounts are reckoned with the following formula: $30\,619 \text{ lot} \times 201.8 \text{ g} / 16 \text{ lot} = 0.386 \text{ t}$. In the next periods following weights can be calculated: 0.667 t; 1.147 t and 0.430 t. In total: 2.632 tonnes of pure silver.

In 1617, fineness of schillings was altered only once, on 13 January, rising from 2.187 lot to 2.25 (2 lot 1 q). As can be seen from the calculations below, 1617 was an absolute record-breaking year regarding schilling emission rates. With 4.0 tonnes the previous record of 1615 of processed silver amount had been broken as well.

- 1) 30 December 1616 – 13 January 1617. $8616 \text{ lot} \times 220 / 2.187 \text{ lot} = 866\,721 \text{ pieces}$;
- 2) 13 January 1617 – 3 January 1618. $308\,876 \text{ lot} \times 220 / 2.25 \text{ lot} = 30\,201\,208 \text{ pieces}$

1617 Summa: 317 492 lot (4.0 tonnes) 31 067 929 pieces

1618 was another relatively peaceful and fruitful year in the history of the Riga mint. On 24 April a decision was made to decrease silver quality in schillings from 2.25 lot to 2.062 lot alloy. In total, a record 4.537 tonnes of pure silver had been coined. The number of schillings minted in a weight mark is uncertain, however, judging from the average weight of the coin, I assume that equal (220 coins) or a slightly increased volume was produced (see Appendix 8). Issue rates:

- 1) 3 January – 25 April 1618. $85\,522 \text{ lot} \times 220 \text{ pieces} / 2.25 \text{ lot} = 8\,362\,221 \text{ pieces}$;
- 2) 25 April 1618 – 2 January 1619. $274\,250 \text{ lot} \times 220 \text{ pieces} / 2.062 \text{ lot} = 29\,260\,426 \text{ pieces}$

1618 Summa 359 722 lot (4.537 tonnes) 37 622 647 pieces

The issue rates of 1619 cannot be precisely calculated for the complete lack of written evidence both of the fineness and their quantity in weight mark. There is indirect evidence that the Riga schillings were debased in 1619. At the beginning of the year, the mint master purchased Spanish real for 46 ½ groschen, whereas at the end of the year, the silver price increased to 50 ½ groschen.⁶⁵² Usually, rising bullion price (also the influx of low-quality coins) put pressure on the coinage, which further stimulated debasement of coins and market price change. It was a vicious cycle, in which one process led to another

⁶⁵² Das Münzbuch 1615–1622: LVVA 673-1-1287, fol. 75r-112v.

provided for the coinage. Assuming that 2.32 florins were charged from each fine mark of silver struck, which was the last regularly charged tax until November 25, 1620, the sum of 5846 fl 4 g 4 β (Livonian schillings) would correspond to 2519.88 fine marks of silver or – 2519.88 M x 201.8 g = 0.508 tonnes. Schilling output: 508.512 g / 0.102 g = 4 985 411 pieces. In total, with some reservations in mind, the output for **1621** can be estimated at 13.811 million schillings and 1.417 tonnes of processed silver.

The following bar chart (Fig. 4.1.1) illustrates the calculated data of schilling emission rates and the reminted silver in a calendar year. Notwithstanding the short-term crisis in 1608–1609, 1614–1615 and 1621, it is possible to distinguish three mid-term trends in schilling coinage: 1598–1608, 1609–1614, and 1615–1621. In the first period, schilling output fluctuated around the figure of 5.26 million. In the next 6 years following the 1608 crisis outputs almost doubled, reaching 9.3 million yearly. Starting with 1615 schilling outputs accelerated at a pace far exceeding previous years on record. In a single year like 1615 earlier rates could be overrun twice, while for the next 4 years, yearly outputs exceeded 30 million. The overall yearly outputs in the last mid-term period averaged 26.44 million. Within 24 years average schilling output accelerated by a factor of five. According to the most cautious estimates, in 1598–1621 a total 298.987 million schillings had been produced in Riga mint.

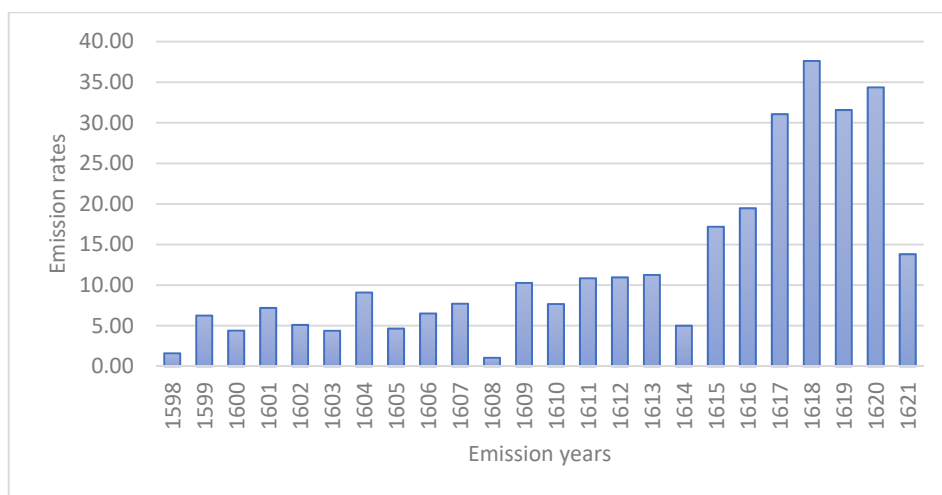


Fig. 4.1.1 Emission rates of the Riga schillings, 1598–1621 (in millions)

Around one third of the calculated figures do not meet the highest precision standards, are approximate or incomplete. This incompleteness, as shown before, arises from the fragmentary nature of the preserved documentary evidence, and inconsistency in accountancy. 1598, 1603–1605, 1610, 1619, and 1621 issue rates are most problematic in that respect. Reconstructing gaps in sources

or attaining higher precision of calculations is not feasible for several reasons. The first obstacle is that it is not always possible to trace the lack of data either to the closure/disruptions in the mint or the loss of evidence. Mint books are the most reliable sources for following up on the delays, while other sources only allow for speculation. Moreover, data processing is sometimes complicated by the diversity of sources in the sense that various compilers employed different strategies in the initial stages of collecting and processing data, as well as dating of events. Discrepancies are most notable in the case of reporting schilling debasements and silver price changes in 1615–1618 (Table 4.1.3). Furthermore, the exact timing of schilling debasements was not recorded until 1615.

Last but not least, it is impossible to reconstruct emissions for the unrecorded periods with high precision. To achieve at least theoretical precision in estimates on a yearly basis, at least a few prerequisites have to be fulfilled: there had to be regular silver supplies, internal or external economic or monetary shocks, which greatly affect the availability, prices, and productivity of mint have to be ruled out. This ‘perfect condition principle’, as I would call it, is observed in the methodology widely used by Lithuanian numismatist Eduardas Remecas. Remecas extrapolates yearly output of a single unit by studying aggregate composition of Lithuanian hoards and available emissions recorded in the mint sources. This method is demonstrated in calculating possible half-groschen mintages in 1545–1566.⁶⁵⁶ Having the recorded emission rates for 1550–1554 on the one hand (3.627 million), and the percentage of these issues in hoards (6.42%), on the other hand, the author establishes the relation between both figures. Thus, only having the percentage of each emission year at hand, the author can arrive at yearly as well as summary emission rates, which reach 56 million. In this case, merely knowing the issue rates for 5 years helped to reconstruct issue rates for the rest of the 21 year long research period. Although we can not evaluate the precision of these calculations, the following estimates on the issue rates of Lithuanian pennies and 2-pfennigs⁶⁵⁷ brings their author to significant revelations. Remecas concludes that the estimated emission results are not compatible with their representation in hoarded material, and they need to be adjusted. Thus, Remecas is the first to adopt and first to question the accuracy of this method. Furthermore, he points out the critical flaws in this method which he encountered with the specified coin (which are relevant also when dealing with other coins):

“Determining the amount of denarius minted more precisely is also hampered by the fact that pennies practically were not put in hoards due to their low value, and we still have scanty material from old cemeteries and old towns.”⁶⁵⁸

⁶⁵⁶ Grimalauskaitė and Remecas, *Money in Lithuania*, 181.

⁶⁵⁷ Grimalauskaitė and Remecas, 181–82.

⁶⁵⁸ Grimalauskaitė and Remecas, 181.

To illustrate the highly problematic applicability of this method in the case of the Riga schilling coinages, it suffices to make a simple comparative study of the most well-studied period of 1598–1601 schillings; both emission rates from 1598 to 1601 (Table 4.1.1) and most complete statistics of these coins finds from the region of historical Commonwealth territories are available (Fig. 4.7.1). There is no relation to be established between both kinds of quantitative figures. My suggestion is that in the everyday usage this method should be avoided and could be justified only when schilling coinage is thoroughly researched, archaeological material is considerably large, well-preserved and fully studied. In other words, due to its low performance, this method is an unlikely tool for numismatic scholarship.

4.2 Silver consumption (1598–1621)

To sustain the daily costs of the Riga mint, – an enterprise with dozens of employees and regular expenses for the upkeep and daily nourishment, it was axiomatic that the mint was run regularly. It was therefore crucial for the mint to be provided with regular silver supplies. Silver was the central life stream of the mint in every aspect. In the following Fig. 4.2.1, the progress of schilling coinage is plotted in terms of processed silver. Following the previously introduced coinage periodisation in the three mid-term periods (1598–1608, 1609–1614, and 1615–1621), I hereby offer initial observations on the silver consumption trends. In the early period over 10 tonnes of silver (10.858 t) were processed in schilling, averaging a little below 1 tonne each year. In the 2nd period, schilling coinage expanded with yearly silver usage of 1.6 tonnes: 9.6 tonnes throughout the period. At the high point of schilling coinage, from 1615 to 1621, silver consumption increased twice, reaching an average of 3.2 pure silver tonnes yearly. Silver consumption trajectory remained relatively high throughout the whole period, peaking in 1618 after which followed a decline, which was most pronounced in 1621.

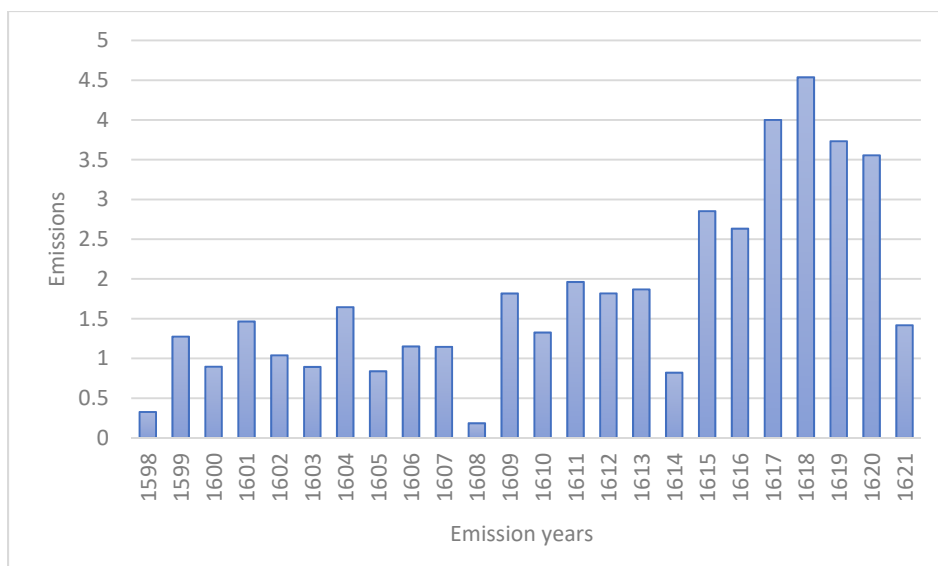


Fig. 4.2.1 Silver consumption in Riga schilling production, 1598–1621 (in tonnes)

Last, to put the statistics in a wider perspective, yearly consumption rates are contrasted with the absolute figures of processed silver (Fig. 4.2.2). One can note that in the absolute figures, 1600 stands in the leading position with 6.3 metric tonnes, while 1619 and 1620, with respective 6.23 and 4.71 tonnes, follow suit. Both 1619 and 1620 results had been achieved with the renewal in the coinage of larger denominations of 3-groschen and dreipöcker, attesting for 1.905 and 1.164 tonnes in the respective years. While these coinages were comparatively short-lived, they readjust the previous impression of the slowing down of silver supplies in the years following 1618 culmination of silver consumption in terms of schillings. Thus, judging from the cumulative figures, the actual high point in silver consumption was reached in 1619. Minting other coins rather than schillings, as previously discussed (see 3.11), is understood as a trade-off between the mint demand for silver and purchasers' need for internationally recognisable coins. It leads to the conclusion that despite relatively high availability of silver, minting of schillings was not limitless. Otherwise, one could expect greatly enhanced schilling output results from what has been calculated.

The statistics of 1598–1600 give only a vague glimpse of the importance of 3-groschen coinage at the mint in the early decades under Polish rule. Schillings were comparably slow to acquire the importance of 3-groschen in pre-war years. The cumulative data progression suggests two heightened silver supply periods at the mint – in the years up to 1601 and from 1615 to 1621. In sum, 56 tonnes (55.949 t) had been processed at the Riga mint.

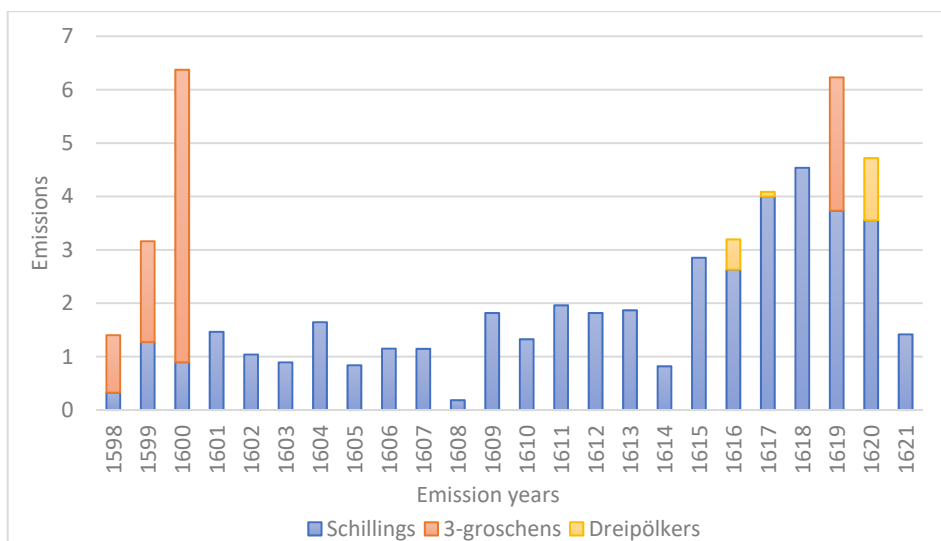


Fig. 4.2.2 Cumulative consumption of silver in the Riga mint, 1598–1621 (in tonnes)

4.3 Copper consumption (1598–1621)

How much copper was processed in Riga schillings? Having the processed silver amounts as well as the silver proof of schillings in each year at hand (chapter 4.1), it is easy to assess their amounts based on the equation, which can be exemplified with the 1598 issues: $0.326 \text{ tonnes of silver} \times 13.125 \text{ lot copper} / 2.875 \text{ lot schilling fineness} = 1.488 \text{ tonnes}$. To avoid the sluggishness of similar calculations as in calculations of emission rates and silver consumption (chapter 4.1) in the years with regular debasement occurrences, such as in 1616–1618, average fineness figure is reckoned: 2 lot 1 q 2 d – for 1616, 2 lot 1 q for 1617 and 2 lot 2 d for 1618. Thus, the same calculations can be used in this section. The achieved result (Fig. 4.3.1) is yet another testimony of the massive scale of minting process in Riga. In total 237.33 metric tonnes of copper were minted in schillings. Copper costs, however, are another issue that will be dealt with in chapter 6.3.2.

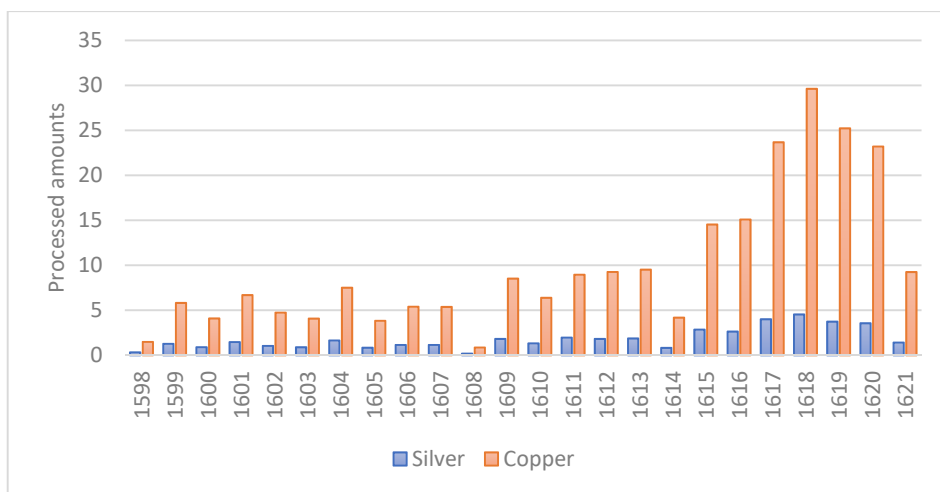


Fig. 4.3.1 Annual consumption of copper and silver in the Riga mint, 1598–1621 (in tonnes)

4.4 Schlagschatz income (1598–1621)

For a better understanding of the schilling output dynamics Schlagschatz is perceived as an important quantitative indicator. In fact, this is hardly a novelty. The revenue component in coinage was there for centuries. Throughout European minting history, it is often hard to discern between income-oriented coinage and coinage necessitated by market fluctuations. Small change coinage was more often profit-oriented because of the heightened coinage expenses. Standard trade units of Spanish reals and thalers were more dependent on trust in their value, whereas in the case of petty coinage long-run consequences from debasement were less significant.⁶⁵⁹ In Riga as elsewhere in Europe, profiteering from coinage had its roots in the assumption that the mint had to be self-sufficient if not an income-generating enterprise. The attitude, of course, evolved over time and space, depending on the availability of metals, fineness of coinages, stipulations in the mint contract with the mint masters, and mint expenses for the resources and employees.⁶⁶⁰

The Riga City Council was exempt from Schlagschatz payments to the monarch⁶⁶¹ so that the Riga City Council and mint master had a potential financial territory to exploit as they saw fit. Regardless of the rate, it could not exceed the official rate, which would otherwise impair the mint of Riga in

⁶⁵⁹ Akira Motomura, “The Best and Worst of Currencies: Seigniorage and Currency Policy in Spain, 1597–1650,” *The Journal of Economic History* 54, no. 1 (1994): 105.

⁶⁶⁰ The studies from Livonian and Swedish times provide some insight in the Schlagschatz policy and its variations. See Leimus, *Das Münzwesen Livlands*, 15.; Platbārzdīs, *Die königlich schwedische Münze*, 128–32.

⁶⁶¹ See 2.1.

competition with other mints. In Riga, Schlagschatz was charged from the mint master and cashed every week by the mint lords. The role of Schlagschatz as a source of revenue from coinage should not be overestimated. As will be demonstrated in the following calculations, the Riga City Council employed different other surplus techniques from the mint. A regular source of revenue was brassage – production costs. Since its value was not strictly stated and could be hardly controlled, there was room for speculation. There were also small fixed rates for each movement of ready money with the outside and surplus (*Uberschoss*) gained after clearing all the coinage expenses for resources and salaries. Last but not least, I am arguing that the king was not left without compensation for the extension of minting right. Privileges to mint specific coins or grant some favourable conditions could be acquired in return for some payment (see 5.4).

In numismatics, Schlagschatz is expressed as a difference between the mint equivalent ME (face value of minted coins)⁶⁶² and the mint price MP (intrinsic value of pure silver mark) plus brassage. Additionally, revenue could be raised by expanding the output or Schlagschatz rate. This mechanism depended on the alteration in a single or a combination of variables, whose relations can be expressed with the following equation:

$$ME - MP = \text{Gross seigniorage (Schlagschatz + brassage)}$$

Regarding the early years under the Commonwealth rule, there is little chance of finding out the Schlagschatz rate. The initial mint ordinance of April 24, 1578, ordered a rate of 20 groschen for each fine silver mark reminted,⁶⁶³ however, later that year, the Warsaw Sejm revoked the king's order.⁶⁶⁴ Except for the king's revenue in GDL (10 groschen per silver fine mark), the ordinance of 5 January 1580, did not foresee a strict regulation for charging of Seigniorage elsewhere.⁶⁶⁵ Practically no data survives from the early decades except for the Schlagschatz rate for reminting 1585 Reichsthalers in schillings. Each weight mark of minted Reichsthalers was charged 4.5 groschen.⁶⁶⁶ In order to bring the mint into better shape by the end of 1599 the Riga City Council decreased Schlagschatz to 3 Polish groschen with a termination date on Michaelmas, 1600.⁶⁶⁷ Judging from the later data, it had been prolonged for another 8 years, after which it returned to the 4.5 groschen (Table 4.4.1). After 1615 Schlagschatz taxation assumed a more complex character, at times taking hardly comprehensible turns in its development.

⁶⁶² In Livonian times, the mint price was quoted in the account units of marks and schillings, whereas in Polish times – in florins and groschen.

⁶⁶³ Zagórski, *Monety dawnej Polski*, 129.

⁶⁶⁴ Walewski, *Trojaki koronne*, 4.

⁶⁶⁵ Zagórski, *Monety dawnej Polski*, 131.

⁶⁶⁶ Caspar zum Berge's report on Reichsthaler and real prices, 1585: LVVA 673-1-1281, fol. 7r-v.

⁶⁶⁷ LVVA 673-1-1278, fol. 10v.

Table 4.4.1 Schlagschatz rate of the Riga schillings⁶⁶⁸

Date	Schlagschatz for 1 fine silver mark struck (in Polish groschen)	Schlagschatz rate (in account mark)	Source
1585	4 ½		LVVA 673-1-1281, fol. 7
30.09.1598–17.11.1599	4 ½	0.75	LVVA 673-1-1284, fol. 2
24.11.1599–3.06.1608	3	0.5	LVVA 673-1-1284, fol. 22r; 673-1-1286, fol. 21; 673-1-1278, fol. 10v
4.02.1609–29.09.1610	4 ½	0.75	LVVA 673-1-1286, fol. 23-103
1612	4 ½	0.75	LVVA 8-4-59, fol. 36-40
8.01.–16.07.1614	4 ½	0.75	LVVA 673-1-1280, fol. 31r
16.12.1615–11.05.1616	22 ½	3.75	LVVA 673-1-1287, fol. 6r
11.05.–8.06.1616	25	4.16	LVVA 673-1-1287, fol. 11r
15.06.–3.11.1616	25 ½	4.25	LVVA 673-1-1287, fol. 12r-23v
3.11.1616–13.01.1617	27	4.5	LVVA 673-1-1287, fol. 24r-29v
13.01.1617–4.04.1618	26 ½	4.41	LVVA 673-1-1287, fol. 30r-62v
18.04.–2.05.1618	90	15	LVVA 673-1-1287, fol. 65
2.05.1618–1.05.1619	93	15.5	LVVA 673-1-1287, fol. 66r-94v
12.06.–27.11.1619	55	9.16	LVVA 673-1-1287, fol. 98r-110r
27.11.1619–25.03.1620	57	9.5	LVVA 673-1-1287, fol. 110v-118v
3.06.–25.11.1620	69	11.5	LVVA 673-1-1287, fol. 124r-136r
31.03.–12.08.1621	4000 fl for every quarter		LVVA 673-1-1287, fol. 145; 673-1-1278, fol. 15v

⁶⁶⁸ An earlier version of the Table has been published in: Dāboliņš, “Riga Mint in 1621,” 121., Table 3.

In an earlier publication, I assumed that from 1615, the rate of Schlagschatz was not fixed anymore, but calculated after paying off all expenses.⁶⁶⁹ I came upon this idea observing the situation in the initial months when the otherwise scrupulous book-keeper made no effort to identify Schlagschatz from among the income positions of *Iberschoß* or *Iberschos vnd gewinst*, and through the acquisition of the number of coins by which the weight of schilling mark had been decreased on September 23 and November 23. Only by the end of 1615, when the register form became more nuanced, I identified *Gewins* as Schlagschatz based on the constant relation between the amount of processed pure silver and *Gewins*. The gains from raising the schilling output in weight mark were integrated into Schlagschatz account only from 16 December 1615. Meanwhile, Schlagschatz had increased from 4.5 groschen (27 Livonian schillings) to 100 Livonian schillings for a mark of fine silver minted.⁶⁷⁰ On December 16, the rate was lifted for the third time, to reach 22.5 groschen or 135 schillings, which explains a switch to the higher account unit of florin (1 florin = 5 Marks). Interestingly, during the 1616 Warsaw Commission, there were discussions of differentiation of Schlagschatz rates depending on the denomination. It was proposed to tax schillings with 21.94 groschen from each fine mark.⁶⁷¹ Although in the context of the Riga mint this seems a somewhat belated proposition, it shows the rising trajectory of Schlagschatz rate taking momentum in the Commonwealth as well.

Similar to the yearly schilling issues, Schlagschatz income figures were not always explicated and had to be processed based on the given variables. Instrumental to understanding Schlagschatz policy and minting profitability is the Schlagschatz rate. This rate expresses the relation between charged income and processed fine silver mark.

Here follows calculations of yearly Schlagschatz income from schilling coinage in Riga. Besides the fluctuating amounts of processed fine silver marks in schillings (see 4.1) and Schlagschatz rate, one has to bear in mind changing Reichsthaler value (here expressed in account marks (M)) and fineness of schillings.

Year **1598**: $1616.92 \text{ M (fine silver marks)} \times 0.75 \text{ (Rate)} = 1212.69 \text{ M (Schlagschatz income in account marks)} / 6 \text{ M (Reichsthaler price)} = 202 \text{ thalers}$.

Year **1599**: November 24, 1599, Schlagschatz rate decreased from 4.5 to 3 groschen. Using previous calculations, in the first period $5803 \text{ M} \times 0.75 = 4352 \text{ M} / 6 \text{ M} = 725 \text{ thalers}$. In the last five weeks 510 M were processed. $510 \text{ M} \times 0.5 = 255 \text{ M}$ or 42.5 thalers were charged in Schlagschatz. In total, 767.5 thalers were collected.

⁶⁶⁹ Dāboliņš, "Riga Mint in 1621," 121., Table 3.

⁶⁷⁰ The mint paid 12 schillings for every weight mark of schillings (212 pieces). 1294 schillings were minted from fine silver mark. It follows that the mint was charged an additional 73 schillings: $1294 \beta * 12 \beta / 212 \beta = 73 \beta$.

⁶⁷¹ Suggestion was to charge 3 groschen from each weight mark of schillings (213 coins). LVVA 673-1-1283, fol. 110v.

Year **1600**: 4441 M 6 lot 1 β fine marks had been processed for which 2220 account marks were paid in Schlagschatz. $2220 \text{ M} / 6 \text{ M} = 370$ thalers.

Year **1601**: silver price increased slightly from 6 to 6 mark 2 groschen per silver thaler. In the same year 7261 M 11 lot 3 q in fine silver had been processed. $7261.7 \text{ M} \times 0.5 = 3630.8$ account marks; $3630.8 / 6.33 = 573$ thalers.

Year **1602**: 5152 M 14 lot 1 q 3 d fine silver marks had been minted in schillings for which 2576.4 account marks or 407 thalers were paid.

Year **1603**: 4426 M 7 lot 1 q 3.5 d of fine silver was processed in the period until October 1. As previously noted (see 4.1), full-year output data cannot be precisely attributed. The given amounts of fine silver attested for the income of 2213.2 account marks or 349 thalers.

Year **1604**: Schlagschatz is calculated on a 1603/1604 fiscal year basis – 4076 M 30 β are registered in Nicolaus Ecke's accounts, which divided by 6.33 M (price of thalers), makes 643 thaler income.

Year **1605**: Schlagschatz is calculated on the 1604/1605 fiscal year basis. Mint lord Ecke registered an income of 2080 M 24 β , which corresponds to 328 thalers. Again, generated income is not complete due to the registry form.

Year **1606**: According to Johan Schomann's accounts, in 1606 the mint was operating all year round reaching an income of 2854.25 account marks, which divided by 6.33 M, makes 450 thalers in revenue.

Year **1607**: various accounts inform of intensive work at the mint until the year end, which resulted in an income of 3380.38 account marks. The growth of silver thaler price from 38 to 39 groschen, however, slightly diminished revenue. Divided by 6.5 M (6 marks 3 groschen), makes 520 thalers.

Years **1608–1610**: weekly Schlagschatz figures are covered in full extent in Fr. Nyenstedte mint lord's register and L. Goldenstedt notes.⁶⁷² Registered figures need only to be summed up and converted into current value (thalers). In 1608, the mint generated an income of 459.47 account marks, which divided by 6.66 M (6 marks 4 groschen), makes 68 thalers. In 1609, Schlagschatz rate changed for the first time in almost 10 years, rising from 0.5 to 0.75, i.e. to 4.5 groschen. Thus from 9001.92 fine silver marks schillings were produced in the value of 6751.44 account marks or 1013 thalers, more than compensating for the previous year meagre results. Despite the shortened minting season (active until September 29) 1610 was a comparably successful year in the minting business. 6569 fine silver marks were reminted bringing an income of 4926 account marks or divided by 6.83 M (6 marks 5 groschen), 721 thalers.

Year **1611**: Because only the fineness and gross weight of minted schillings is given (54 202 marks), I can proceed as follows: $54\,202 \text{ M} \times 2.875 \text{ lot} / 16 \text{ lot} = 9739.42$ fine silver marks. Schlagschatz income is calculated: $9739.42 \text{ M} \times 0.75 = 7304.56$ marks. Finally, account marks are converted in current thaler values: $7304.56 \text{ M} / 7 \text{ M} = 1043$ thalers.

⁶⁷² Frantz Nyenstedt's schlagschatz accounts, 1607–1610: LVVA 673-1-1285, fol. 10r-22v; L. Goldenstedt's notes, 1607–1610: LVVA 673-1-1286.

Years **1612–1613**: the same set of variables is available, wherefore the sequence of calculations does not change. One exception to bear in mind is the decline in the fineness of schilling in 1612 from 2.875 lot to 2.625 lot. Thus, in 1612 Schlagschatz constituted 6740 account marks or 962 thalers, and 6925 account marks or 989 thalers in 1613.

Year **1614**: similar to 1608, the mint suffered serious disruptions in the monetary market, which resulted in the interruption of the minting process on July 16. In all, 4064.64 fine silver marks were processed in schillings. $4064.64 \text{ M} \times 0.75 \text{ M} = 3048$ account marks. Considering thaler price – 7 marks, makes 435 thalers.

Year **1615**: Several stages can be drawn based on debasement patterns and Schlagschatz policy changes.

- 1) 4 February – 16 September 1615. Assuming the short formulation “ist vor arbeitett” indicates gross weight of produced marks in schillings, I calculate Schlagschatz in the following manner: $53\,057 \text{ weight marks} \times 2.625 \text{ lot} / 16 \text{ lot} = 8704 \text{ M}$ (fine silver); $8688 \text{ M} \times 0.75 = 6528 \text{ M}$ (account marks) or $1305 \text{ fl} = 932$ thalers.
- 2) 23 September – 26 November. Schlagschatz can be reckoned using the same calculations. 21 403 weight marks were minted bringing an income of 2633 account marks or 376 thalers. Besides Schlagschatz, in the same period, the mint was charged an additional 7 schillings from each weight mark of minted schilling, which was introduced on the occasion of schilling debasement on September 23. Thus, an additional 1205 florins or 860 thalers were gained.
- 3) 28 November – 9 December. 4640 weight marks with schillings had been produced, which corresponded to 751.25 fine marks, 112.68 florins, or 80.49 thalers. The mint was charged an additional 5 schillings (12 schillings altogether) after the introduction of further debasement of schillings to 212 schillings per weight mark. In this short taxation period, 270 florins 26 groschen or 193 thalers were collected.
- 4) 16–30 December. A further increase in Schlagschatz rate was developing after the December 16 decision to fix the rate at 3.75 account marks (0.75 fl) or 135 β per fine mark. 900 M 3 lot 3 q of fine silver was processed. Given the Schlagschatz rate, it totals 675 florins or 482 thalers.

In total, 1615 yielded an income worth 2467 thalers, arguably a breakthrough year for Riga mint in terms of Schlagschatz revenues. In a single year, Schlagschatz rate had experienced more changes than the previous years if not decades.

Year **1616**: similar to 1615 Schlagschatz rate was raised three times, accompanied by several debasements taking place on 12 March, 8 June, and 3 November. While taking into account all fluctuations in Schlagschatz rate (Table

4.4.1), to avoid splitting and complicating the overview, I will provide only the average Schlagschatz rate and silver price. Otherwise, most of the Schlagschatz changes took effect on the same day with the debasement of schillings. Again, results are calculated within the established debasement periods:

- 1) 3 January – 9 March 1616. 1913 M 14 lot fine silver was processed. $1913.93 \text{ M} \times 3.75 \text{ M} (0.75 \text{ fl}) = 1435.44 \text{ florins}$ or 1025 thalers;
 - 2) 12 March – 8 June. $3309.97 \text{ M} \times 4.16 \text{ M} (0.83 \text{ fl})^{673} = 2614.87 \text{ fl}$ or 1867 thalers;
 - 3) 8 June – 3 November. $5687.54 \text{ M} \times 4.25 \text{ M} (0.85 \text{ fl}) = 4834.40 \text{ fl}$;
By June 15, silver thaler price had increased to 43 groschen. If 1 fl = 30 groschen, 1 thaler = 1.43 fl.; $4834.40 \text{ fl} / 1.43 \text{ fl} = 3380$ thalers;
 - 4) November 3 – December 30. $2134 \text{ M} \times 4.5 \text{ M} (0.90 \text{ fl}) = 1920 \text{ fl}$;
 $1920 \text{ fl} / 1.43 \text{ fl} = 1343$ thalers.
- In total, schilling coinage yielded an income of 7615 thalers.

Year **1617**: with only one schilling debasement taking place on January 13, this year was comparatively stable, though the rising silver price started to take its toll. On the same day as debasement, a small, but nevertheless decrease in the Schlagschatz ratio to 0.88 fl could be observed as well.

- 1) 30 December 1616 – 13 January 1617. $538.4 \text{ M} \times 4.5 \text{ M} (0.90 \text{ fl}) = 484.56 \text{ fl}$ or $484.56 / 1.5 = 338$ thalers;
- 2) 3 January 1617 – 3 January 1618. $19\,304.75 \text{ M} \times 4.41 \text{ M} (0.88 \text{ fl}) = 16\,988 \text{ fl}$ or 11 325 thalers. In total, 11 663 thalers were collected.

Year **1618**: similar to the previous year, schilling quality experienced minimal changes, being enhanced by 1 pfennig on April 24, the same day that the mint registered silver price increase to 45 groschen for Spanish real.⁶⁷⁴ In the same year, the mint book registered at least two episodes of rising silver prices in relation to Spanish real. Thus, the price of 47 groschen per thaler may not be accurate. In addition, Schlagschatz rate expanded hugely, from 26.5 to 93 groschen, i.e. almost 2 thalers for each fine silver mark struck. The surge in Schlagschatz rate was preceded by a profitable recoinage of dreipölkens into schillings with the Schlagschatz rate of 50.4 groschen.⁶⁷⁵ However, this rate is not taken in account as it was purely a result of cheap silver supplies, which do not reflect market price-induced adjustments.

⁶⁷³ Average rate.

⁶⁷⁴ “Vonn Anno 1615 denn 4 Februarii bis auff dieser Zeitt Anno 1618 denn 22 Aprilis...”: LVVA 673-1-1280, fol. 38r.

⁶⁷⁵ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 60r-61v, 62v-63r.

- 1) 3 January 3 – 25 April 1618. $5345 \text{ M} \times 2.32 \text{ fl} (11.8 \text{ M})^{676} = 12\,400 \text{ fl}$ or 7948 thalers;
- 2) 25 April – 2 January 1619. $17\,140 \text{ M} \times 2.32 \text{ fl} = 39\,764 \text{ fl}$ or 25 490 thalers.

In all, 33 438 thalers were collected.

Year 1619: unlike the static schilling quality, 1619 experienced an unprecedented rise in silver prices, from the probable 47 groschen per thaler early that year to 52 groschen in December 1619. The mint shut down for a short while on May 1–15 due to silver deficiency. On 15 May, minting commenced with 3-groschen coinage, being charged relatively low at the rate of 1 : 1.1 fl.⁶⁷⁷ In all, 18 499 fine silver marks had been processed in 1619. $18\,499 \text{ M} \times 2.28 \text{ fl} (11.4 \text{ M})^{678} = 42\,177 \text{ fl}$; $42\,177 \text{ fl} / 1.63 \text{ fl}^{679} = 25\,875 \text{ thalers}$. After the burst of income rise in the previous years, in 1619 the mint experienced the first contractions since 1614. Despite that, 1619 was another extremely productive year in schilling coinage history.

Year 1620: After the first silver shortages, which were followed by a temporary mint closure from March 25 to April 22, the mint produced dreipölkers for 6 weeks⁶⁸⁰ followed by schilling coinage resumption with a heightened Schlagschatz rate of 1 to 11.8 M (2.32 fl). In November 25, the Riga City Council ordered to remint dreipölkers in schillings at the Schlagschatz rate of 1 to 1.52 fl.⁶⁸¹ Recoinage of dreipölkers lasted until February 24, 1621.⁶⁸² Also, on 19 August, schillings were debased for the last time, increasing their output to 260 schillings in 1 Cracow weight mark. This was also a year of uninterrupted silver price expansion, reaching unforeseen heights.

- 1) 1 January – 19 August 1620. $9706.37 \text{ M} \times 2.11 \text{ fl} (10.55 \text{ M})^{683} = 20\,480 \text{ fl}$; $20\,480 / 2 \text{ fl} = 10\,240 \text{ thalers}$;
- 2) 19 August 1620 – 6 January 1621. $7911.62 \text{ M} \times 2.32 \text{ fl} = 18\,354 \text{ fl}$; $18\,354 \text{ fl} / 2.2 \text{ fl} = 8342 \text{ thalers}$. In total, 18 582 thalers.

1621 was overshadowed by grave shifts in the silver market which was revealed by the recoinage of old schillings starting 24 February after running out of dreipölkler reserves. One can follow the progress of work and Schlagschatz on a weekly basis until 31 March 1621. In these months, the mint had processed 4508 pure silver marks. $4508 \text{ M} \times 2.32 \text{ fl} = 10\,458 \text{ fl}$; $10\,458 \text{ fl} / 2.5 = 4183 \text{ thalers}$. On 1 April, the terms of the lease contract with the mint master had

⁶⁷⁶ Average rate.

⁶⁷⁷ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 96r-97v.

⁶⁷⁸ Average rate.

⁶⁷⁹ The average thaler price is set at 49 groschen.

⁶⁸⁰ Ibidem, fol. 121r-123v.

⁶⁸¹ Ibidem, fol. 136v.

⁶⁸² Ibidem, fol. 142v.

⁶⁸³ Average rate.

been changed to payments of a constant quarterly sum of 4000 florins or 16 000 florins a year. Compared to previous years, 16 000 florins displays a significant lowering of profit level. The fast-approaching war could be the cause of grave alterations in future income prospects. Until 12 August, 5846 florins 4 groschen 4 schillings were charged. $5846 \text{ fl} / 2.5 \text{ fl} = 2338$ thalers.

In Table 4.4.2 below, one can see yearly Schlagschatz income data. The accumulated yearly wealth is converted from account units of zloty into current values of Reichsthaler.

Table 4.4.2 Yearly Schlagschatz income from the Riga schillings

Year	Schlagschatz (in Reichsthalers)	Schlagschatz (in florins)	Year	Schlagschatz (in Reichsthalers)	Schlagschatz (in florins)
1598	202	242	1610	721	985
1599	767	920	1611	1043	1460
1600	370	444	1612	962	1348
1601	573	726	1613	989	1385
1602	407	515	1614	435	609
1603	349	442	1615	2467	3455
1604	643	815	1616	7615	10 802
1605	328	416	1617	11 663	17 472
1606	450	570	1618	33 438	52 164
1607	520	676	1619	25 875	42 177
1608	68	91	1620	18 582	38 834
1609	1013	1350	1621	6521	16 304

According to the accumulated data, the Riga mint was run with little revenue for most of the research period. In times of relative abundance of cheap silver (until 1600), accumulated Schlagschatz had less significance. In the coming, more unstable times, when silver supplies went down, productivity of the mint fell considerably due to the low elasticity of coinage and the mint's subjection to exogenous changes in monetary markets and inflation. From 1604 to 1615 two instruments were employed seldomly to attract silver for the mint – debasement of schillings and raising of the silver purchasing price. Yet another instrument was in reserve – Schlagschatz. In 1615, a major revision of Schlagschatz policy took place, which as I am suggesting in chapter 5.4 was implemented in reaction to external threats. In a matter of a couple months, Schlagschatz rate increased by a factor of 5, which was accompanied by more regular schilling debasements in the succeeding years. 1615 is the year where one can truly detect the beginnings of schilling expansion. It was the time when maximizing of Schlagschatz and surplus became the backbone of schilling coinage.

4.5 The Riga schillings in Polish, Lithuanian and Ukrainian hoards

Coin finds have always been a source of great importance for tracing socio-economic and political changes, as well as monetary movements between lands and people. In what concerns Riga schilling finds, Polish numismatist Andrzej Mikołajczyk is leading the discussions. Initial results were published in the dissertation (1980)⁶⁸⁴ and later extended in the 1981 paper of mint emissions under the rule of Stephen Báthory and Sigismund III.⁶⁸⁵ Hypothetical emission shares of the Commonwealth mints were incorporated in his most well-known monograph *Introduction to the Early Modern Polish Monetary History* (1988). In cooperation with Marta Męciewska, an inventory of coin hoards from Poland with *tpq* 1500–1649 was released.⁶⁸⁶ Although the number of analyzed Riga schillings is uncertain, the total source base of his analysis of Stephen Báthory and Sigismund III coins, was an impressive 24 994 specimens comprised of “5271 solidi, 835 grossi, 15 693 one-and-half grossi, 1708 three grossi, 983 six grossi and 504 orts struck between 1577–1627.”⁶⁸⁷ For comparison, Mikołajczyk has also analysed hoarded material from Ukraine, consisting of 20 193 Polish specimens, thus covering most of the historical territories of the Commonwealth in his hoard studies.⁶⁸⁸

Mikołajczyk’s early statistical analysis of the Riga schillings was based on undisclosed number of hoards.⁶⁸⁹ The aggregate numbers were contrasted against the cumulative number of schillings, where the % share reflect their relative emission rates. In the first minting period (1577–1601), Riga schillings accounted for 62.96% of schillings in the finds. Riga was the leading producer of the Commonwealth schillings, followed by the Crown mints and mint of Gdańsk with the respective 24.28 and 6.89% shares.⁶⁹⁰ In the following decades (1602–1622) Riga mint managed to secure its dominant position in the Polish schilling market. According to Mikołajczyk’s calculations, Riga schillings attested for 58.15% in the Polish schilling material, followed by Lithuanian schillings with 33.34% and Crown schillings – 8.51% share.⁶⁹¹ Mikołajczyk localised the peak of Riga schilling output in the decade between 1593 and 1603.⁶⁹²

⁶⁸⁴ Mikołajczyk, *Obieg pieniężny*, 1980.

⁶⁸⁵ Mikołajczyk, “Rozmiary Produkcji Menniczej.”

⁶⁸⁶ Męciewska and Mikołajczyk, *Inwentarz*.

⁶⁸⁷ Wojtulewicz, “Coins of Kings Zygmunt III and Władysław IV,” 25.

⁶⁸⁸ Wojtulewicz, 25.

⁶⁸⁹ Andrzej Mikołajczyk, *Obieg pieniężny w Polsce środkowej w wiekach od XVI do XVIII*, vol. 28, *Acta Archaeologica Lodziensia* (Łódź, n.d.), 30., Fig. 16.

⁶⁹⁰ Mikołajczyk, *Einführung*, 61. In terms of 3-groschen emission, Riga’s output was comparably less impressive, but important, nevertheless. With 21.94% of the 1580–1601 emissions, Riga stood second to Poznań’s 22.49%.

⁶⁹¹ Mikołajczyk, 68.

⁶⁹² Mikołajczyk, 30.

Next, some observations can be made of the hypothetical schilling outputs and general traits of the monetary market development in central Poland.⁶⁹³ There was a peak in the Riga schilling outputs at the turn of the century, after which followed a drop averaging about half of the previous year's best results. The lowest output results were recorded around the years 1609–1610, and the highest, – in 1613–1615, which is attested by the increased Riga schilling outputs as well as a short resumption of schilling coinage in the Polish kingdom in 1613–1614. The significance of the Riga schillings seemingly diminished in the post-1615 years. Although the schilling coinage fell in the final years of the second decade, the general situation in the Polish monetary market had improved tremendously, with Polish coins acquiring almost complete control over the domestic market by 1620. The rising importance of domestic, Polish, coins clearly owed to the massive scales of dreipötker emissions and the reopening of mints. Coincidentally, the highest concentration of the Riga schillings is observed in the period with very low minting activity in the crown mints. The initial schilling distribution statistics, however, offer not only a very simplistic explanation of schilling expansion resulting from the problems in the Crown mints, but also unlikely timeframe of the Riga schilling expansion (see below).

Mikołajczyk makes an interesting observation regarding the loose finds of Sigismund III times. Stray finds are predominantly composed of schillings and dreipötkers, while kwartniki, 3-groschen, 6-groschen, and orts are found in single digits.⁶⁹⁴ Unlike hoarded coins, which commonly represented a selection of most worthy coins, single coin finds are usually understood as lost coins and thus they may be a precise reflection of everyday coin circulation. And yet, it is not completely so. As Leimus and Tvauri point out, small change was lost more easily than the precious hard units, because they were smaller and changed hands more frequently.⁶⁹⁵ Besides that, larger denominations usually were minted in smaller numbers and people were naturally more attentive to worthy specimens than the small change. Either way, the reliability of single finds as reflections of circulating money could be higher than that of hoards, which were often assembled from higher-value specimens and were purposely buried.

Mikołajczyk's book and its results served as a basis for similar studies in Lithuania. Most notable among the publications is the voluminous *Money in Lithuania*⁶⁹⁶ which puts the overview of coin distribution within historical Commonwealth territories in a broader perspective and permits cross-national comparisons.⁶⁹⁷ Here, the statistics of Polish and Ukrainian hoards⁶⁹⁸ are

⁶⁹³ Mikołajczyk, *Obieg pieniężny*, 23., Fig. 9.

⁶⁹⁴ Mikołajczyk, *Obieg pieniężny*, n.d., 28:30.

⁶⁹⁵ Ivar Leimus and Andres Tvauri, "Coins and Tokens from a 15th-Century Landfill in the Kalamaja Suburb of Tallinn," *Eesti Arheoloogia Ajakiri* 25, no. 2 (2021): 144.

⁶⁹⁶ "Money in Lithuania" is a translation of the original 2016 edition in Lithuanian: Dalia Grimalauskaitė and Eduardas Remecas, *Pinigai Lietuvoje* (Vilnius: Lietuvos Nacionalinis Muziejus, 2016).

⁶⁹⁷ The following analysis and figures initially were proposed in the article by Eduardas Remecas, "XVI a. monetų apyvarta."

combined and replenished with the data analysis of Lithuanian hoards. The relevance of hoard analysis to Lithuanian numismatics lies in the fact that similar to Polish counterparts it suffers shortages of written evidence about mint emissions.⁶⁹⁹

Under Stephen Báthory, the Riga schillings production was only slowly making inroads in the more distant Polish and Ukrainian monetary markets.⁷⁰⁰ In the following years of Sigismund III, thanks to regular performance, the Riga mint managed to overtake all the previous competitors – Vilnius, Gdańsk, and Polish Crown mints and secured its undisputable position in the schilling market. The Riga schillings made a huge impact in the schilling market in Polish and Ukrainian areas, attesting for as much as 71.5 % of circulating schilling mass, minted prior 1601, whereas in GDL, the Riga issues held a near monopoly, comprising 95.4% of all schilling finds. Thus, Riga’s emissions accounted for approx. 80% of schillings minted in the Commonwealth from 1588 to 1601.⁷⁰¹ With less than 1% share of the domestic schilling market, Lithuanian schillings emissions were practically negligible.⁷⁰²

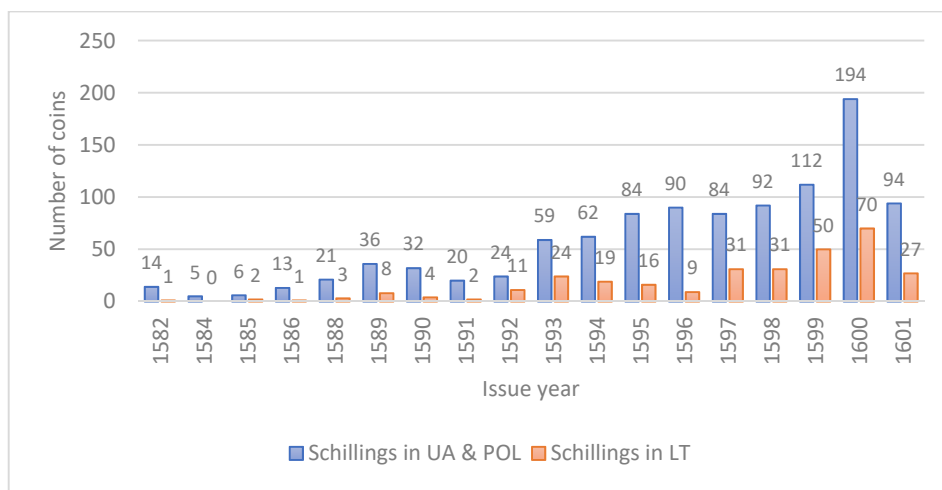


Fig. 4.5.1 Chronological distribution of the Riga schillings (1582–1601) in Polish, Ukrainian, and Lithuanian hoards⁷⁰³

⁶⁹⁸ Mikołajczyk, “Rozmiary Produkcji Menniczej.”

⁶⁹⁹ Grimalauskaitė and Remecas, *Money in Lithuania*, 192, 200.

⁷⁰⁰ The Riga schillings attested for only 11.3 percent of all schillings in Polish and Ukrainian hoards, outperformed by Gdańsk (34.1%), Vilnius (27.5%) and Polish Crown mints (26.9%). Grimalauskaitė and Remecas, 193.

⁷⁰¹ Grimalauskaitė and Remecas, 205.(Table 19)

⁷⁰² Grimalauskaitė and Remecas, 205.

⁷⁰³ The chart is based on the data presented in Remecas, “XVI a. monetų apyvarta,” 71., Fig. 8.

In the second part of the research period, dissemination rates of Riga issues kept rising. In 1602–1622 Riga schillings exceeded 10 000 pieces in Lithuanian finds, which account for approx. 84% of all schillings from the period. Meanwhile, Lithuanian schilling coinage had recovered, occupying 15% (1800 pieces) of circulating schilling amounts in GDL. Judging by the 33.4% share of unearthed schillings in Polish and Ukrainian territories,⁷⁰⁴ the Vilnius schilling was a widespread export commodity,⁷⁰⁵ whereas the Crown mint schillings found their way to Lithuania only incidentally (less than 1%). According to Riabtsevich, the Riga schillings found a significant sales market in Belarus territories as well.⁷⁰⁶ The Riga schillings reportedly occupied a large share also of the Polish and Ukrainian schilling market (58.15%), but how much in quantitative measures, is not stated.

Both Mikołajczyk's and Lithuanian statistics may not be accurate enough because of the reliance on a rather outdated source.⁷⁰⁷ Arguably the best source for quantitative Polish hoard analysis today is the inventory of coin hoards from Poland. It was released possibly after 1988,⁷⁰⁸ but somehow never reached a larger readership. Of more than 40 hoards (*tpq* 1585 to 1629), which contain the Riga schillings, 33 qualified for further examination.⁷⁰⁹

⁷⁰⁴ Grimalauskaitė and Remecas, *Money in Lithuania*, 205., Table 19.

⁷⁰⁵ Of the 1581–1584 Vilnius schilling production, four times more specimens are unearthed in Ukraine and Poland, than in Lithuanian archaeological material. Grimalauskaitė and Remecas, 193.

⁷⁰⁶ Riabtsevich, *O chem rasskazyvajut monety*, 46.; Riabtsevich has also carried some in-depth studies of Belorussian finds: Riabtsevich, “Skarby monet z XVI i XVII wieku.” According to Viktor Kakareko, in the recent decades, deposit studies have been much neglected in Belarus. Kakareko, “Trojaki,” 35.

⁷⁰⁷ Grimalauskaitė and Remecas, *Money in Lithuania*, 206. Lithuanian colleagues cite this publication: Andrzej Mikołajczyk, *Geneza i rozwój nowożytnej monety polskiej na tle europejskim, XVI – pol. XVIII w.* (Kraków: Polskie Towarzystwo Archeologiczne i Numizmatyczne, 1983), 126.

⁷⁰⁸ Męclewska and Mikołajczyk, *Inwentarz*.

⁷⁰⁹ Having full knowledge of the hoard composition and datings of schillings.

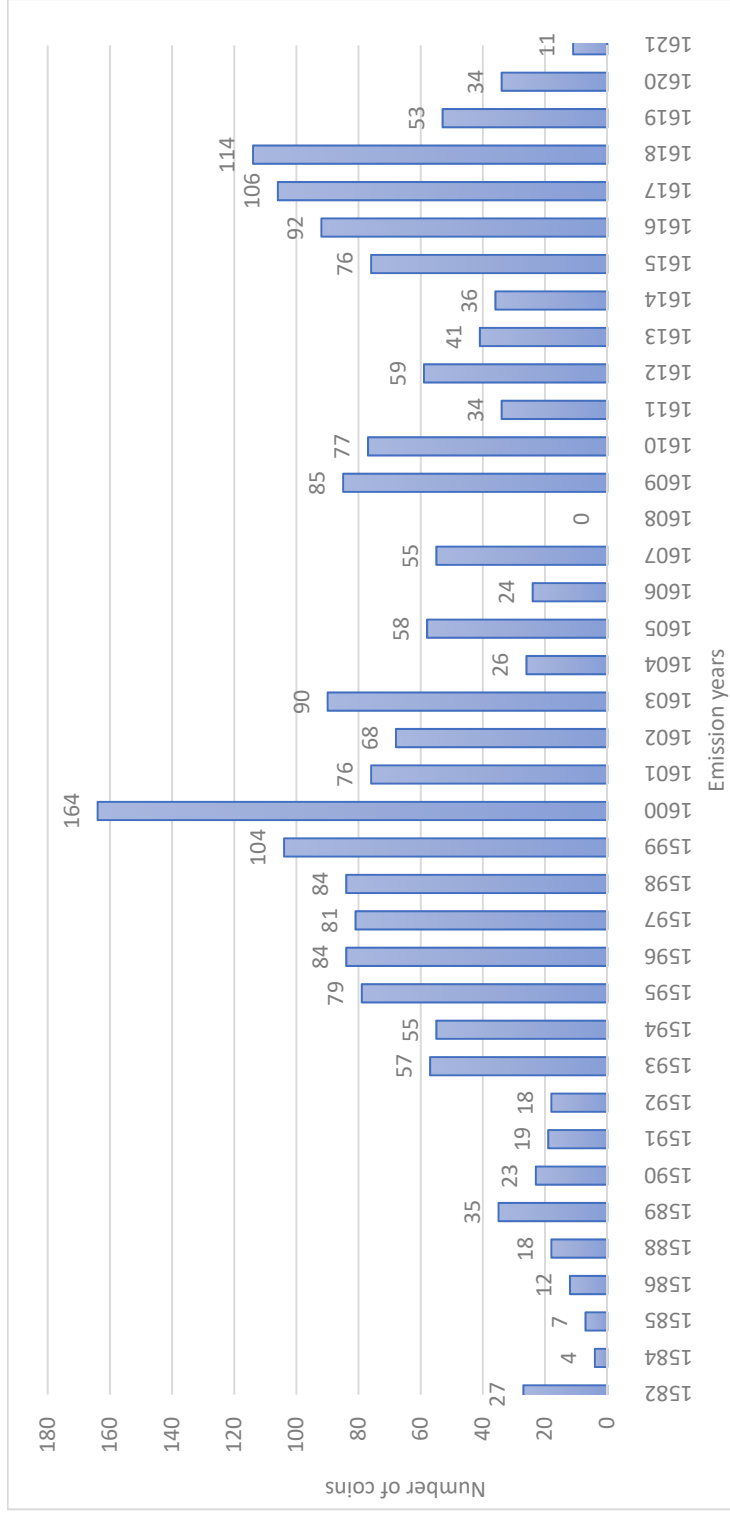


Fig. 4.5.2 Chronological distribution of the Riga schillings (1582–1621) in Polish hoards⁷¹⁰

⁷¹⁰ Studied Polish hoards, inventory nos: 153, 171, 183, 187, 250–253, 255, 257, 260, 263, 266–269, 290, 293, 305, 322, 350, 354, 367, 376, 385, 404–405, 414, 420, 438, 466, 471, 491. Source: Męciewska and Mikołajczyk, *Inwentarz*.

The main focus in this short analysis is placed on the second-period emissions (1602–1621) for which there is only incomplete knowledge presented in Mikołajczyk’s early studies of hoards. Given the timespan between both studies, there is a larger quantitative data set and increased yearly distribution figures. Schilling appearance is most regular and massive in two short concealment periods: *tpq* 1607–1609 and 1624–1625. Taking a closer look at the distribution rates and hoarding (*tpq*) relations would be worth the effort since it could deepen our understanding of hoarding patterns, the domestic market situation, and reactions to the debasement of coins. But of course, that requires a more advanced methodology. Fig. 4.5.2 does not indicate differences in the dissemination pattern of the earliest, 1580s issues in Poland, which are very rare. As to the emissions of the first decades, one can witness a more explicit rise in figures starting from 1593 issues, which is suggestive of heightened productivity rates. After reaching the highest point with 1601 schillings, the emissions of successive decades saw a very uneven distribution in the hoards. Noticeable that there is no coin of the 1608 emission year. Steady growth of emissions emerged in 1615 and lasted until 1618, which contrasts with Mikołajczyk’s early analysis of Polish hoards. There is also a marked lapse in schilling dissemination in the following three years.

In the case of Poland, one cannot speak of at least a tenth of the amount of Riga schillings that was circulating in Lithuania. This is not only in absolute, but relative figures as well, which is supported by the composition analysis carried out by Lithuanian numismatists. Of the 1602–1622 issues found in Poland, only 26.4% are schillings, meanwhile in Lithuanian hoards schillings attested for 75.8% of 1602–1622 issues. Above all dreipölkers were hoarded in the Polish Kingdom and Ukraine (63.95%).⁷¹¹ The general impression is that fewer schillings were hoarded in the Polish Kingdom and Ukraine than in the Duchy of Livonia (see 4.6) and much less than in the GDL. How to explain these marked regional differences? Was it because of the distance or proximity of regions to each other? Were schillings an object of much more widespread speculations in the Polish Kingdom than anywhere else? Or – was it the Lithuanian customer who was most interested in the Riga schillings?

Lithuanian colleagues argue that the Riga schillings “apparently were mainly designated for use in the East of the Commonwealth of the Two Nations”.⁷¹² Undoubtedly, seeing these figures gives some basis for such claims. However, colleagues might be rushing to conclusions. There has not been found any direct or indirect evidence in the written sources to confirm the idea. Before making any further attempts to critically evaluate such claims, the so-far neglected archaeological material of Latvia and Estonia should be looked at.

⁷¹¹ Grimalauskaitė and Remecas, *Money in Lithuania*, 206.

⁷¹² Grimalauskaitė and Remecas, 205.

4.6 The Riga schillings in Latvian and Estonian hoards

Polish Livonia formed a semi-autonomous monetary area within the Commonwealth, which was characterised by common and special legislation acts and granting of minting right to Riga. As the only town in the province exercising coinage rights, Riga was a major provincial authority monitoring coin circulation. Therefore, Polish Livonia formed the ‘natural’ circulation area of Riga mint production. Riga schillings were expected to be current and transmitted regularly within these spatial limits and only then to be disseminated in other Commonwealth regions. How much of the Riga schillings went into circulation and what does the analysis of Latvian and Estonian hoards reveal about the disposition of the monetary market of the Duchy of Livonia to other Commonwealth territories?

The first comprehensive catalogue of coin finds in Latvia was released comparatively late, in 2009. This data collection was assembled by Ducmane & Ozoliņa based on existing hoards kept in various Latvian museums as well as written sources, which allowed to trace the basic transformation of the original find and its current state of preservation. Following the established pattern of Polish and Lithuanian numismatists, periodisation of the numismatic material was based on the primacy of monetary policy.⁷¹³ However, this study argues that the monetary regulations at the royal courts of the Commonwealth mostly were too distant to have direct impact on the everyday usage patterns of currency and stresses the primary role of local political-economic events instead, which is indicated by the statistics of principal hoarding periods. Thus, the hoarded material is grouped into the following periods: 1581–1604, 1605–1621, and 1622–1629. The invasion of the Duchy of Livonia (1600–1601) by the armed forces of Duke Charles of Södermanland (future king Charles IX), led to some of the most massive concealments in the monetary history of Estonia and Latvia, with hoards from roughly *tpq* 1604 drawing the upper chronological limits of this period. This material provides ample evidence of the monetary economy development in ‘peace time’. After 1604 the finds became more sporadic and smaller in size, which, as I argue, was the result of structural changes in the local monetary system. The second most extensive concealment took place in the wake of Gustav II Adolph’s invasion in 1621 and the restrictive measures towards local small change in the following years. Though the third cluster of hoards falls out of the chronological time frame of this research, it complements former period statistics, which were missing data of the final year emissions.

⁷¹³ In earlier Polish and Lithuanian hoard studies, 1601 and 1604 were set as boundaries between one and another period. Both are chronologically close, but internally somewhat distinct points of reference in the Commonwealth monetary history. While 1601 signalled an end of monetary expansion and closure of most of Crown mints in Poland, 1604 marked the post-1604 Warsaw Commission era, characterised by silver price increases, more regular debasements and small change shortages.

Of 38 Polish period hoards 24 hoards may be termed as complete in the sense that full knowledge of their original composition has been retained. From what can be gathered in the first period (Fig. 4.6.1), previous Livonian issues, in particular schillings from the Free City of Riga (1561–1581) occupied a predominant role in everyday merchandise. The coinage of the newly opened Riga mint was competing with the imports of GDL issues, which entered Livonian territories en masse during the Livonian war years and was reinforced by the lifting of the monetary barrier between the Commonwealth and Livonia in 1581. To a lesser degree hoards consisted of a variety of neighbouring coinages, particularly from the Duchy of Courland, Muscovy and Dole (1572–1573). The more distant coins from western countries, with exception of Spanish reals, had been withdrawn from circulation almost completely. The statistics can be explained by considering the shortages of fresh currency in Polish Livonia as a result of intensive hoarding and the rebuilding of the devastated Livonian province.

The successive period (1605–1621) reveals a completely changed picture of the local monetary market. Polish Riga issues established a dominant role in the local monetary market. Circulation of Livonian issues had decreased considerably similar to other local issues of Duchy of Courland and Dole, which had fallen out of everyday usage. From the imported coinages of great importance Polish issues stand out, which switched position with Lithuanian issues. The Vilnius mint was clearly unable to compete with the outputs of Polish mints, whose numbers had risen significantly in the preceding decades to 1601. Only 3 Lithuanian schillings (1581–1621) have been detected in the Latvian hoards of this period.⁷¹⁴ Latvian statistics back up the previously held opinion about Lithuanian schilling production dissemination towards the Polish Kingdom territories. The very few finds in Latvian soil are not only proof of Vilnius mint market orientation but also a testimony to the Livonian schilling market saturations, which is why the Duchy of Livonia was not perceived as a prospective sales market of their production. It was completely different with 3-groschen, which are regularly detected in Latvian hoards (Stephen Báthory – 26 pieces, Sigismund III Vasa – 87 pieces). Lastly, Muscovite coinage seems to have cemented its role in everyday exchange. In the earlier period, 1581–1604, Muscovite coins were detected only in two hoards, after that their number increase to five hoards. This rise might be explained by the intensification of economic relations with the east, and Polish intervention in Muscovy during the Polish-Muscovite War (1609–1618).

⁷¹⁴ Ducmane and Ozoliņa, *Monētu depozīti*, 129–44.

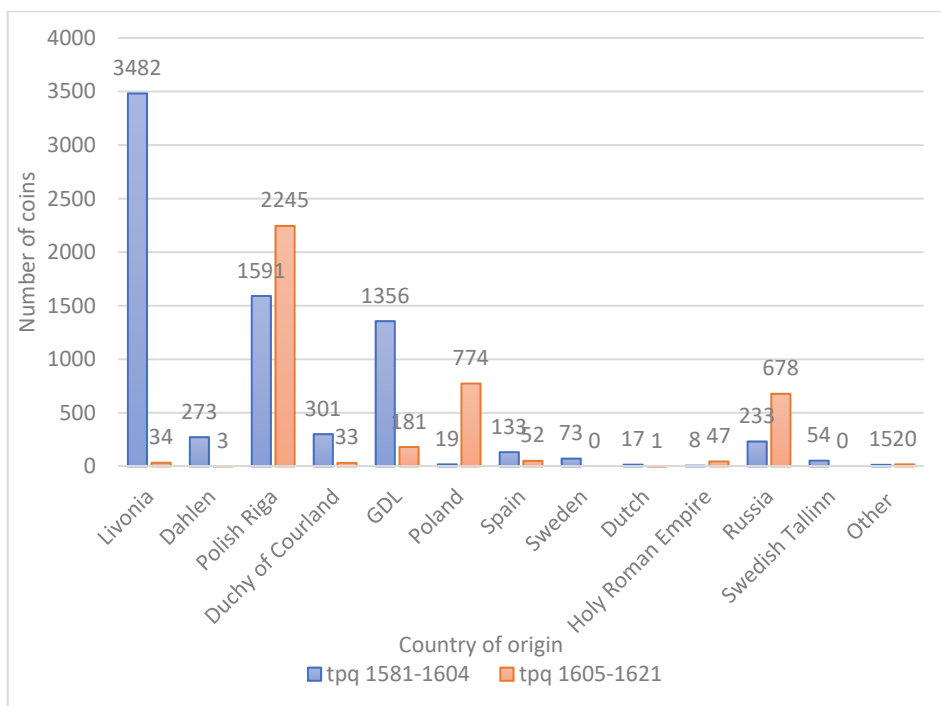


Fig. 4.6.1 Composition of Latvian hoards, *tpq* 1581–1604 and *tpq* 1605–1621⁷¹⁵

In the following charts, I offer a more detailed study of the Riga schillings distribution in the hoards concealed during the Polish-Lithuanian rule in Riga (*tpq* 1581–1621). Of 38 registered hoards, 19 contain Polish Rigan schillings, but due to the low degree of preservation only 17 qualify for the present study.⁷¹⁶ Among those 17 hoards, 1160 pieces for various reasons could not be attributed more precisely and had to be filtered out from the statistics of Figs. 4.6.2 and 4.6.3. Another group of coins not included in the statistics are counterfeits, 137 specimens in total.

⁷¹⁵ The data is based on the published Latvian hoards: Ducmane and Ozoliņa, 129–44. In the statistics only those hoards are studied, whose composition is completely known.

⁷¹⁶ Source: Ducmane and Ozoliņa, 129–44., hoard nos.: 151, 155–156, 159, 161–162, 165–166, 171–172, 174, 176–178, 181, 185, 187.

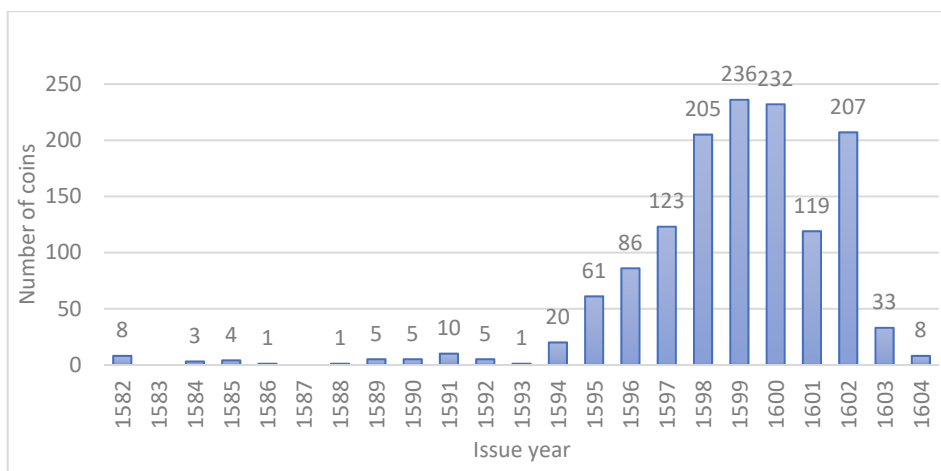


Fig. 4.6.2 Chronological distribution of the Riga schillings (1582–1604) in Latvian hoards, *tpq* 1581–1621

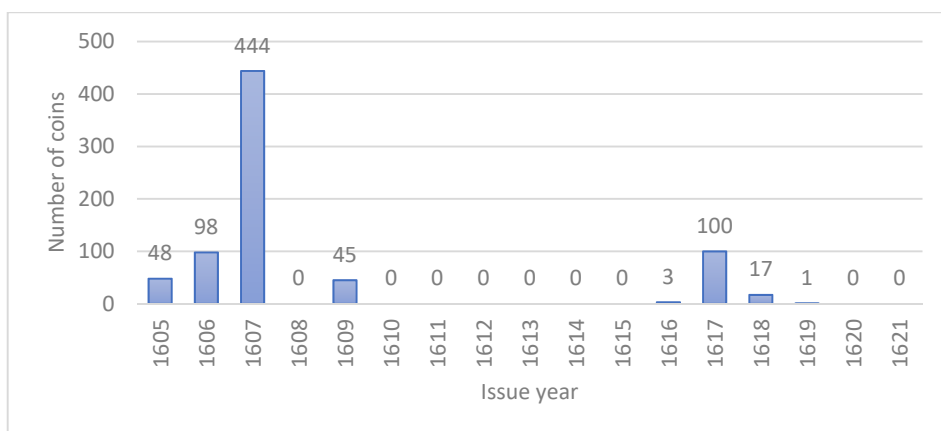


Fig. 4.6.3 Chronological distribution of the Riga schillings (1605–1621) in Latvian hoards, *tpq* 1581–1621

The initial issues from 1582 to 1593 (except for 1591) are represented with less than 10 pieces per year. The almost total absence of 1580s issues could be seen in the light of the complete shortages of hoards from the post-Livonian war period, low emission rates, and considerable reserves of previous, Livonian period schillings (Fig. 4.6.1). From the early 1580s Livonian and Polish monetary systems co-existed.⁷¹⁷ Under these conditions, local society would be more willing to keep the accounts and units in the old way. Furthermore, the favourable and stable silver prices may have dictated monetary considerations of the mint and preferences of possible currency users, which resulted in

⁷¹⁷ Old accounting system 1 mark = 36 schilling was retained.

declining demand of schilling and the subsequent reduction of their outputs and role in monetary markets. Judging from the regular appearance of groschen and especially 3-groschen, they were equally competitive as schillings, yet more attractive for wealth accumulation. The majority (311 coins) of the unearthed Riga 3-groschen (418 coins) were hoarded in the Polish period.

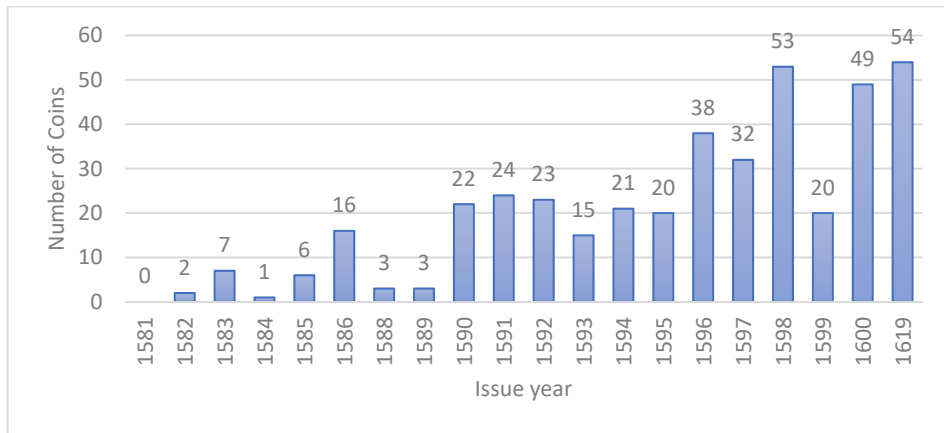


Fig. 4.6.4 Chronological distribution of Riga 3-groschen (1581–1600, 1619) in Latvian hoards, *tpq* 1581–1621⁷¹⁸

Fig. 4.6.2 demonstrates a steady schilling growth rate starting only with 1594 issues and short contraction intervals in 1601 (119 pieces), 1603 (33), and 1604 (8). As revealed in the following Figure 4.6.3, the most represented year with 444 coins is 1607. With more than 200 schillings 1598–1600 and 1602 are numerous as well. 1602 and 1607 statistics, however, should be taken cautiously, as these figures are primarily the results of a single hoard. There are several years that deliver zero results: 1608, 1610–1615, and 1620–1621. The complete lack of any 1608 schillings might not come as surprise since their coinage had been doubted and only now their issue rates could be estimated at a comparatively low 1 million coins (Fig. 4.1.1). However, the total absence of 1610–1615 schillings, given their issue rates at roughly 10 million a year (Fig. 4.1.1), is absolutely astounding. Likewise, the missing of 1619–1621 issues may be explained with the relatively recent coming into circulation. The fact that the later issues were not only there, but also circulating in amounts much larger than the earlier issues, is illustrated in the following chart.⁷¹⁹

⁷¹⁸ Source: Ducmane and Ozoliņa, *Monētu depozīti*, 129–44. 13 hoards of the Polish period are included in the statistics. Hoard nos: 151, 155–156, 159, 161–162, 165–166, 171–172, 174, 176–178.

⁷¹⁹ Ducmane & Ozoliņa list 13 hoards from this period; due to data incompleteness of their composition only 8 hoards are included in the survey. Hoard nos: 189, 192–196, 198–199. Ducmane and Ozoliņa, 148–51.

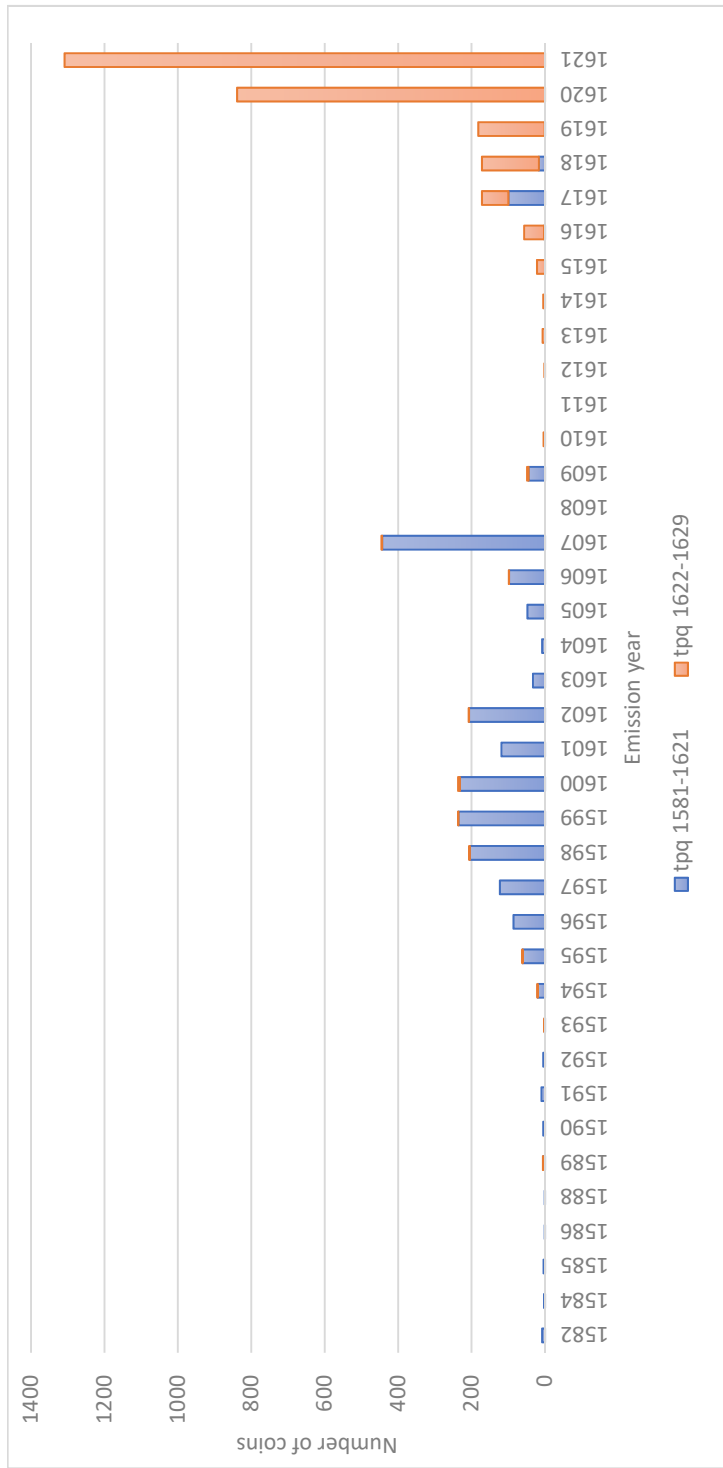


Fig. 4.6.5 Chronological distribution of the Riga schillings (1582–1621) in Latvian hoards, *tpq* 1581–1621 and *tpq* 1622–1629⁷²⁰

⁷²⁰ The Figure is composed of Figs.: 4.6.2., 4.6.3., 4.6.6., 4.6.7.

The Riga schillings are represented in 6 hoards out of 13 ‘Swedish period’ hoards (*tpq* 1621–1629),⁷²¹ however due to incompleteness of data only 4 could be selected for further research.⁷²² In total they contain 3072 coins from Polish Riga, most of which are schillings (2942 pieces). Furthermore, 274 pieces could not be attributed more precisely and are deleted from the common statistics. Except for the latest issue years, each issue year is mostly represented with single units (Figs. 4.6.6 and 4.6.7). There are years and periods, which are completely under-represented in coin finds: 1582–1588, 1590–1592, 1596–1597, 1601, 1603–1605, 1608 and 1611–1612. Dealing with such low figures extend the possible margin of error of achieved results. Examination of a larger number of hoards most probably would raise the chance of their appearance, but not so significantly as to completely change the picture, when considering their appearance rate in other hoards of the period. As for now, they are in line with the previous perception of the low schilling outputs in 1580s until mid-1590s. Meanwhile, shortages of issues from the latter half of 1590s and early 17th century, which had been rather plentiful in Polish period hoards, suggest a massive withdrawal or manipulations with these coins at some point. It is quite unlikely that hoarding could possibly attest for such a disappearance of current money. There is no such precedence in Livonian monetary history whatsoever. One can note a nearly equal disappearance of 1610–1615 issues in the material, hoarded during the Swedish period. What is most remarkable about these issues – they do not appear in Polish period statistics. It means that most of the production – either by way of exchange, reminting, or/and export had been withdrawn from the local market. The reminting case can be expanded with at least some written evidence. The 1612 Riga mint records show reminting of defective schillings (probably 1611 issues) (see 3.6). Similar to the critical 1601–1603, in 1621 ‘heavy schillings’ had been withdrawn from circulation to be reminted in debased schillings. Judging from the noted fineness in the mint book – 220 pieces in weight mark and 2 lot 3 d in silver content, these were 1616 issues. The mint book of Riga also informs on the reminting of ‘heavy schillings’ in October–November 1621 and 22 March – 1 April 1622, however the records do not specify their quality.⁷²³ Presuming that some of the pre-1616 issues went in the melting pot, 1621 and 1622 recoinages of schillings did not assume the massive scale of 1601–1603 recoinages. The question about the disappearance of 1610–1615 and even earlier issues remains open. In any case, this illustrates at least a decade long extraction of Riga schillings from the Duchy of Livonia, which seems to be interrupted by the establishment of Swedish rule in Riga after which neither the mint, nor the owners of these pieces were willing to give away because of the already noted shortages of silver change. This, in turn, explains the unprecedented high numbers of schilling deposited in the final period (*tpq* 1622–1629).

⁷²¹ Ducmane and Ozoliņa, *Monētu depoziiti*, 148–52.

⁷²² Ducmane and Ozoliņa, 148–51. Hoard nos: 189., 192., 194., 195.

⁷²³ Dāboliņš, “Riga Mint in 1621,” 115.

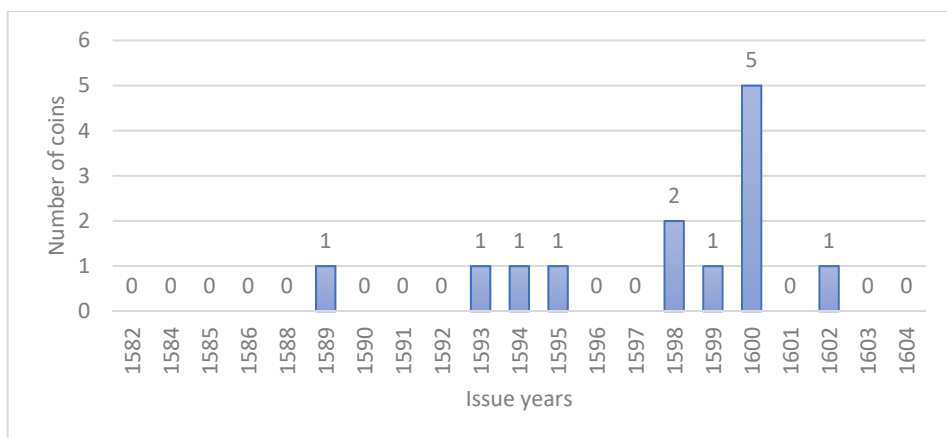


Fig. 4.6.6 Chronological distribution of the Riga schillings (1582–1604) in Latvian hoards, *tpq* 1622–1629

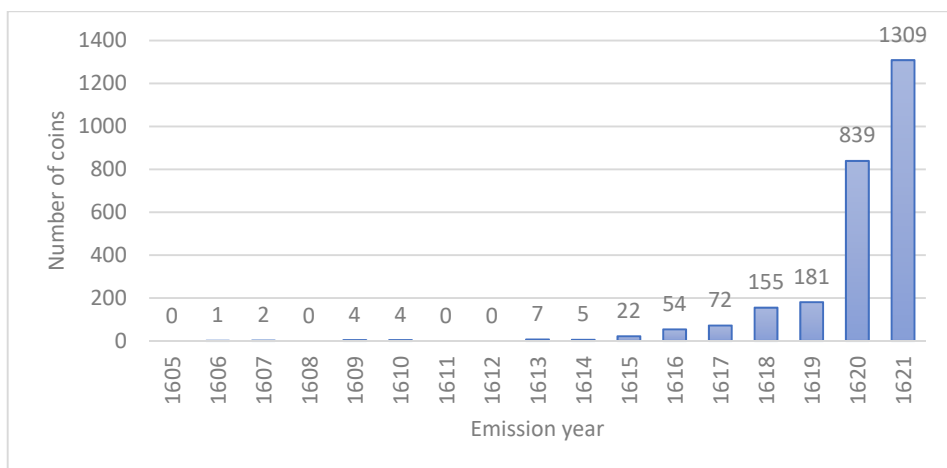


Fig. 4.6.7 Chronological distribution of the Riga schillings (1605–1621) in Latvian hoards, *tpq* 1622–1629

To put the schilling dissemination within a larger context, I look at the composition of Swedish period hoard statistics (Fig. 4.6.8). One can notice not only an overwhelming primacy of Polish Riga schillings, but also expansion of the renewed coinage under Swedish rule. The Commonwealth issues from Poland and GDL make regular appearances in Latvian finds, though not as much as in previous times. There are signs of intensified monetary relations between Lithuania and the war-torn Livonian province. Many more Lithuanian schillings and other units (1581–1621) are hoarded during these years than previous decades. This influx of Lithuanian coins could be both explained with the arrival of new armed forces from GDL as much as the strict prohibition policy

towards Rigan issues. In 1626, Riga lost its former minting right for schillings and dreipölkers. Further restrictions followed, which curbed circulation of local silver coins, forbidding recoinage of small change and Riga's export with the hinterland in Lithuanian and Belarusian lands.⁷²⁴ On 22 November 1626, Johan Banér (1596–1641), commander of Riga, reported to Gustav II Adolph that schillings are not found in the town anymore.⁷²⁵ In addition to that, another important aspect leading to massive removal of silver coins from circulation, could be the introduction of overvalued copper coins.⁷²⁶ A permanent garrison, placed within the city walls, as well as a rising number of civilians were paid mainly in Swedish copper coins by the Governor-general of Livonia (est. 1622). Thus, monetary prohibition went hand in hand with the expansionistic policy of Swedish coinage. Their presence in archaeological material became ever more noticeable starting with the coin finds dating to *tpq* 1625 and 1626. One can conclude that in monetary terms Livonian subjugation was not finalised with the conquest of Riga.⁷²⁷ Indeed, though heavily attacked and temporarily controlled by Swedes, the Duchy was nominally ruled by the Poles until concluding the Truce of Altmark (1629), when most of the former territories of the Duchy of Livonia were ceded to Sweden.

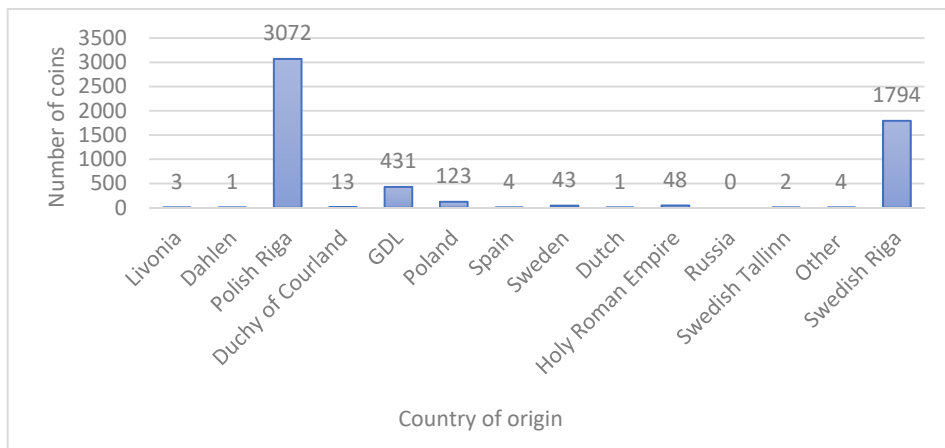


Fig. 4.6.8 Composition of Latvian hoards, *tpq* 1622–1629⁷²⁸

⁷²⁴ Platbārzdīs, *Die königlich schwedische Münze*, 23–33.

⁷²⁵ Platbārzdīs, 29.

⁷²⁶ Platbārzdīs, 24. “Da schon Anfangs zwischen dem Kupfern und Silbermünzen ein steigendes Agio vorherrschte, verschawanden die letzteren aus dem Umlauf.”

⁷²⁷ Riga schillings are recorded in 37 hoards out of 151 Swedish period hoards. Most active concealment of these coins took place in the timeframe of approx. 45 years, from *tpq* 1621 to 1666. Ducmane and Ozoliņa, *Monētu depozīti*, 145–96., Inv. nr. 188–338.

⁷²⁸ Source: Ducmane and Ozoliņa, 148–51.; Nos: 189., 192., 194., 195.

I conclude the review of Latvian numismatic material with the statistics of schillings from the public museum collection. For this task, the numismatic collection of the RVKM was researched, which holds some of the central, most prestigious, and richest collections of its kind in the Baltic countries. The principles of its formation, and in most cases also the provenance of each coin remain largely unknown, though, as with most museum collections, it was assembled through the purchases, donations from local, mostly German origin burghers during the late 18th century until 1936. The most prestigious and well-studied collection part is Anton Buchholtz (1848–1901) coin and medal collection bequeathed to the museum in his last will. As a numismatist and collector, he distinguished himself in observing high scientific standards, meaning that not only the most valuable and beautiful collectibles, but even the insufficiently researched smaller units were studied and complemented with written account studies. As of today, the schillings and other small change units seem to be the least affected fraction of the coin collections by the Second World War events.⁷²⁹

Contextualising such collections in the monetary history of Riga is very problematic. Hardly any principles and methods exist for interpreting such coins. On the other hand, there is no chance that these coins originate outside of the archaeological find context, and as such they can be subjected to simple analysis. The very rough comparison of the results conveys an overwhelming similarity with the Swedish period and Polish period hoard statistics. There is also a striking similarity with Mikołajczyk's analysis of central Polish hoards. Establishing a more solid methodology of translating these results would require additional comparative material studies of the nearest regional museum collections (Tallinn, Vilnius, Tartu, etc.) in the first place. Hopefully, in future, such studies might yield results, which are comparable to the hoard results and as such could be a useful substitute in case of missing hoard statistics.

⁷²⁹ Tatjana Berga et al., *Dr. phil. Antona Buhholca Baltijas monētu un medaļu kolekcijas katalogs (Dr. phil. Anton Buchholtz Sammlung baltischen Münzen und Medaillen von Heinrich Johumsen)* (Rīga: Rīgas vēstures un kuģniecības muzejs, 2011).

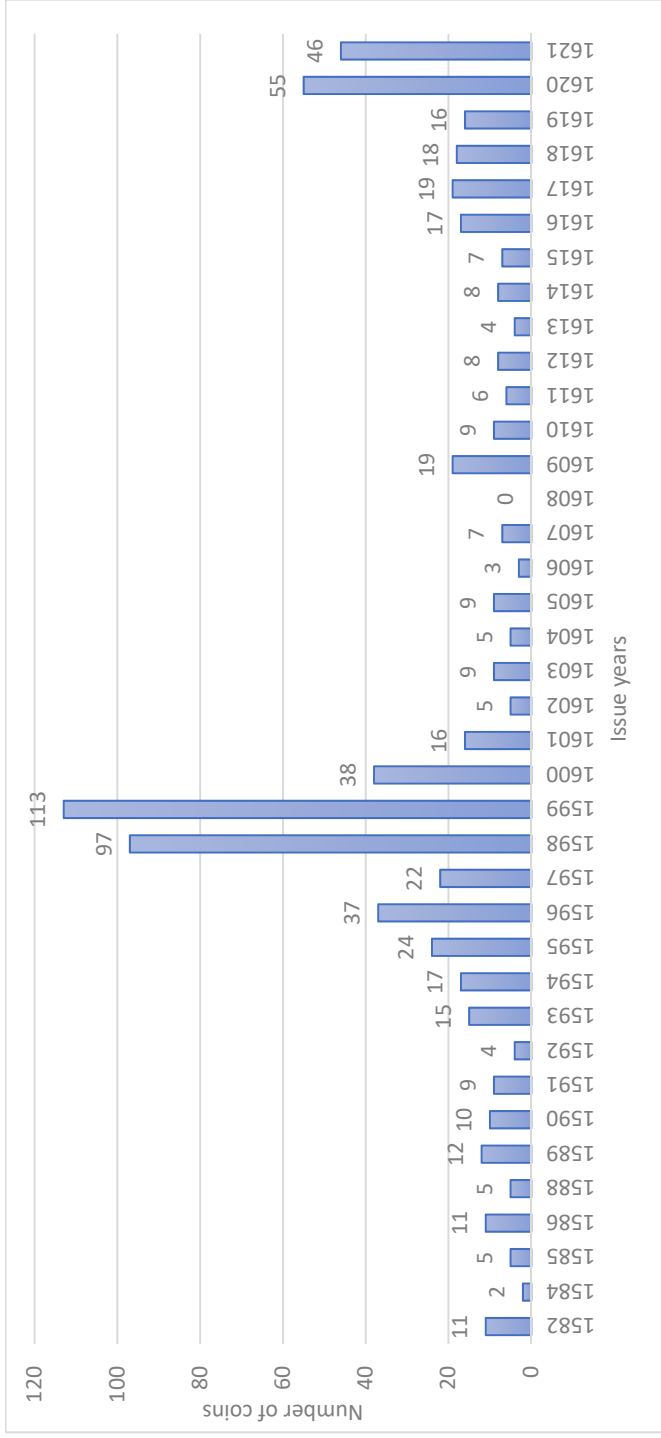


Fig. 4.6.9 Distribution of the Riga schillings (1582–1621) in the coin collection of the RVKM

Regarding the monetary situation in the northern part of the Duchy of Livonia or southern Estonia of modern times, the most detailed overview is provided in Mauri Kiudsoo's master Thesis (defended in 2000), which deals with currency and their circulating areas in Estonia during the 17th century.⁷³⁰ In Appendix 1, the find catalogue is presented in chronological order based on their *tpq*. Each entry contains a short description of the hoard, its provenance, and content, listed number of coins per country/city. Estonian hoards are catalogued differently from Latvian hoards being grouped in accordance with the military-political events of the day.⁷³¹ The hoards from the Polish-Swedish War period (1600–1629) are chronologically the earliest group of hoards and the main group of interest for the current study.⁷³² The earliest stage of warfare, until 1611, witnessed the most massive concealments in the history of the 17th century Estonia. Kiudsoo attributes 42 hoards from this period. The second period of 1611–1617, which was the truce period, yielded only one hoard from Kuressaare, whilst the latter stage of warfare (1617–1629) – another 18 hoards.

In the past 20 years, several more hoards containing Riga schillings from the same period have been unearthed in Estonia.⁷³³ Three hoards can be attributed to the same historical Sangaste parish area and with the same *tpq* 1600. First, in October 2013, the Uniküla hoard with 202 coins was unearthed. In the following spring, within one month Ants Erik, the metal detectorist, discovered Õruste Ööbiku (*tpq* 1600) and Kiviküla (*tpq* 1600) hoards. A total of 191 and 360 pieces were collected from each spot respectively. In terms of composition, all three hoards are common to the period under research, the most numerous groups being Lithuanian ½-groschen, Livonian schillings, and schillings of Polish Riga. The most recent (unearthed in 2016) and valuable addition to this chronological group of hoards is the extremely rich Pugritsa III hoard (5007 coins). The youngest coin in this hoard is a schilling from Riga, which bears the date [15]97. Estonian archaeologist Andres Tvauri argues that its concealment may have been connected with the fateful arrival of war in those parts of Estonia. This assumption is supported by the numerous coin finds made in the same historical region in recent and earlier times. Thus, the Pugritsa III hoard redraws Kiudsoo's earliest dating of hoards associated with the outbreak of war by one year.⁷³⁴

It is noteworthy that the majority of these 65 hoards (Kiudsoo reports about 61 hoards and Tvauri – 4 hoards) have been found in Southern Estonian territories.⁷³⁵ 35 out of 65 hoards are complete and may be subject to further analysis of the major groups of coins.

⁷³⁰ Kiudsoo, "Eesti mündiaarded 17. sajandist."

⁷³¹ The difference can be explained with principally different periodisation of Polish rule in each country. In Latvian historiography, 'Polish times' are casually dated according to the king's rule over Riga, not the land, as in Estonian historiography. See also Ducmane and Ozoliņa, *Monētu depozīti*.

⁷³² Kiudsoo, "Eesti mündiaarded 17. sajandist.," 13–20.

⁷³³ I am grateful to Dr. Andres Tvauri from the University of Tartu who generously provided me with the information and detailed reports of each find.

⁷³⁴ Kiudsoo, "Eesti mündiaarded 17. sajandist.," 13.

⁷³⁵ See Kiudsoo, "Eesti mündiaarded 17. sajandist.," Map 1.

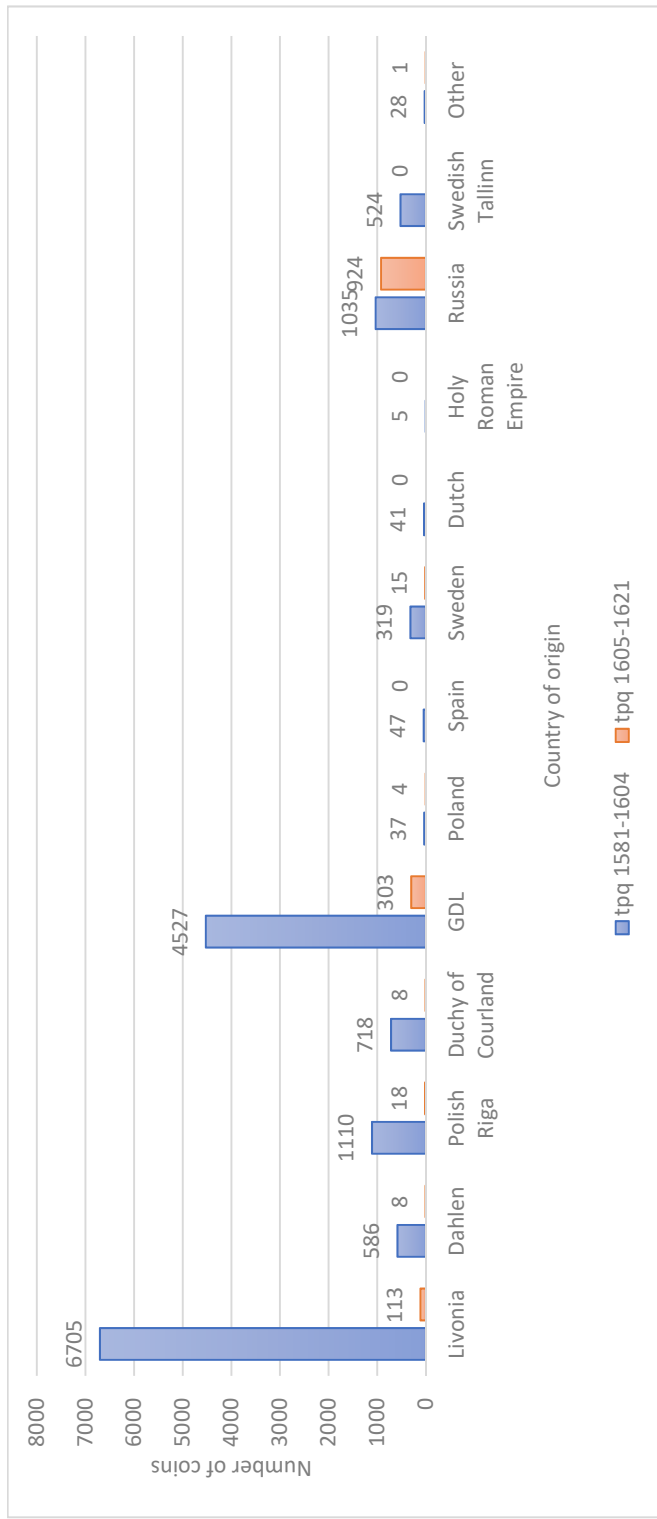


Fig. 4.6.10 Composition of Estonian hoards, *tpq* 1581–1604 and *tpq* 1605–1621.⁷³⁶

⁷³⁶ Kiudsoo. Catalogue Nos 1–10, 12–16, 18, 20–23, 25–26, 30, 33, 36–38, 40–41, 43, 51 plus Pugritsa III, Kiviküla, Öruste Ööbiku, and Uniküla hoards.

Estonian hoards reveal a somewhat different picture of the development of the monetary market in the Duchy of Livonia. In the earlier stage, Lithuanian ½-groschen and Livonian issues, especially schillings, dominated the small change market. Local issues from nearby Swedish Tallinn played a comparably minor role in the monetary market since the minting was severely disrupted there for most of the research period, from 1597 to 1620. Consequently, issues of the competing Polish Riga mint could be expected to make a stronger appearance. However, their preeminence is not so expressed. Riga issues also stand in nearly the same positions as the late 16th century schillings of Dole and Duchy of Courland. Comparably fewer Spanish kingdom or Spanish colonial issues are found in Estonia than in the Latvian sector.⁷³⁷ With five 8- and 4-real coins, Pugritsa III hoard is one of the richest finds of such coins. Andres Tvauri writes that before this discovery “15 Estonian hoards were formerly known to contain Spanish 8- and 4-real coins, 13 of them discovered in southern Estonia in the territory of historical Duchy of Livonia.”⁷³⁸ It is therefore a typical feature of Latvian and Estonian numismatics that the distribution area of the Spanish kingdom and colonial money lies within the limits of the historical territories of the Duchy of Livonia.⁷³⁹ The outbreak of war in 1600 resulted in a similar depletion of small change in Estonia as it was in the southern part of the Duchy. Whatever the reasons, they seem to have had less effect on Muscovite currency,⁷⁴⁰ which was generally more widespread in Estonia than in Latvian territory, although it was on the rise in the latter (compare Figs. 4.6.1 and 4.6.10).

With the invasion of Riga in 1621, the Livonian monetary market stood before the next great transformation (Fig. 4.6.8). Polish Riga schillings saw a spectacular reappearance in the Estonian archaeological material. As previously suggested, the massive concealment of Polish Livonian issues could be seen as a reaction to Sweden’s policy opposing local coinages and overvaluation of Swedish issues. Besides hoarding, many more Polish period issues could be reminted or exported over the GDL border, where they could be invested in goods or exchanged at a better price. Although somewhat later than in Latvian parts, in the hoards with *tpq* 1630 and upwards Swedish mainland issues

⁷³⁷ 17 finds with 215 Spanish American coins are unearthed in Latvia: Kristīne Ducmane, “Jaunspānijas un Peru vicekaralistes monētas Latvijas depozītos,” in *Latvijas Nacionālā vēstures muzeja zinātniskie lasījumi 2007.–2010. Rakstu krājums.*, Latvijas Nacionālā vēstures muzeja zinātniskie raksti 19 (Rīga: Latvijas Nacionālais vēstures muzejs, 2013), 147.

⁷³⁸ Andres Tvauri, “Three Medieval and Early Modern Hoards from Pugritsa Village, Historical Võrumaa,” *Archaeological Fieldwork in Estonia*, 2016, 87.

⁷³⁹ Tvauri, 87.

⁷⁴⁰ It was generally of high silver content and therefore good for hoarding.

occupied an ever-increasing share, signaling an increasing presence in southern Estonian economic relations.⁷⁴¹

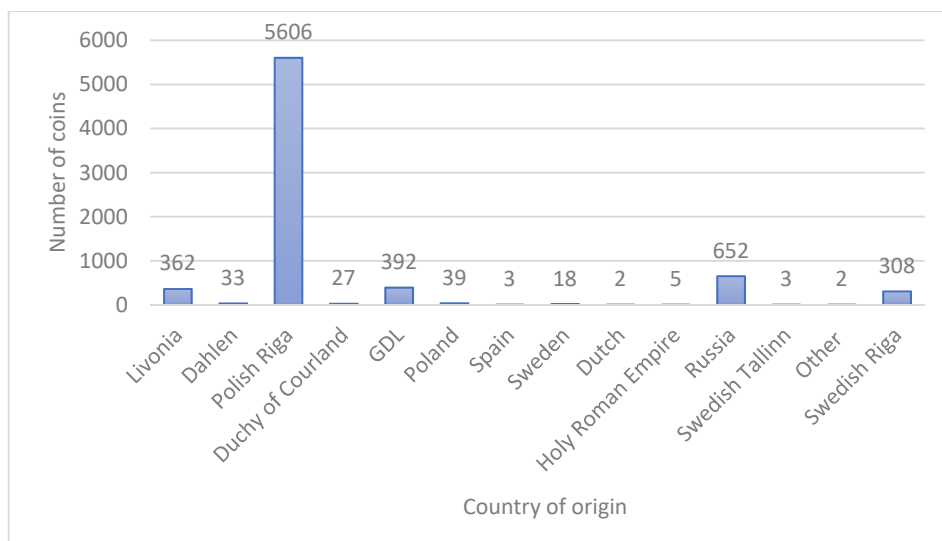


Fig. 4.6.11 Composition of Estonian hoards, *tpq* 1622–1629

Kiudsoo does not attribute hoarded coins by issue years. Therefore, it is not possible to study distribution of schillings by issue years similar to the analysis of Latvian and Polish finds. However, in drawing the northern limits of the dissemination of Riga schillings in the chronological period from 1581–1600, one can rely on the most recent finds: Pugritsa III (*tpq* 1597), Uniküla (*tpq* 1600), Öruste Ööbiku (*tpq* 1600) and Kiviküla (*tpq* 1600). These hoards contain 172 Riga schillings, of whom 4 could not be attributed more precisely. Similar to the distribution of schillings in Latvian hoards, earlier issues are rarely represented, if at all. There is also an upward movement of schilling issues from 1593–1594, culminating at the turn of the century. The only divergence from Latvian statistics is the peculiarly high number of 1594 issues.

⁷⁴¹ By the mid-17th century Swedish coinage had solidified its dominance over the Estonian small change monetary market almost completely, although Muscovite coins were permanent fixtures in Estonian hoards throughout the ‘Swedish times’.

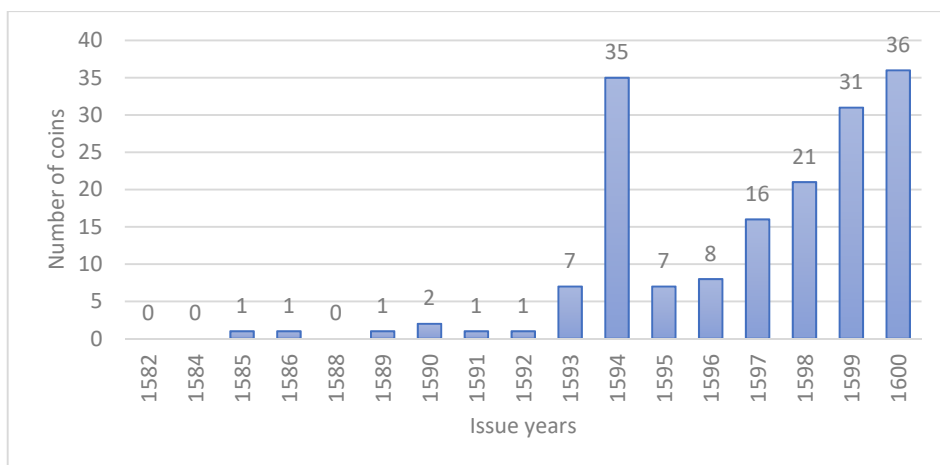


Fig. 4.6.12 Chronological distribution of the Riga schillings (1582–1600) in Estonian hoards, *tpq* 1581–1600

4.7 Preliminary conclusions

Notwithstanding the methodological and chronological differences between the statistical analysis of the distribution of the Riga schillings in five modern countries which comprise most of the historical territories of the early modern Commonwealth, with the assistance of calculated yearly issue rates (Fig. 4.1.1), it is feasible to make general observations and conclusions on the coinage dynamics and dissemination patterns of the Riga schillings. First, I consider common features. Except for Estonian statistics (1601 issues are missing), all other national statistics provide comparative data about the distribution of the Riga schillings minted from 1582 to 1601 (Fig. 4.7.1). The combination of modern Latvian and Estonian finds attest for almost an equally large share of hoarded schillings as all the other countries combined. The previous assumption of the Duchy of Livonia as the core circulation area of the Riga schillings is clearly valid. Each country's national statistics of schilling distribution reveal the same general pattern. It leads to several important conclusions: from the onset of their coinage the Riga schillings disseminated over the whole Commonwealth; the share of schillings circulating at home (Estonia and Latvia) and disseminating over other parts of the Commonwealth could be similar. The rising figures of 1593 to 1600 schillings in all national statistics suggest an increasing availability of schillings, i.e. growing issue rates.

Considering the critical points in the output reconstruction method (see 4.1), in the Thesis I employ the altered method. First of all, I extend the monetary basis with additional results from other nations, secondly, I distinguish four mid-term trends in schillings coinage intensity: 1582–1592, 1593–1597/1598–1608, 1609–1614, and 1615–1621. Further, I make estimates of the average

emission results for 1598–1621. The first two unrecorded periods (until 1597), for which there is a lack of hard data, were comparably stable in monetary development and without evident restrictions to schilling dissemination, hence I argue that a link between the av. distribution rate and av. emission figures can be established with some precision (see below). If one departs from the issue rates of 1598–1601,⁷⁴² which averaged 5.26 million a year, in 1593–1597 schilling production increased progressively by a factor of five to eight, meanwhile, a flat and low issue rate for the first decade (1582–1592), less than 1 million pieces a year, can be deduced.

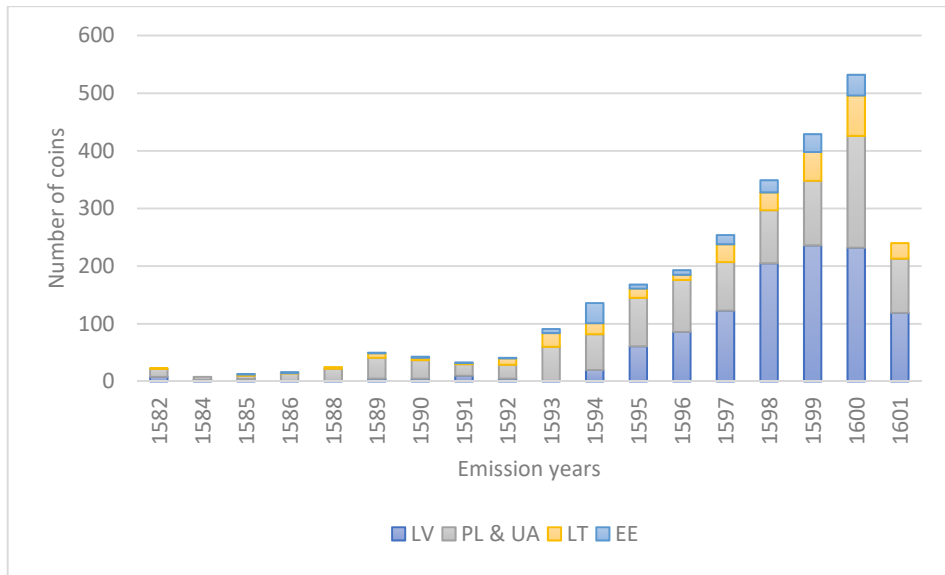


Fig. 4.7.1 The cumulative Riga schilling distribution in five modern countries (PL, UA, LT, LV, EE), *tpq* 1582–1601⁷⁴³

The year 1601 demonstrates the first crucial divergence between the emission rates (Fig. 4.1.1) and the prevalence of issues in the coin finds, which suggests major disturbances in coin dissemination and circulation. It means that there can not be established a trustworthy relation between the emission rates and cumulative distribution of each emission year beyond the 1601 issues. Reconstruction methods should be applied only with a critical evaluation of their results. Henceforth, national statistics preferably should be studied within the domestic monetary development context, and only secondary through the research of schilling emission rates.

⁷⁴² 1598–1601 schilling emission rates are relevant for this method. See below.

⁷⁴³ This Fig. is composed of the Figs.: 4.5.1, 4.6.2, and 4.6.12.

The great divergence between the results of both source groups of emission rates and hoarded schillings emerged as a result of the violent transformations in the Commonwealth monetary policy and regional politics, the process, which took shape in the turbulent years between 1601 and 1604. The beginning of the Polish-Swedish War was the major catalyst of dismantling the former small change structure and depletion of the local monetary base.⁷⁴⁴ Schilling coinage suffered from precarious war-time economic conditions, restricted trading activity and bullion inflow, which reflected in the form of the silver famine of 1601–1603.

Additionally, in the long term the local monetary base was replenished by the shortfalls in the Polish coinage in the aftermath of the stipulations of the 1601 Constitution order. Riga remained the only significant schilling issuer in the Commonwealth for twelve consecutive years (until 1613). In terms of processed silver and emission rates, they fell behind the average outputs of Riga schillings and 3-groschen of pre-war years (1598–1600). Only in the years following a short lapse in 1608/1609, yearly outputs doubled and more than tripled between 1615–1621. However, that increase in schilling supply hardly reached domestic users. According to Latvian hoard analysis, there was a drastic decrease of schilling concealments of post -1600 issues (with an exception for 1607) until the late 1610s schillings. Although several mint sources hint at the recoinage of schillings at the mint (in 1612, 1621, 1622), these were temporary measures, which were unlikely to empty schilling stocks of specific issues. This suggests more than a decade-long extraction of most of the production directly from the mint. The most reliable explanations for their dispersal could be sought in the context of coin export. GDL, given its proximity to Riga and the relatively small outputs of schillings in Vilnius mint during these years, was certainly one of the largest sales markets. More than 10 000 Riga schillings (1602–1622), which have been detected in Lithuanian hoards⁷⁴⁵, account for nearly the same amount of the Riga schillings that have been found in Estonian and Latvian hoards combined.

If we extend our gaze over the Lithuanian southern border into the Polish Kingdom, which was a much more populous and richer territory, one should expect to account for tens of thousands of schillings. However, this assumption is very problematic, given the surprisingly small numbers of deposited schillings outside of the modern Baltic state borders. In fact, A. Mikołajczyk's analysis of chronological schilling distribution in Polish hoards suggests a considerable drop in schilling imports right after 1600. Polish authorities might have succeeded in limiting imports and usage of the Riga schillings at some point following the Warsaw Commission discussions in 1604, but not completely. In general, the Riga schillings managed to secure or even improve their key role in the Polish schilling market, assuming the lion's share of the whole

⁷⁴⁴ Unless complete productions were bought up, piled somewhere and melted down.

⁷⁴⁵ Grimalauskaitė and Remecas, *Money in Lithuania*, 206.

schilling market (58.15%).⁷⁴⁶ Furthermore, any assessments of the imported amounts of the Riga schillings in Poland might be hugely distorted since the Riga schillings were massively melted down and/or hoarded. Given the comparably high silver content, the Riga schillings were in demand both at home and outside the provincial borders. Thus, a strict small-change policy would lead to the depletion of Livonian small change stocks. The Riga schilling outflow faltered around 1615 after the enactment of a new schilling coinage policy, which encouraged gradual schilling debasement for the sake of greater profit. The schilling production was not merely oriented to export but also domestic consumption. Demand for schillings could be higher than ever as testified by the skyrocketing emission rates and record-high hoarding results in the years following the 1621 Swedish invasion. Hoarding of schillings, though, was more likely reinforced by Sweden's prohibition policy and introduction of copper coins.

⁷⁴⁶ Mikołajczyk, *Einführung*, 68.

Chapter 5. EXPANSION OF THE RIGA SCHILLINGS IN THE COMMONWEALTH (1615–1621)

This chapter investigates one of the research questions of my Thesis: what contributed to the schilling expansion or how they became overwhelmingly competitive and widespread in the Commonwealth? The main focus here is on the final 7-year period, which is represented with the widest spectrum of historical evidence and can be subject to thorough interdisciplinary examination. I proceed from the premise that due to the low material value and limited monetary role in international trade, massive long-distance dissemination of small change was quite atypical to early modern Europe. I look for specific political-economic and monetary traits, which preconditioned their expansion, changing supply-demand relations in and outside the domestic Livonian market.

Being the principal means of everyday transactions, schillings had limited use in large-scale merchandise. Before entering the Polish Kingdom in large quantities, Riga schillings had to overcome some practical obstacles. Due to their size and low purchasing power, schillings were extremely unwieldy for making large purchases, not to mention for use in long-distance transactions. Transportation costs and the guarding of the precious cargo made any such transactions economically unfeasible. To sum up the idea: “Petty coins circulated locally but not internationally, except in some border areas.”⁷⁴⁷ Riga merchants settled their contracts with the economic hinterland in sound money, e.g. thalers and Spanish reals. In fact, among the so-called *Retour-Waren*, or import products that were being re-imported in the east, western coins were dominant.⁷⁴⁸

If there was any outflow of Riga schillings, naturally, the Polish Kingdom and GDL would be the affected destinations, therefore, one might expect growing interest in Riga schillings in these countries. The nearly absolute absence of written evidence, unfortunately, hinders the possibility of drawing precise periodical and geographical limits of the start of Riga schilling expansion. No earlier than 1604 did Riga schillings become a visible subject in the monetary political arena. The discussions of the Commission of Warsaw in 1604 drew attention to the problematic Riga schillings, which with other low-quality small change could be taken out of circulation.⁷⁴⁹ In ten years or even less, one could witness widespread speculation with Riga schillings. The most vivid example of the ongoing speculations is provided in the letter from 15 July, 1614 of mint master of Riga, Henrich Wulff I:

“[...] in Crown Poland and the Grand Duchy of Lithuania coins are exchanged and worsening in a way that not only our 3-groschen and groschen but also our Rigan schillings are transferred and reminted: poor quality coins, however, are

⁷⁴⁷ Motomura, “The Best and Worst of Currencies,” 108.

⁷⁴⁸ Doroshenko, *Torgovlia i kupechestvo*, 91–92.

⁷⁴⁹ *Sententia dominora Commissariorum in negotio rei monetaria diebus Julii Anno 1604 expedita*: LVVA 673-1-1283, fol. 43v.

arriving not only from Crown Poland and GDL but particularly from everywhere else to the detriment of common use [...],⁷⁵⁰

In this letter mint master Wulff drew the Riga City Council's attention to the repeated reduction in the quality of Polish and Lithuanian coinage, which is why not only Riga 3-groschen and 'our groschen',⁷⁵¹ but also schillings had become a source of exchange; besides, bad coins were arriving not only from the Commonwealth but even more from other places. The mint master was most alarmed by such a turn of events since the unequal exchange of schillings (or any other denomination) drained Riga of the precious silver reserves.

Confronted with the prospects of losing control over the domestic market to the floods of bad coins, in the same letter mint master H. Wulff used all of his persuasive skills to agitate for the debasement of Riga schillings. He argued that the debasement would allow covering for the losses sustained by the invasion of debased currency and the long war years. According to his estimates, the treasury could expect a yearly income of 18 000 Polish florins. The mint master ascertained that the new policy would not hinder the city privileges. Riga coins would still be minted at the same intrinsic and extrinsic value as Lithuanian and Polish coins.⁷⁵² His arguments for the much-needed debasement of Riga coinage were strengthened with a fresh perspective of the Commonwealth monetary policy. Namely, in recent years the treasuries of the Polish Kingdom and GDL set an objective of maximising profit by employing lowering coinage standards.⁷⁵³ Seeing that debased currency was commonplace, the mint master acted as patron of a new policy: "almost everywhere in Europe worse quality coins are being produced and all coins I had to exchange, were smaller than the previous ones."⁷⁵⁴

Despite the mint master's efforts, the Riga City Council did not respond in the way H. Wulff expected. The principles of small change policy probably had not been regulated or stipulated by the royal decrees yet. The main reason for the delay could be the fact that the mint had to obtain a licence from higher authorities – the king or Lithuanian treasurer before introducing any changes in coinage quality (see 5.3). By that time exchange with the debased Polish and Lithuanian coins had reached critical levels in Riga. As expressed in the cited letter, if the coins were not debased, the mint master would suffer severe

⁷⁵⁰ "[...] in der Chron Pohlen vnd in GroßFürstenthumb Littawen die münzte sich andert vnd ringert dergestaltt, das nicht allein vnsern Düttchen vnd groschen, dan auch vnser Rigsche Schilling vmbgeschlagen vnd vormüntzett werden: Dringen aber die geringere münzte nicht allein auß der Chron Pohlen oder GroßFürstenthumb Littawen besonder auch allenthalben dahero zu vns Häuffigk herein geführet würdt: mit trefflichem schaden des gemeinen Nutzen [...]" H. Wulff's report, 15.07.1614: LVVA 673-1-1283, fol. 99r.

⁷⁵¹ The meaning of "our groschen" in this source is uncertain. Neither of the groschen units (3-groschen, groschen or 3-pölkers) were issued at that time in Riga. Most likely, H. Wulff was referring to Livonian ferdings.

⁷⁵² H. Wulff's report, 15.07.1614: LVVA 673-1-1283, fol. 99v.

⁷⁵³ Ibidem, fol. 99v.

⁷⁵⁴ "[...] ahll fast in gantz Europa allenthalben der Hammer geleichtet wirdt und alle münzte die ich an mich wechßeln muß, inn mer geringer ist dan die vorige [...]" – Ibidem, fol. 100r.

losses.⁷⁵⁵ It was clearly for this reason that the mint master opted for the closure of the mint on the following day.

The mint didn't resume operations until 2 February 1615. However, as previously observed, except for the rise in Schlagschatz rate, no adjustments in schilling quality were made until 23 September. The reasons for that remain undisclosed. Several more readjustments followed in the final quarter of the year, which put the schilling coinage in Riga on solid ground. From the yearly schilling output data and issue distribution rates in Polish (and Lithuanian?) hoards, it can be suggested that around 1615 the moral, economic and legal ground had been laid for the extensive debasement and dissemination of Riga schillings. In order to understand what were the driving forces behind the spectacular rise of Riga schillings in this final stage, in the succeeding sub-chapters I shall examine several of the above-mentioned claims in H. Wulff's letter. His views were not only those of an expert but also formed through the actual experience at the mint and networking with entrepreneurs, colleagues in other mints, and merchants.

5.1 The looming European monetary crisis

As argued by the mint master H. Wulff, in the early 17th century debased coins dominated across Europe.⁷⁵⁶ Wulff's argument was based on empiric evidence gathered from the continent, which I do not need to question, since his principal function as the head of the mint included exchanging foreign money with local units and testing their quality. If anyone, it was the mint master, who was most updated in matters of circulating money quality. Still, it is worthwhile to verify such claims on a factual information basis, since this aspect is vaguely understood in the context of Baltic numismatics.

While reoccurrences of regional monetary crises and debasement of coinages were commonplace in European monetary history, monetary crises on a continental scale occurred far less frequently. On a broader scale, monetary crises can be classified in terms of causal factors. Most of the medieval and early modern monetary crises were somehow related to bullion crises, caused by the trading imbalance of western Europe to the east, low capacities of silver mines, or social problems. The late medieval bullion famine (late 14th to mid-15th century) is one of the most well-known examples of this type of monetary crisis.⁷⁵⁷ Secondly, we

⁷⁵⁵ Ibidem, fol. 100r.

⁷⁵⁶ H. Wulff's report, 15.07.1614: LVVA 673-1-1283, fol. 100r.

⁷⁵⁷ There is a great deal of literature dealing with the late Middle age bullion famines, although, given their all-pervasive character, to some extent it is covered practically in all Medieval numismatic literature: Andrew M. Watson, "Back to Gold-and Silver," *The Economic History Review* 20, no. 1 (1967): 1–34.; Spufford, *Money and Its Use*, 339–62.; Alan M. Stahl, "European Minting and the Balance of Payments with the Islamic World in the Later Middle Ages," ed. Simonetta Cavaciocchi, *Relazione Economiche Tra Europa e Mondo Islamico, Secc. XIII–XVIII.*, Settimane di Studi 37, 2007, 889–906., Nathan Sussman, "The Late Medieval Bullion Famine Reconsidered," *The Journal of Economic History* 58, no. 1 (1998): 126–54.

may speak of a crisis in terms of overwhelming debasement praxis, of which the *Kipper und Wipper* (1618–1623), lit. the clipping and culling times is the most representative case. In regards to the research period and the character of schilling expansion, the latter seems to be the most related comparison.

Most of the literature regards the *Kipper und Wipper* crisis within the territories of the Holy Roman Empire. Polish numismatist Andrej Mikołajczyk is essentially the only non-German-speaking numismatist to understand crisis as something larger, extra-national. He expanded it to a wider, central European context, bringing Poland and the neighbouring lands of Silesia, Bohemia, Hungary, and Austria within its scope.⁷⁵⁸ Some scholars trace its roots to the arrangements of the Empire mint ordinance of 1559, which made small coins full-bodied. Due to production costs, mostly large denominations coins were produced, causing in effect shortages of small change “that was increasingly met by unauthorised mints that produced light-bodied coins.”⁷⁵⁹ The uncontrolled coinage went hand in hand with clipping of small change and the ensuing massive speculations with small change which in turn led to silver shortages and inflation, which was imported to the neighbouring lands. Unauthorised coinage in remote or previously abandoned mints (*Heckenmünzerei*)⁷⁶⁰ was a widespread phenomenon in which a large, yet hardly accountable number of men, both from high ranks and lower social groups were engaged. In 1621–1623, Kuttenberg in Bohemia became the hotspot for *heckenmünzerei*, in which hundreds of millions of secretly debased coins were produced at the incentive of the highest state authorities.⁷⁶¹ There is a vivid example of *heckenmünzerei* from the Duchy of Pomerania, western borderland of the Polish Kingdom. In 1609, Duke Philipp Julius (1584–1625) opened the mint of Franzburg.⁷⁶² According to the testimony of the mint tenant Caspar Rotermund, coins were minted from old silver and ‘Polish silver’. In 1610 he signed a contract with Daniel, a Jewish goldsmith, who promised to supply the mint with cheap silver. Silver and gold were acquired in the Commonwealth in exchange for groschen, which had been minted in larger quantities for this purpose.⁷⁶³ Despite Rotermund’s argument that groschen had been minted to acquire Polish silver, groschen went into local circulation as well. Due to the poor quality, Franzburger groschens were soon prohibited in several German lands, and finally, in 1612 in Pomerania. Rotermund, however, hesitated to quit minting debased

⁷⁵⁸ Mikołajczyk, *Obieg pieniężny*, 1980, 15.

⁷⁵⁹ Sargent and Velde, *The Big Problem*, 257.

⁷⁶⁰ Konrad Schneider, “Heckenmünze,” in *Von Aktie bis Zoll. Ein historisches Lexikon des Geldes*, ed. Michael North (München: C.H.Beck, 1995).

⁷⁶¹ Michael North, *Kleine Geschichte des Geldes. Vom Mittelalter bis heute*. (München: C.H.Beck, 2009), 101–3.

⁷⁶² The whole case is described in detail by Joachim Krüger, *Zwischen dem Reich und Schweden: die landesherrliche Münzprägung im Herzogtum Pommern und in Schwedisch-Pommern in der frühen Neuzeit (ca. 1580–1715)* (Münster: LIT Verlag Münster, 2006), 107–18.

⁷⁶³ Krüger, 109.

groschen until 1613.⁷⁶⁴ Joachim Krüger argued that the whole idea of opening a new mint and subletting it could be connected with the duke's debt to Rotermond. By doing this, the duke was violating the Holy Roman Empire's Mint order (1559), which forbade the leasing of mints.⁷⁶⁵ This case somewhat predates the accustomed timeline of Kipper and Wipperzeit, but adds new local perspectives to the small-change problem in Europe.

Neither France nor England was spared from clipping and counterfeiting of base money. According to Glassman and Redish, the illegal manipulations were encouraged by the "primitive state of coin-making", e.g. hammering of money and the very small distinction between clipped and worn coins.⁷⁶⁶ In England, for example, the law permitted circulation of clipped coins as legal tender, but at decreased, bullion, value.⁷⁶⁷ In response to the continual emergence of bad money, the monetary authority raised the "tender value of the good money, that is, by depreciating the currency."⁷⁶⁸ Mint and coinage disorders were aggravated due to improper tariffing of the English against continental coins when illicit export of domestic currency ensued. Moreover, as pointed out by W. A. Shaw, there were hardly any domestic coins issued between 1613 and 1621.⁷⁶⁹ In such conditions, foreign coins infiltrated the local monetary markets, even from countries as distant as Crown Poland. The Eastland Company, whose trade had gone, blamed the scarcity of silver "to the rise of foreign coin, especially that of Poland and Holland, during the last four years in which the Hollanders have farmed the King of Poland's Mint."⁷⁷⁰ In France, the proclamation of December 5, 1614, increased the exchange ratio between silver and gold, thus depreciating the value of current money. This, as argued by W. A. Shaw, saved France from the catastrophe "which befell England and Germany."⁷⁷¹

Although under different circumstances, similar problems of clipping and culling were observed in Amsterdam, which was the hub for monetary transactions in early modern Europe. In the ordinance of the city of Amsterdam of July 15, 1608, one can read some of their concerns:

"Whereas by ordinance of this State of June 15, 1604, on good and weighty considerations it is provided against the great disorder and heavy ruin which are found to result from the great irregularities and license which various persons, under pretext of banking, and other merchants, were practising in taking in and paying out other people's money and culling out the heavy pieces, as also by the many bills of exchange and such devices; such people, knowing well how to make their profit from the heavy coins, returning the light pieces again into currency [...]"⁷⁷²

⁷⁶⁴ Krüger, 114–15.

⁷⁶⁵ Krüger, 107.

⁷⁶⁶ Glassman and Redish, "Currency Depreciation," 6–7.

⁷⁶⁷ Glassman and Redish, 6.

⁷⁶⁸ Glassman and Redish, 7–8.

⁷⁶⁹ Shaw, *The History of Currency, 1252–1894*, 144.

⁷⁷⁰ The source is unknown. Here cited after: Shaw, 139.

⁷⁷¹ Shaw, 90.

⁷⁷² Quoted in: Shaw, "Monetary Movements," 193.

Rightfully so, Shaw understood Kipper und Wipperzeit not as an inherently ‘German’ phenomenon. Before the local sovereigns lost control of sound money the Holy Roman Empire was flooded with debased specie from beyond its borders. Price and monetary movements in early modern Europe were omnipresent. Ever since the beginning of the price revolution in the 16th century scholars related quality problems to the “changed relations of the precious metals since the discovery of the New World.”⁷⁷³ While the metal content of the largest and standard units remained largely unchanged, price changes were expressed in the devaluation of smaller units of monetary systems. These ‘changed relations’ as argued by W. A. Shaw were met most successfully in the states “where strong central rule prevailed.”⁷⁷⁴ German countries were not up to the task due to political particularism and the ‘simony’ of trading and purchasing sovereign right of minting. Debasement was a constant danger to monetary stability “long before and long after the Kipper und Wipper-Zeit.”⁷⁷⁵ As the list of debasers grew longer with each year, so did the exchange rates of Reichsthaler in the Empire and across the European countries most vividly in the first quarter of the 17th century (1600–1625).⁷⁷⁶

This general description of the situation in the various markets shows that H. Wulff’s claim was hardly an overstatement. In light of the given examples, one can infer a growing pressure on price stability in the Commonwealth due to the rising stock of debased, counterfeited, worn, and clipped everyday coinage. Despite the concentration on Kipper und Wipperzeit in the literature of the early modern monetary crises, this general survey shows the existence of a currency base deterioration on a continental scale. Though H. Wulff’s statement was correct, it missed an important explanation, though – the depletion of European currency was not authorised by major governments in the first place, secondly, poor foreign coinage quality was not recent news.

5.2 Market conditions in Riga and Polish Livonia

Wulff’s letter sought to change the mental attitude towards small change debasement by drawing on local political and military turbulent times in Riga, which were less predictable and peaceful for the local economy than the previous few decades. As the numerous medieval and early modern period studies of currency depreciations show, inflation and currency depreciation was closely connected with numerous social-economical processes – demography, supply and demand relations of precious metals, and economic and social structure of society.⁷⁷⁷ This chapter examines several social-economic indicators and the possible impact on the outputs of Riga schillings.

⁷⁷³ Shaw, 202.

⁷⁷⁴ Shaw, 202.

⁷⁷⁵ Shaw, 202.

⁷⁷⁶ Shaw, 202.

⁷⁷⁷ For the understanding of the scale of currency depreciation in Europe, two articles offer a good start: Cipolla, “Currency Depreciation.” and Watson, “Back to Gold-and Silver.”

After the Livonian War, Riga and Polish Livonia enjoyed a (short) period of much-needed relief.⁷⁷⁸ The recovery process was long and costly. Compared to the 1540s pre-war figures, 1590s crops in the former manorial estates of the Archbishopric of Riga still lagged behind almost by half.⁷⁷⁹ These figures are a relevant point of reference since the farmlands were located in a Polish-ruled area, which in 1582 was transferred to the Roman Catholic Diocese of Cēsis. Another point of reference for the current study is population number. Based on indirect sources, E. Dunsdorfs estimates the drop in Latvian speaking population of Polish Livonia from 179 100 before the outbreak of the Livonian War in the 1550s to 104 750 inhabitants in 1601.⁷⁸⁰ Another 55 000–60 000 Estonians could be living in the northern part of Polish Livonia at that time.⁷⁸¹ Thus, the total population of Polish Livonia was in the margins of 150 000 and 200 000. The more affluent townsfolk of Riga (8000–15 000) and Tartu (600–1000)⁷⁸² made a marginal 5% of the total population.

The Polish-Swedish War period (1600–1629) put an end to the ‘renewal period’ of the local Polish Livonian economy. After the first Swedish attacks in 1601, Riga and the city surroundings became an area of repeated military manoeuvres in 1605, 1608, 1617, 1618, 1621.⁷⁸³ “The new war”, writes Dorošenko, “had a more devastating effect on the Latvian and Estonian lands than the Livonian war.”⁷⁸⁴ In the mid-1620s as much as ½–¾ of farmsteads had been laid waste to. The recovery of the economy was hindered by the low morale and lack of discipline of mercenaries. Ultimately, endemic shortage of livestock and financial means led to marauding, which was part of the war doctrine of the time, ‘war feeds itself’. Dorošenko makes a bold statement claiming that the consequences of the Polish-Swedish War (1600–1629) could be matched only by the Thirty Years War (1618–1648) of the same era.⁷⁸⁵ Thus, in terms of human

⁷⁷⁸ Latvian historian V. Dorošenko gives a detailed account on the desolation of the Livonian (Latvian part) estates during and after the war years. Dorošenko came to conclusion that: “At the end of the Livonian War in most of the Livonian and Lettgallian territories the local agriculture was severely damaged.” Before the start of the Polish-Swedish War many estates in Vidzeme had recovered considerably, with only 8.4–1.5% of former agricultural lands left unharvested. Vasilijš Dorošenko, “Kara postījumu sekas Vidzemes un Latgales lauksaimniecībā XVI gs. otrajā pusē,” *Vēstures problēmas*, no. 3 (1960): 20, 28–29.

⁷⁷⁹ Dorošenko, 26.

⁷⁸⁰ Dunsdorfs and Spekke, *Latvijas vēsture 1500–1600*, 215–17.

⁷⁸¹ This figure is deduced from the indirect calculation of Estonian population of the Duchy of Livonia and additional 5% of the town dwellers. Heldur Palli, *Eesti rahvastiku ajalugu aastani 1712*, Academia 6 (Tallinn: Teaduste Akadeemia Kirjastus, 1996), 50.

⁷⁸² Before the start of the Livonian War, the population of Dorpat was in the margins of 5000–6000 inhabitants, while in 1656 it was estimated at 1200–1500 inhabitants. Veiko Berendsen, Enn Küng, and Margus Maiste, “Tartu rahvastik 17. sajandi lõpul ja 18. sajandi algul – Rahvusarhiiv,” *Tuna*, no. 1 (2010): 30.; Heivi Pullerits, ed., *Tartu: ajalugu ja kultuurilugu* (Tartu: Tartu Linnamuuseum : Ilmamaa, 2005), 113.

⁷⁸³ Dzidra Liepiņa, “Rīgas patrimoniālā apgabala zemnieku šķiru cīņa poļu-zviedru kara laikā: (1600.–1629.g.),” *Vēstures problēmas*, no. 3 (1960): 41.

⁷⁸⁴ Dorošenko, “Kara postījumu sekas,” 20, 28.

⁷⁸⁵ Dorošenko, 34.

capital and economic conditions, the predominantly agrarian society of the Duchy of Livonia was experiencing hard times beyond comparison.

Despite the innumerable losses of the local population, this does not seem to have had any effect on the schilling coinage. Assuming that most of the emissions reached local populations, schilling expansion increased their availability as well as monetisation of larger masses including the peasantry. Discussions on the extent the Polish Livonian economy was money-based, yield no definitive answers yet. The development of monetary commodity relations has been examined only for the later decades under Polish rule and the Swedish Livonian period. The major studies of agrarian economic history by E. Dunsdorfs⁷⁸⁶ and Enn Tarvel⁷⁸⁷ shows that peasants owned little real estate, movable property, or financial means. This explains the fact that within rural population regular (*corvée*⁷⁸⁸) and extraordinary dues were permissible in kind, labour, and cash payments. The land revision data from 1590 and 1599, gives a very uneven picture of money-based taxation. Jānis Zutis wrote that the payment depended on the size of the arable land. In addition, Zutis claimed that the cash dues were probably the harshest, unlike *corvée*, they were based on the size of the farm and therefore were non-negotiable.⁷⁸⁹ Other dues were levied based on crop size. For example, in Koknese, peasants paid 2 zloty in account units for 1 plough, in another Koknese folwark farm – 4 zloty. Simultaneously, in Āraiši (Ger. Arrasch) only 6–8 groschen had been paid for 1 plough.⁷⁹⁰ A more detailed inventory of the yearly taxation is available from Lemsal manor. 24 different taxes were enumerated, of which only 3 had been charged in currency – 1 zloty in cash for the plough, 1 zloty of ‘sheep’ fee, and 18 groschen (or half thaler) in ‘ox’ fee.⁷⁹¹ In one of the richest manorial households of Bērzaune (Ger. Bersohn), owned by the influential Thiesenhausen family, each unmarried household man was charged with 8 schillings plus 6 schillings ‘welten’ (?). The head of the household was charged a 4 marks yearly fee.⁷⁹²

While measuring the total of cash accounts to the produce accounts from the Estates of Axel Oxenstierna, Dunsdorfs concluded that the relationship was in favour of the natural economy for most of the period, but in the mid-1650s “money economy overtook natural economy”.⁷⁹³ Additionally, Dunsdorfs examination shows that the cash-production relationship changed for the good with payments in

⁷⁸⁶ Dunsdorfs, *Arklu revīzijas 1601-38*; Edgars Dunsdorfs, *Uksenšernas Vidzemes muižu saimniecības grāmatas 1624.–1654.* / (Rīga: LU Studentu padomes grāmatnīcas izd., 1935).

⁷⁸⁷ Enn Tarvel, *Foljvark, pan i podannij* (Tallinn: Akadēmija nauk Estonskoj SSSR, 1964), 216–20.

⁷⁸⁸ Serf labour performed in lieu of cash payments to the overlord.

⁷⁸⁹ Jānis Zutis, *Vidzeme kā poļu un zviedru cīņas objekts: 16. gs. otrā puse – 17. gs. sākumam*, Apcerējumi par Latvijas PSR vēsturi 6 (Rīga: LVI, 1949), 47–48.

⁷⁹⁰ Nikolajs Ķaune, *Leišu un poļu laikmets Livonijā*, Jaunais zinātnieks 34 (Rīga: Valters un Rapa, 1936), 75..

⁷⁹¹ Ķaune, 76.

⁷⁹² Ķaune, 76.

⁷⁹³ Edgars Dunsdorfs, *The Livonian Estates of Axel Oxenstierna* (Stockholm: Almqvist & Wiksell International, 1981), 76.

kind in years of bad crops. The same tendencies could have developed both in manorial as well as peasant economies.⁷⁹⁴ The seasonality of manorial and peasant economies, therefore, was a crucial factor in the transition to the cash economy. The amount of circulating money was limited for another reason – the less intensive exchange of tradeable goods on the countryside than in towns. The monetisation of peasant society was largely dependent on the relation between the volatile household productivity and the rather inflexible taxation system, where the peasantry was often left with no excess production to trade with. Moreover, peasants were forbidden from selling their goods directly in the market but settling the trade with the Riga burghers, who often acted as their creditors.⁷⁹⁵

The situation in the Livonian countryside was not unique in the European context. The ‘scarcity of coin’, as noted by Geoffrey Parker, was a regular problem in many areas of early modern Europe, with periodic shortages appearing longer after about 1620.⁷⁹⁶ Despite the heavy upgrade of bullion stocks by imports from the New World, the accessibility of financial means in early modern Europe was limited mainly to urban areas and the upper strata of society.

More recently the same question about the level of a money-based economy has been dealt with by Polish economic historian Piotr Guzowski. Guzowski shares the idea that the emergence of smaller fractions (half-groschen and deniers) “accompanied by a policy of debasement resulting in the reduction of their commodity value, contributed to the greater accessibility of money.”⁷⁹⁷ Additionally, he views the potential increase of ordinary peoples’ monetisation taking place during the period of high prices of grain and market expansion. These were the times when peasant farms were capable of producing extra income, which could be further invested.⁷⁹⁸ The overall picture of the monetisation level of the peasantry and the state as a whole in the 16th century is that of a developed, money-based economy, where even the poorest members of society participated, though, higher rates of monetisation had been reached in the late 16th century when entering the European grain markets.⁷⁹⁹ Last but not least, Guzowski concludes that the lower strata of society, peasants, and servants, were undersupplied with ready cash.⁸⁰⁰ This statement implies that there was potential for the spread of small change and that the economic activity correlated with the monetisation of a wider strata of society to some level.

In towns, monetary relations had a more significant role. Money was present in almost every social interaction involving the exchange of goods or services. Protected from invading armies behind high walls, wealth was easier accumu-

⁷⁹⁴ Dunsdorfs, 75–76.

⁷⁹⁵ Doroshenko, *Torgovlia i kupechestvo*, 82–83.

⁷⁹⁶ Geoffrey Parker, *Emergence of Modern Finance in Europe, 1500–1730*, ed. Carlo M. Cipolla, *The Fontana Economic History of Europe 2* ([London: Fontana], 1973), 531.

⁷⁹⁷ Piotr Guzowski, “Money Economy and Economic Growth – the Case of Medieval and Early Modern Poland,” *Quaestiones Medii Aevii Novae* 18 (2013): 247.

⁷⁹⁸ Guzowski, 249.

⁷⁹⁹ Guzowski, 252, 255.

⁸⁰⁰ Guzowski, 254.

lated and could be invested in various financial ventures with interest. Townspeople were better positioned to overcome economic crises in a shorter length of time. However, as revealed from the Baltic Sea region's history, in a longer perspective the well-being of a town was largely preconditioned by its legal status, economic hinterland, and positioning in merchandise networks. It has been stated that aside from retaining old privileges and customs, Riga came through the Livonian War gaining in another aspect.⁸⁰¹ The truce of Jam-Zapolski, concluded on 15 January 1582, between Poland and Muscovy, united much of the former hinterland of Riga.⁸⁰² "For Poland," as the Swedish economic historian, Artur Atmann writes, "the treaty meant that the Düna line was secured and the trade route to Riga was free."⁸⁰³ Essentially, it was the extension of Riga's hegemony over neighbouring food supplies which was enforced with the common currency and taxation policy. Trade was relieved of several toll stations, that had been installed during the war years (see 2.1). Also, the competing Gauja river (Ger. Aa) basin trade was reoriented towards Riga.⁸⁰⁴ Neither state officials, nor noblemen were permitted to trade within the city limits.⁸⁰⁵ Thus, as stated by Vasilij Dorošenko, "Riga was the obligatory stopover" in the transit with western and eastern merchandise in the Duchy of Livonia.⁸⁰⁶

The progress of economic life in Riga can be measured by different means. Since it was primarily a transit and trading city, economic historians explain the economic developments by the use of different merchandise accounts. Based on Sound duty records as well as harbour registers from the Baltic Sea region Edgars Dunsdorfs selected four years (1565, 1575, 1585, 1595) to compare the fluctuation of exported values of goods. Compared to 1565, the 1595 export value had almost tripled to more than 420 000 Reichsthalers.⁸⁰⁷ Generations of economic historians have presented data on the flow of goods and capital based on written sources – tax collection books, extracts, and summary overviews but hardly anyone has paid attention to the Riga city income and expenditure book, 1593–1654,⁸⁰⁸ one of the most outstanding and comprehensive sources of its kind.⁸⁰⁹ In this account book one can follow yearly summary income data from two toll duties – portorium (1594–1654) and excise (1617–1654), and from

⁸⁰¹ Viktors Dāboliņš, "How much silver was reminted in Riga (1598–1621)?" Forthcoming.

⁸⁰² The limits of hinterland have been defined by Georg Jensch and Artur Attman: Jensch, *Der Handel Rigas.*; Artur Attman, *The Russian and Polish Markets in International Trade, 1500–1650.* (Göteborg: Institute of Economic History of Gothenburg University, 1973).

⁸⁰³ Attman, *Baltic Markets*, 97.

⁸⁰⁴ Dunsdorfs and Spekke, *Latvijas vēsture 1500–1600*, 452–53.

⁸⁰⁵ Zutis, *Vidzeme kā cīņas objekts*, 24–25.

⁸⁰⁶ Vasilij Dorošenko, "Riga und sein Hinterland im 17. Jahrhundert: zum Problem der Wechselbeziehungen zwischen Stadt und Land," *Hansische Studien IV* (1979): 155.

⁸⁰⁷ Dunsdorfs and Spekke, *Latvijas vēsture 1500–1600*, 462–71.

⁸⁰⁸ Ierlicher Summarischer Auszug aller der Stadtt Einnahme vnd ausgabe, 1593–1654: LVVA 8-1-32.

⁸⁰⁹ The source has been referred to at least twice by V. Dorošenko: Vasilij Doroshenko, "Rost Rizhskoj morskoj torgovlji v XVII – XVIII vv.," *Latvijas PSR zinātņu akadēmijas vēstis*, no. 1 (402) (1981): 55.; Doroshenko, *Torgovlia i kupechestvo*, 296.

1617 – read a full report of the yearly city income. The importance of the source lies in the fact that it provides comparable annual data series for most of the period under question. Furthermore, the data set of portorium income can be extended by examination of the memorial of Andreas Koy, which records portorium income also in 1588–1593.⁸¹⁰ Portorium can be used as one of the most precise indicators of economic activity in the city (and province) since it was introduced in Riga port in the first year of Polish rule in 1581 and imposed on almost all exported and imported goods at approx. 2% of their value. Initially, collected taxes were shared with the city at the rate of 1/3 of total income. It was assumed that in 1603 Sigismund III raised the share of the city to one-half.⁸¹¹ However, by examining the income and expenditure book of Riga, one can conclude that the new taxation was imposed only in 1606⁸¹² after receiving final approval from the Polish Sejm.⁸¹³ By combining yearly data from both sources, one can trace the portorium income in the Polish period and infer general trends in economic activity and the monetary market.

The technical problem of the sources that is to be reckoned with is that the record-keeping was done in account units of marks and Livonian schillings. The Livonian mark was not the most representative account unit in Europe. Therefore, to make calculations internationally more comprehensible, in this study portorium rate (~ 2%) and full revenues are converted into the standard currency of Reichsthaler. The problem with Reichsthaler, however, was its price instability, which increased from 35.5 Polish groschen in 1588 to 75 Polish groschen in 1621. To put the portorium revenue in comparative perspective it is necessary to assign thaler with a constant value. In this study, I shall express it in the Reichsthaler price of 1598, at 36 Polish groschen. After 1601, due to a steady silver price increase, in terms of real values, the income rates slid below the nominal values. For that reason, estimates of the particularly unstable final 5 years need to be adjusted for the effects of rapid silver price increase, which amounted to a staggering 78.5%, from 42 to 75 Polish groschen per Reichsthaler (Appendix 2). The immediate results were: a massive drop in purchasing power, rising export product prices, and depletion of domestic bullion stocks.

⁸¹⁰ *Copia Proventuum Portorii per Praefecto Portorii Andream Koyen, 1588–1605*: LVVA 673-1-1253; The source is noted by Polish historian Anna Ziemlewska: Ziemlewska, *Ryga*, 185.

⁸¹¹ Jensch, *Der Handel Rigas*, 115.

⁸¹² *Ierlicher Summarischer Auszug aller der Stadtt Einnahme vnd ausgabe, 1593–1654*: LVVA 8-1-32, fol. 42.

⁸¹³ The instruction of Riga delegates to the Sejm, 6.03.1606: LVVA 673-3-14, fol. 71; Ziemlewska, *Ryga*, 187.

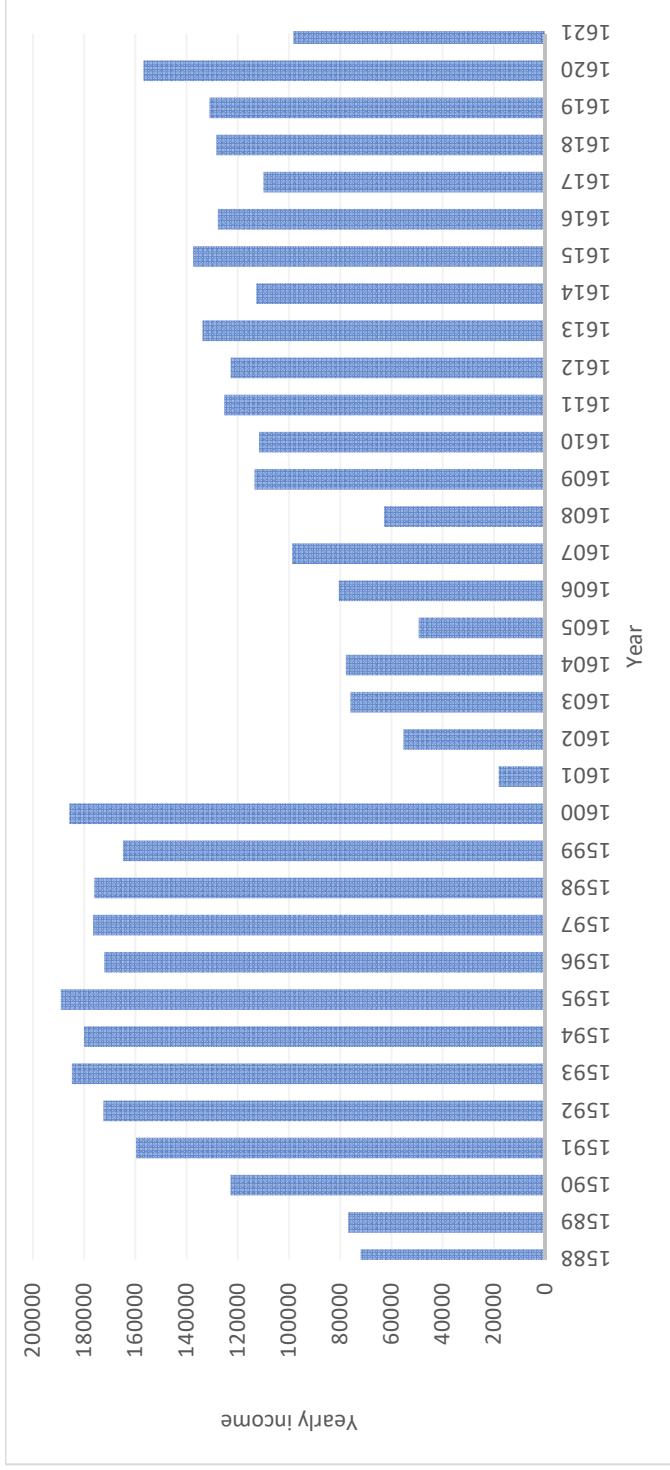


Fig. 5.2.1 Nominal yearly income from portorium in Riga (1588–1621), in 1598 Reichsthaler value

From the perspective of annual portorium income, the Polish period in Riga was very dynamic and subjected to sharp fluctuations.⁸¹⁴ By analysing the nominal income rates, one can follow general trends and distinguish major exogenous shocks⁸¹⁵ in the province. The figures suggest that in the decade leading to the nearly total drop-out of the international market in 1601,⁸¹⁶ portorium income almost tripled and held to that level for most of the decade. The 1590s was the ‘golden decade’ of the Polish period. The rise, as has been agreed upon among numerous economic historians by and large, fundamentally owed to favourable external factors (see 1.1), and to the stability of price levels.

The economic progress was brought to a halt with the arrival of Swedish forces in Polish Livonia in 1601. Furthermore, the meagre income rates in the following years could be explained by bad winter crops and severe drops in summer crops in Riga’s economic hinterland. The book of the Great Guild informs about shortages of grain, which is why Riga was in dire need of imported cereal. Unfortunately, sea-born trade was halted until January-February 1602, which raised product prices even more. Riga burghers would deliver Gdańsk grain overland paying as much as 100 florins for every shipped last.⁸¹⁷ Therefore, the drop in 1602 portorium incomes could be explained by the decrease in economic activity as much as by the severe product dearth symptomatic to the sporadic fighting in the Polish-Swedish War years (1600–1629).

A further slump in trading activity was witnessed in 1605 and later in 1608, which coincided with the second and third return of the Swedish army in the vicinity of Riga, followed by unsuccessful assaults on Riga. However, in contrast to the military campaign of 1601, the later hostilities might have less damaging effect on the local economy, which suggests that the warfare had been conducted either in a limited space of time, regional scale, or both.⁸¹⁸ In

⁸¹⁴ Unfortunately, we have little data to account for economic life in the 1580s. The last two years suggest a considerably lower economic activity. With conclusive war combats being waged in 1581, and the renewal of internal fights during the ‘Calendar riots’ (1584–1589), it is possible to speculate that the yearly figures did not exceed those of 1588 and 1589.

⁸¹⁵ The term is defined as unexpected event of external nature induced by wars, earthquakes, plagues, etc., which have widespread effect on economic performance.

⁸¹⁶ For the burned suburbs of Riga alone, Frantz Nynstede estimated the losses to 2 barrels of silver. Franz Nyenstaedt, “Livländische Chronik nebst dessen Handbuch,” in *Monumenta Livoniae Antiquae: Sammlung von Chroniken, Berichten, Urkunden und andern schriftlichen Denkmalen und Aufsätzen, welche zur Erläuterung der Geschichte Liv-, Ehst- und Kurland’s dienen*, ed. Johann Friedrich von Recke, vol. 2 (Riga, Leipzig: E. Frantzen, 1839), 108.

⁸¹⁷ Karl Eduard Napiersky, “Das Buch Der Aeltermänner Grosser Gilde in Riga,” in *Monumenta Livoniae Antiquae: Sammlung von Chroniken, Berichten, Urkunden Und Andern Schriftlichen Denkmalen Und Aufsätzen, Welche Zur Erläuterung Der Geschichte Liv-, Ehst- Und Kurland’s Dienen*, vol. 4 (Riga, Leipzig: E. Frantzen’s Verlags-Comptoir, 1844), 251.

⁸¹⁸ The Swedes had been ravaging the Livonian countryside from early spring. On 4 July, the Swedes laid siege to Riga. In attempt to outflank Swedish forces, Polish infantry invaded Swedish occupied towns in the Duchy of Livonia. As the Swedish forces retreated, so the local peasantry was often forced to flee or die from hunger and plague.

1608 the income from portorium stood at a comparably high 62 880 thalers. The economy recovered convincingly in the following years. Even the 1617 campaigns in the Duchy of Courland and the repeated capture of Daugavgrīva by Gustav II Adolph left comparably marginal traces on the general trend in trade. The highest peak was reached again in 1620. However, the trade never fully recovered to the real values of the 1590s. In contrast to the generally positive trends in European trade markets in 1590–1620,⁸¹⁹ the Duchy of Livonia was able to enjoy favourable international market conditions only for a decade, namely, the 1590s.⁸²⁰

From the regional history perspective, one can find analogies in the history of Gdańsk. Gdańsk is a valuable source of comparison for its equally central role with its economic hinterland and similar trading profile. Both Riga and Gdańsk heavily relied on the grain trade being the main outposts of grain export for the River Daugava and Vistula crop basins respectively. An overview of Gdańsk trade in the late 16th century shows that violent year-to-year fluctuations were closely tied to the shifting conjuncture of the grain trade in the west and harvest yields, or – as in 1577⁸²¹ and 1620s⁸²² – with military intrusions.⁸²³ “The grain trade,” as argued by Kristof Glamann, “was subject to very severe ups and downs. This is reflected in its prices, which are the most widely fluctuating of all commodity prices.”⁸²⁴ Due to the similar trading profile, both port cities were expected to be affected by the same general market fluctuations. The similarity is demonstrated in E. Dunsdorfs study, in which he stated that during the 17th century the three largest Baltic port cities Gdańsk, Königsberg, and Riga shared similar shifts in trading conjuncture, meaning that in terms of ships called at ports and the size of cargo, the time series fluctuated similarly.⁸²⁵ In quantitative terms, however, Baltic ports attested to highly uneven shares vis-à-vis their Western trading partners. Gdańsk serviced as much as 54.7% of the trade, while Riga in terms of settled contracts and carrying capacity accounted for 22.5%, in Amsterdam’s Baltic trade.⁸²⁶ In contrast, Narva’s and Pärnu’s (Ger. Pernau) role in international merchandise was dwarfed to negligible

⁸¹⁹ Victoria N. Bateman, “The Evolution of Markets in Early Modern Europe, 1350–1800: A Study of Wheat Prices,” *The Economic History Review* 64, no. 2 (2011): 457.

⁸²⁰ Generally, market contractions in the Duchy fall clearly in line with the contemporary European trends. As testified by the study of Victoria Batemann, “a market deterioration in the sixteenth or seventeenth century [...] corresponds well with a number of events [...] including the Wars of Religion in France (1560–98), wars in the Spanish Netherlands (1566–1648), the Thirty Years War in Germany (1618–1648), rising absolutism in the political arena, and the Little Ice Age.” Bateman, 464.

⁸²¹ The city was besieged by Polish king Stephen Báthory.

⁸²² In 1625, Swedish intervention began in Pomerania (Polish Kingdom) and in 1626–1629 Gdańsk was besieged by a Swedish army.

⁸²³ Glamann, “European Trade,” 462.

⁸²⁴ Glamann, 455.

⁸²⁵ Edgars Dunsdorfs, “Merchant Shipping in the Baltic during the 17th Century,” *Contributions of Baltic University*, no. 40 (1947): 6.

⁸²⁶ Bogucka, “Amsterdam and the Baltic.”; Bogucka, “Baltic and Amsterdam.”

levels, both answering for 4.8 and 3.7% of all Amsterdam’s freight contracts with Livonian ports.⁸²⁷

The portorium income series is but one indicator of the changing chronology of economic activity in Riga. Various sectors might have reacted in different ways to the challenges of the day. To test how economic developments could affect the operation of the mint, the following Fig. 5.2.2 contrasts yearly portorium income with the yearly schilling output values in Riga mint. For comparative reasons, the yearly production values are estimated on par with 1598 Reichsthaler price.

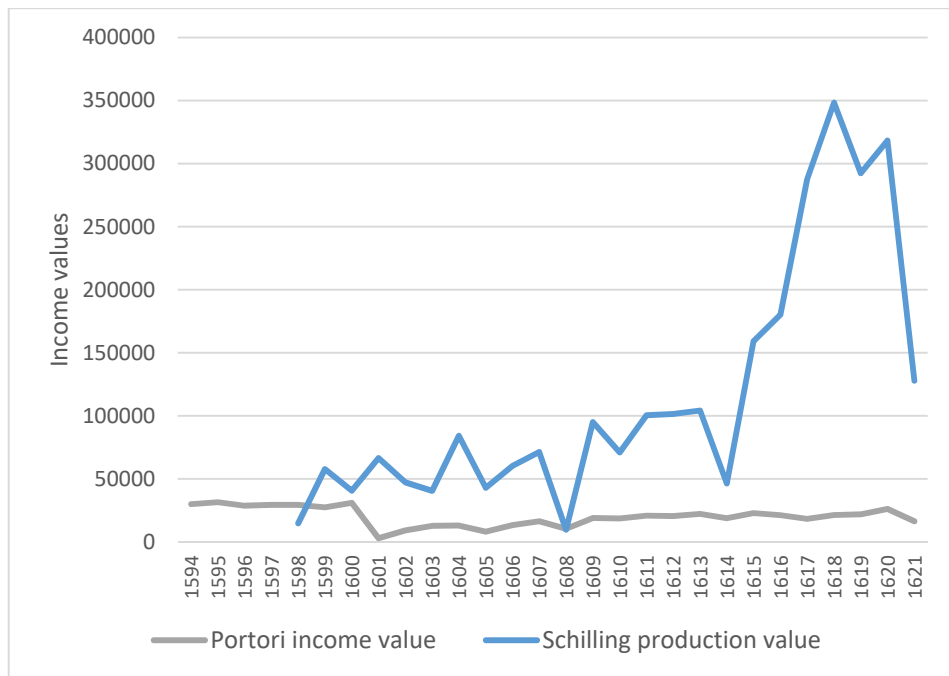


Fig. 5.2.2 Schilling output values (1598–1621) vs. portorium income values (1594–1621), in thalers

Due to its heavy reliance on silver supplies from foreign markets, it could be presumed that from all the industrial, agricultural, and household enterprises coin production was possibly one of the most liable to market changes. More so, because silver attested for the bulk of minting expenses. However, Fig. 5.2.2 demonstrates quite the opposite. In what concerns schilling coinage, the mint exhibited surprising resilience towards major exogenous shocks. Portorium income value line is very flat in comparison to the zigzag line pattern of schilling production value, with a gradation between the lowest and highest value 35,

⁸²⁷ Bogucka, “Amsterdam and the Baltic,” 441.

while in the former case it is only 12 times. Only in two years – 1598 and 1608 portorium income exceeded the value of schilling output. If the latter observation could hold the truth, the former could be different, since the coinage data survives only for the last three months of 1598.

The general trend was that of schilling output values exceedingly outgrowing the income from portorium and remaining largely unaffected by the market trends under peace time conditions. In the years of active warfare, some connection between both rates can be established, except for 1601. While the transit of goods had practically stopped in 1601, the mint operated all year round with estimated issue rates surpassing 7 million pieces. The comparably high results, I presume, could be achieved at the expense of 3-groschen, whose production halted by the end of 1600, and the accumulated wealth of small change in the previous decade of high economic activity and low silver prices. In the critical 1605, Riga mint continued issuing schillings at a comparably high level as well. The low figures of 1608 were affected by at least two factors – the arrival of the Swedish forces in the vicinity of Riga, and even more by the undervaluation of silver in Riga (see 3.6). The schilling production explosion in 1615–1621 also runs contrary to the generally flat and decreasing portorium rate. The issue figures as well as income from taxation dropped again in 1621, which is the only year when both values reacted identically to the external shock. Both the shortfalls in schilling output rates (1608 and 1614), as well as their expansion in various periods, were attested purely by monetary circumstances, thus the market fluctuations leave seemingly no traces. Negative market effects – shortages of bullion and inflation, – as I shall demonstrate in subchapter 5.5, mainly would be overcome by utilizing diversified supply networks of Riga mint.

The supply and demand relations of Riga mint and the countryside, however, remain largely unclear. The sharp distinction between the depressed countryside and general economic trends in Riga allows assuming that from the turn of the 17th century, Polish Livonia accounted for a diminishing share of the total schilling emissions. For now, the assumption of increasing monetisation of society cannot be proven. Other mechanisms or circumstances explain the “success story” of Riga schillings, which should be sought in terms of purchasing power of schillings in and outside the Polish Livonian borders. In conjunction with the strained economic situation, the Riga City Council could be supportive of the mint master’s plan to make coinage more profitable.

To sum up, in the period under discussion neither market nor social conditions were favourable for uninterrupted and free coinage development. Although the mint demonstrated surprising resilience to shocks and precarious social-economic conditions of the day, one can make a general distinction between peace-time and war-time coinage. In peace times, coinage exhibited greater elasticity, it was less affected by the availability of precious metals and expense constraints; the mint was also more likely to place its interests ahead of the communal interests when facing monetary challenges. It was then that Riga’s schilling production saw particular progress and experienced the closure

of the mint. Both debasement and closing of the mint could be tolerated much more since the mint authorities as well as population were less constrained by external factors. Whereas under war-time conditions the mint was more dependent on the citizenry and merchants, and therefore more likely to be supportive of their demands. Although general market conditions were essential, the existence of alternative supply networks and income prospects may have had an even greater immediate effect on the mint's success and coinage outputs.

5.3 The changing schilling policy

When speaking about the rise of Riga schillings, one expects to follow their progress on a timeline. The results, preferably, should be comparable with other mints in the Commonwealth. However, the lack of respective output data from the rest of the Commonwealth mints, and the incomplete data set of Riga schilling quantitative figures – hoarded numbers and yearly issue rates only partially meet information basis requirements for the task. Hence, to support the idea of Riga schilling primacy in schilling market, and before giving more credit to the acquired results in Chapter 4, it is necessary to reflect on the extraordinary success of Riga schillings in terms of political discussions and settlements.

Trying to locate political decisions which could have direct implications on the acceleration of schilling output is a precarious task from the source preservation and source analysis perspectives. Very few sources are preserved to present the case, some of which may even be misleading. Since the link between decision-making and law enforcement can not be always established with clarity, there is a probability that some rules were withdrawn, postponed, or even worse – ignored. Sometimes the cause-and-effect relation has to be looked at in the interplay between various interests and agents. More so, indirectly some countermeasures could be playing in the interests of Riga mint. Furthermore, the effectiveness of law-making can not be overestimated. Either way, the probability of arriving at certain conclusions is very much a question of source criticism and provenance of written sources, which in the context of current research is only beginning to take shape.

Riga schillings could have entered the Commonwealth in the early 1580s at the earliest. The first and most important of this was joining the common monetary system in 1581. The monetary system united around 15⁸²⁸ Commonwealth mints under one 'roof', thus forming one of the largest European currency areas of the day. In effect, there existed no geographical currency constraint for the local coinages such as Riga schillings within the limits of the Commonwealth. Despite the new opportunities that opened up for Riga mint, the earliest Riga mint records are more explicit about a negative process, an import of Commonwealth coins. 1580s Riga and Duchy of Livonia experienced a forceful entry of Polish and, in particular, GDL coins (minted until 1566). In

⁸²⁸ This is not an exact number, it fluctuated from year to year.

the first twenty years (1581–1600), Lithuanian small change would take the leading position among the ‘foreign’ coinages out of the total numbers of hoarded money in the Duchy of Livonia (see 3.3). However, apart from these, more recent Polish and Lithuanian issues appeared in the duchy only occasionally. 3-groschen was the only relatively widespread coin.

If one wants to place a starting point for what can be called the expansion of Riga schillings, one has to look as far back as 1601. Two important decisions were made this year, which broke apart the *status quo* in schilling coinage and the market. First of all, on March 13, 1601, the Warsaw Sejm decided to close all crown mints, but not the Cracow mint. The constitution order of 1601 would leave mints in Royal Prussia, Riga, and Jelgava untouched each working with mixed success in the forthcoming years. Secondly, the state embraced a strict monetary policy regarding the small change, prohibiting their coinage everywhere but Riga and Jelgava.

Judging from the most recent catalogue by Haljak, Jelgava mint was a rather minor player in the schilling market.⁸²⁹ Several of the issues are of doubtful existence, 1604, 1606, and 1610 issues are rarities of various degrees, and only 1605 and 1607 issues have come to our days in considerable numbers. Moreover, Jelgava schillings do not show up in Mikołajczyk’s hoard statistics. Mrowiński, in his article dedicated to Livonian and Courlandic finds, presents very low figures – of 1000 contemporary coin finds made in Poland by 1988 only about 30 contain Courlandic coins.⁸³⁰ The same scarcity of Courlandic coins has been observed in Lithuanian archaeological material.⁸³¹ It is convincing to regard Jelgava mint as servicing exclusively local monetary market needs.

After 1601, the output of the remaining active mints could have diminished, not meeting the demand for monetary means. Under such circumstances, there was a rising demand for any monetary means available, not only Riga schillings but also foreign coins and in some peripheral lands inducing counterfeiting. Ukrainian numismatist Anatolij Kruk observed a significant rise in 3-groschen imitations in the Ukrainian lands between 1601 and 1603. He concluded that this was caused by the closure of mints in 1601 and the resulting shortages in monetary means.⁸³² Additionally, several counterfeiting cases have been reported from the early years of the 17th century taking place in Lviv (Ukraine) and Łańcut (Poland).⁸³³ At this point, 1601 political decisions did not have the immediate effect on schillings as on 3-groschen.

Another event in the series of political discussions which influenced the demand for Riga schillings is the 1604 Warsaw Commission. According to Borys Paszkiewicz, the decisions of the Warsaw Commission in 1604 opened

⁸²⁹ Haljak, *Livonian Coins XIII–XVIII Century. Part II*, 302–3.

⁸³⁰ Mrowiński, “Feudal Coin,” 54.

⁸³¹ Grimalauskaitė and Remecas, *Money in Lithuania*, 212.

⁸³² Referred by: Boiko-Gagarin, *Falshivomonetnichestvo*, 113–14.

⁸³³ Boiko-Gagarin, 124.; Mikołajczyk, *Einführung*, 100.

the gates for the massive emission of schillings. In his view, Riga benefitted from the extreme debasement, thus these coins were overvalued.⁸³⁴ To my understanding, the Warsaw Commission did help to create a sales market for Riga schillings, but differently. Paszkiewicz's argument is based on outdated information of schilling debasement patterns, which as I argued before (see 3.5), was not carried out uniformly in the Commonwealth. In Riga (and Vilnius) schillings were debased only by 11%, a rate which placed them twice above the Polish schilling value. Riga schillings were debased more or less proportionately to the silver price fluctuations of 1 Reichsthaler, which was priced in groschen. 1 groschen consisted of 0.57 grams of silver. 3 schillings consisted of nearly the same silver amount – $3 \times 0.18 = 0.56$ grams. The Polish schilling contained only 0.09 g, which did not meet the schilling standard anymore. Intrinsically, Polish schillings had slipped down the ladder of the monetary system to the value of half-schilling (kwartnik), although officially it was never confirmed, since they were evaluated equally with Lithuanian and Riga schillings. Therefore, if one uses Paszkiewicz's argument, it has to be reversed – the success and demand for Riga schillings were explained by their intrinsic stability. Fortunately, the crown mints did not issue debased schillings very often, only in 1613 in Bydgoszcz, which was enough to cause much headache to Riga mint (see below).

1604 Warsaw Commission regarded many foreign small change units, including Riga schillings of insufficient quality. It was therefore planned either to abolish or demonetise such coins.⁸³⁵ Paszkiewicz argues that while their circulation in Commonwealth was prohibited, Riga was allowed to proceed with their coinage.⁸³⁶ The regulation, however, was unlikely to take a toll on Riga schillings since that would require installing strict border controls and surveillance regimes in domestic markets. The costs for the execution of regulation would certainly exceed the desired effects. Another, far more decisive, result of the Commission was the adoption of the new minting standard of Vilnius schillings. Thus, in terms of schilling coinage Riga aligned itself with a partner (Treasurer of GDL) that was close, relatively independent and able to commit in politics which benefited both sides.

Since Riga mint was the main schilling producer in the Commonwealth, how did it coordinate the change of their fineness? Who authorised these changes? It is tempting to suggest that the Riga City Council acquired special minting privilege of schillings occasionally. For comparison, two sources can be of use. In the letter dated 26 January 1609 Zacharias Boll informed his Riga colleague on Vilnius groschen. The Lithuanian treasurer had acquired a license from the king to mint these coins basing their quality on Cracow groschens. Cracow pieces had been minted according to the same monetary ordinance “*auf*

⁸³⁴ Paszkiewicz, “Podobna jest moneta,” 98.

⁸³⁵ Sententia dominora Commissariorum in negotio rei monetaria diebus Julii Anno 1604 expedita: LVVA 673-1-1283, fol. 43v.

⁸³⁶ Paszkiewicz, “Podobna jest moneta,” 98.

diselbige Muntz Ordnung” which was discussed in the 1604 Warsaw Commission and had to be adopted at the next Sejm meeting. Boll wrote that after a while the mint changed its mind concerning these coins because of the high thaler and real prices.⁸³⁷

The necessity to acquire special privilege before the new undertaking is mentioned also in Joannis Öberhovys *Relation* (1609?), which was enclosed in Boll’s letter. *Relation* recorded six main decision points of the Vilnius Commission, which according to its source, was summoned “some years ago”, i.e. before 1609.⁸³⁸ The Riga mint master had been among the invited delegates, however, to the astonishment of “*Herrn Müntzer*” Riga had not sent anyone. For the current discussion, the fourth and last sixth points are most relevant. The former point reconsiders Vilnius mint master’s plans to mint “*Reyalen münzen*”⁸³⁹, for which 700 florin payment was to be made by the following Midsummer to the Lithuanian treasurer in return for special privilege “*sonders Priuilegien*”. Significantly, the Vilnius mint resumed operating again in 1606–1607.⁸⁴⁰ It suggests that 700 florins were not spent in vain. The final, sixth point, notes that Riga should not mint anything new unless it had the consent and permission from the treasurer of GDL or his majesty.⁸⁴¹

The dispatch of Boll’s letter and *Relation* can be associated with the half-year arrest in coinage in Riga mint in 1608/1609. When on 13 January 1609 citizens of Riga broke out in discontent with the shortages of small change, the Riga City Council sought the quickest and most resolute answer. Within less than one month of raising the issue, on 4 February, the mint was able to resume schilling coinage “according to the new ordinance”.⁸⁴² Reading the final, sixth point in Öberhovys *Relation* allows presupposing that such speed of reaction could be reached only by contacting the treasurer of GDL. The correspondence with Cracow or Warsaw could be hardly exchanged at such pace, moreover, assuming that the majesty’s chancellery could be more overcrowded with pending issues. Indeed, in the previously noted Zacharias Boll’s letter to H. Wulff, one can find a direct reference to the acquisition of such privilege: “*Gunstiger freundt Hinrich wysett das ewre gesanten denn 23 ditto ßin ankomen, Vndt mit Inem Newordnung gehappt wegen der Muntz*”.⁸⁴³ The rapidity with which the whole case was communicated among different actors

⁸³⁷ Zacharias Boll to Henrich Wulff, 26.01.1609: LVVA 673-1-1283, fol. 83r.

⁸³⁸ LVVA 673-1-1283, fol. 87r.

⁸³⁹ “Das er dafür das er Reyalen münzen muege in den Littawschen Schatz gebe 700 fl. vff künfftigen Iohannis wirtt die Zeitt vmb sein, worauff er dan sonders Priuilegium haben.” LVVA 673-1-1283, fol. 87r. It isn’t completely clear what has been meant by ‘Reyalen münzen’. That denomination does not occur in any monetary legislation of the Commonwealth. It can also be understood that Boll applied for a privilege to mint from reals, i.e. to mint reals into small change.

⁸⁴⁰ Grimalauskaitė and Remecas, *Money in Lithuania*, 200.

⁸⁴¹ LVVA 673-1-1283, fol. 87v.

⁸⁴² L. Goldenstedt’s notes, 4.02.1609: LVVA 673-1-1286, fol. 23.

⁸⁴³ Zacharias Boll to Henrich Wulff, 26.01.1609: LVVA 673-1-1283, fol. 83r.

and special privilege acquisition was settled, was extreme. The proximity to the GDL treasurer and good relation with him, therefore, was of great advantage to Rigans.

To continue, it is necessary to review H. Wulff's claims about the recent shift in the monetary policy of the Commonwealth that would stipulate decreasing the minting standard. The idea is expressed in his letter from 15 July 1614: "some years ago Polish and Lithuanian treasurers had initiated such changes, which are observed until this day."⁸⁴⁴

This passage does not refer to any specific legislation act, date or denomination, which complicates the task to verify Wulff's claims. Neither Polish nor Lithuanian numismatic historiography notices any meaningful changes in monetary policy. In line with H. Wulff's concerns, one can review two sources – undated H. Wulff's report to the Riga City Council, which, judging from the content, must have been produced in 1614 and Cracow mint tariffs ('*valuation*'). The close relation between both records is established by Wulff's reference to Cracow tariffs, ascribing its origin to a certain "*Barneken's hand*"⁸⁴⁵ or "*Barneken designation*".⁸⁴⁶

In his report, H. Wulff expresses worries over the decreased schilling quality in Bydgoszcz mint, which had been minted from 2 lot 3 d silver alloy and 200 pieces in weight mark. By the time of his writing they had become much worse "*viel geringer*".⁸⁴⁷ The same applied also to Cracow dreipölkers, which had been struck 1 piece lighter and of decreased fineness for 1 quintin. Hence, H. Wulff concluded that Riga schillings were withdrawn and reminted in Poland and GDL with profit: "*Dann sie in Pohlen vnd Littawen mit großen gewin vmbgeschlagen vnd gemüntzet worden*".⁸⁴⁸ To present the case, the mint master promised to deliver in the shortest time evidence from the treasurer.⁸⁴⁹

⁸⁴⁴ "[...] hatt vor etliche Jharen schon so woll der Polnische als Littawsche Schatz solche andernung angefang[en] vnd im wollen schwangk vnd vbung biß auff die gegen wertigen Zeitt, gebracht." H. Wulff's report, 15.07.1614: LVVA 673-1-1283, fol. 99r; H. Wulff's claims against the Lithuanian and Polish issues are expressed in the undated letter (1614/15) to the Riga City Council, where he promises to make a clearer statement in the following days: "Lege man nuhn wie vnd wo man wolle, meine schillinge auff die Prob, da soll vnd würdt sichs in grund vnd wahrheit erfunden, das sie an Schrodt vnd Korn gesundt vnd vntedelhafft vnd Keines wegs zubeschulden; Den sie in Pohlen vnd Littawen mit großem gewin vmb geschlagen vnd gemüntzett werden: welchs vnd wie sie in Pohlen vnd Littawen Müntzen, ich vermittels Göttlicher hülff in Kurtzentagen vnter des H. Schatzmeisters Hand vnd an Siegell Clärlich darthun will." LVVA 673-1-1280, fol. 36

⁸⁴⁵ Cracow valuation, 1614 (?): LVVA 673-1-1283, fol. 92r-93v; A copy of the Cracow valuation, which is assigned to a certain "*Barneken's Handt*" – LVVA 673-1-1283, fol. 94r-95v.

⁸⁴⁶ H. Wulff's report, n.d.: LVVA 673-1-1280, fol. 32v.

⁸⁴⁷ Ibidem.

⁸⁴⁸ Ibidem, fol. 36r.

⁸⁴⁹ Unfortunately, the treasurer's testimony could not be located, also it could be lost or perhaps it did not reach Riga at all.

The only evidence to affirm his claims was the copy of the Cracow mint tariffs. The difference between Riga schilling fineness (2 lot 2 q 2 d) and those of Bydgoszcz mint (2 lot 3 d) was 1 q 3 d. It means that for every Riga schilling weight mark exchanged with those schillings, Riga lost 5.4 grams of pure silver. As to dreipölkers, although Riga did not mint these coins yet, exchange with these coins in Riga schillings was uneven as well.⁸⁵⁰ Dreipölkers were supposed to be minted similarly to the German 3-kreuzers, from 8 lot silver and 121.5 pieces in weight mark, however, according to H. Wulff's testimony their minting standard was lower – 7 lot 3 q and 120.5 pieces. It means that the average dreipölkers contained 0.81 g of pure silver. The actual fineness of dreipölkers as the 1616 Warsaw Commission tests revealed, was even lower (see 3.8).

After a long break, in 1614 Vilnius resumed producing schillings. Lithuanian numismatists set their quality at 2.75 lot fineness and an average weight of 0.91 grams.⁸⁵¹ This minting standard corresponds to 220 pieces in Cracow weight mark⁸⁵² and 0.157 grams of silver in a single piece.⁸⁵³ These figures suggest that Vilnius schillings were slightly smaller than Riga schillings in size and weight. To put it in a wider perspective, there were now three different schillings in circulation, which was against the uniform monetary policy principles. Furthermore, being the best in quality, Riga schillings were put in the least favourable position in exchange with the competitors.

Regarding the latest developments in currency politics, H. Wulff's claims were fully justified. Studying dreipölkers and schillings testifies to serious changes in small change quality taking place in 1614 in the Polish Kingdom and less dramatic changes in GDL schilling quality. There was 'big money' to be made from the coinage of debased small change. However, debasement of these coins, and possibly, also others, does not seem to be coordinated and communicated among the mints. Riga seems to have found out about new standards long overdue, after the new coins had entered Rigan and Polish Livonian monetary markets.

Riga was not able to debase schillings at the same level as Bydgoszcz and Lithuanian schillings at once. Erasing of quality differences with Vilnius schillings took a comparably gradual path, finalising sometime in 1616. The mint book and the 1616 Warsaw Commission proceedings are not united on the end date. According to the latter source, by the time of the Warsaw Commission, both schillings were equal. The mint book inscription from 1616 tells another story. Whereas Vilnius schilling were minted from the mentioned fineness, Riga schillings were still produced from 2 lot 1 q 1 d,⁸⁵⁴ therefore it was decided to make necessary amendments in coin quality. On 13 January

⁸⁵⁰ Cracow valuation, 1614 (?): LVVA 673-1-1283, fol. 93v.

⁸⁵¹ Grimalauskaitė and Remecas, *Money in Lithuania*, 199.

⁸⁵² $201.8 \text{ g} / 0.91 \text{ g} = 220$ pieces.

⁸⁵³ $2.75 \text{ lot} = 34.68 \text{ g}$; $34.68 \text{ g} / 220 \text{ pieces} = 0.157 \text{ g}$.

⁸⁵⁴ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 64r.

1617, it was decided that Riga schillings should be minted from 1 pfennig higher quality silver, i.e. 2 lot 1 q. Therefore, despite enjoying schilling coinage rights Riga was placed in an uneven position with the central Commonwealth mints.

To sum up, the monetary policy of the Polish-Lithuanian state in most cases was not exclusively discussing schilling matters. More likely, schillings fell within the wider perspective of small change policy, which was becoming increasingly negative after witnessing the increasing prices for products and bullion in the late 16th century. Thus, from 1601 and onwards, Riga underwent targeted, but not always completely successful attacks against its schillings. The uninterrupted coinage of Riga schillings from 1601 to 1613 came as a result of government prohibitions to mint these coins elsewhere and probably a monetary agreement between Riga and the state officials. As soon as the coinage resumed in Bydgoszcz (1613) and Vilnius (1614), Riga's coins were placed on uneven conditions, and in 1614 Riga negotiated for the implementation of a new schilling standard. The Riga City Council seems to have arrived at an agreement which however entailed several checks on its coinage: schillings could be debased only gradually, and they had to be of higher quality than Vilnius schillings. This might have been the price of the stratification between the mints, in which the Crown and GDL mints stood above the others. The ensuing dispute over Riga schilling and dreipölker quality (1620–1621), showed that despite its claims to mint higher quality coins than elsewhere, Riga had no legitimate reason to independently decide on what to mint and their fineness.

5.4 Schlagschatz factor

This subchapter firstly reviews H. Wulff's argument about the recent shift in the currency policy of the Commonwealth which would stipulate lowering of the minting standard for the sake of maximising profit. Secondly, I shall re-examine Wulff's calculations for the yearly profit of 18 000 florins. Third, I expand on the previously expressed idea that the acceleration of Riga schilling output took off in 1615 (see 4.4) through regular manipulations with minting standard and expansion of Schlagschatz as well as brassage.

When the debased coins from Poland and Lithuania started to pour in, Henrich Wulff I faced two radical options. It was between unmeasurable losses to the mint and depletion of the local monetary market, on the one hand, and the predicted Schlagschatz income of 18 000 florins (or more), on the other hand. Bydgoszcz and Vilnius schillings were making profit at the expense of intrinsically more worthy schillings, being mainly exchanged with pre-1601 Commonwealth schillings and Riga schillings. The intrusion of debased schillings enforced Gresham's law in action and mounting inflation rates. Moreover, the incentive to decrease schilling quality arose from the necessity to offset Riga's losses concerning the incoming low-quality schillings and possibly arrest any further intrusions from the outside. However, debasing local coins would

further empty Riga of more worthy schilling stocks. The decline of the quality of local small change reserves was inevitable. The mint master and the Riga City councillors were business-minded people and there was no question that both sides were willing to make the least sacrifices to match greater losses. The initial issues of debased 1615–1621 Riga schilling thus fall within the category of coins which were minted as "necessary defences and retaliations against aggressive, profit seeking debasements undertaken by neighbouring pri[n]ces (or city states)". According to John Munro's observations, it had been one of the most widespread motives for conducting aggressive debasement.⁸⁵⁵

If the Schlagschatz income prospects are adjusted to 1614 exchange rates and schilling standard, 18 000 florins corresponds to 12 857 thalers or 0.26 t of silver.⁸⁵⁶ This profit was the amount of silver that could be extracted from the monetary market yearly. Since these calculations are based prior to large monetary fluctuations, it is necessary to adjust them to inflation and the devaluation of the złoty.

The early modern monetary system of the Commonwealth was based upon the Polish złoty or florin, an account unit in the value of 30 groschen attached to the golden ducat price.⁸⁵⁷ As elsewhere in European countries, the influx of American silver, changing gold-silver ratio, and inflation, resulted in the reduction of precious metal content in account units. A. Mikołajczyk fixed debasement in terms of groschen, each debasement case marking changes in florin value.⁸⁵⁸ However, in the period under discussion, groschen was debased only once – in 1604, which does not provide a precise overview of the depreciation pattern of the złoty unit. Moreover, as Mikołajczyk has amply demonstrated, because of unbalanced intrinsic value relations across the denomination structure, there were multitudes of groschen values. As of 1621, in terms of 3-groschen and 6-groschen, the intrinsic value of 1 groschen was 0.305 grams, in dreipötker – 0.300 g, in groschen – 0.294 g, in schilling – 0.252 g.⁸⁵⁹ From all the denominations being struck in the period under research, Riga schillings were minted the longest, for 37 years. It was an everyday currency, which could be easily converted into Polish groschen at the constant rate of 1 to 3. Table 5.4.1 introduces złoty devaluation patterns in terms of Riga schillings followed by respective reduction of złoty in grams of pure silver. Secondly, due to the reduction of the money of account, the mint most likely would need to reconsider income prospects. The final two columns plot the inflated Schlagschatz income in 1615–1621 in nominal and % terms in relation to 1614 calculations as the starting point.

⁸⁵⁵ Munro, "The Technology and Economics," abstract.

⁸⁵⁶ 18 000 florins x 90 (schillings in złoty) = 1 620 000 schillings; 1 620 000 / 126 (schillings per thaler) = 12 857 thalers; 1 620 000 x 33.04 (silver in weight mark of schillings) / 200 (schillings in weight mark) = 267 662 g or 0.26 tonnes.

⁸⁵⁷ Mikołajczyk, *Einführung*, 18, 41–42.

⁸⁵⁸ Mikołajczyk, 41.

⁸⁵⁹ Mikołajczyk, 69.

Table 5.4.1 Reduction of zloty in terms of Riga schillings (1581–1621)⁸⁶⁰ and inflation-adjusted Schlagschatz income prospects (1614–1621)

Year	Reduction of zloty value in Riga schilling, in %	Grams of silver in zloty / 90 schillings	Inflation-adjusted Schlagschatz income prospects	Inflation-adjusted Schlagschatz income rise, in %
1581–1603	100.00	18.36		
1604–1605	88.73	16.29		
1606–1609	86.76	15.93		
1610	84.80	15.57		
1611	88.73	16.29		
1612–1614	81.37	14.94	18 000	100.0
1615	77.94	14.31	18 771	104.2
1616	64.22	11.79	21 795	121.0
1617	63.24	11.61	22 012	122.2
1618	59.80	10.98	23 204	128.9
1619	50.98	9.36	24 722	137.3
1620	51.47	9.45	24 614	136.7
1621	50.49	9.27	24 831	137.9

Within 40 years the account unit of florin depreciated by almost 50% with respect to Riga schillings. Mostly this happened in the time frame of 7 years, from 1615 to 1621. Therefore, to maintain the real income value at the 1614 level, by 1621, the income could be expected to rise to 24 831 zloty. From the perspective of zloty debasement and predicted income in Table 5.4.2, one can note that in 1615 and 1616 Riga hardly came close to meet initial estimates. As to the 1615 incomes, it can be easily related to the shortened minting period and the gradual transition to the new Schlagschatz rate. Whereas in 1616, Riga was only gradually able to switch to debasement levels of Vilnius schillings. Despite the impressive rise in output, 1617 was another year of relative disappointment, still lagging behind the inflation-adjusted prognoses. However, the following years of 1618 to 1620 more than compensated for the earlier failures, falling again behind the projected income level in critical 1621. Though initial expectations were not reached yearly, after settling of final accounts for the period, the mint had enriched the involved parties with surplus. Witnessing the contrasting yearly income rates, it seems that yearly minting outputs could be guided by H. Wulff's estimates, however, the pace of depreciation of florin made its own adjustments.

⁸⁶⁰ The same as: Appendix 5.

Table 5.4.2 Charged and expected Schlagschatz incomes from Riga schilling coinage, in zloty

Year	Charged Schlagschatz ⁸⁶¹	Inflation-adjusted income (expectations)
1615	3455	18 771
1616	10 802	21 795
1617	17 472	22 012
1618	52 164	23 204
1619	42 177	24 722
1620	38 834	24 614
1621	16 304	24 831
Summa	181 208	159 949

There were two ways for generating significant Schlagschatz incomes – rising Schlagschatz fee or/and increasing emission rates.⁸⁶² It could be achieved either at the expense of worsening minting standard or mint price. The estimated % of Schlagschatz fee is calculated by contrasting it with the mint equivalent (ME) of schilling.⁸⁶³ Based on the fact that 178 schillings were produced from 2.875 lot mark of alloy, fine silver mark (16 lot) equals 990 schillings or 330 groschen. Assuming that 4.5 groschen were charged for each mark of pure silver until 24 November 1599, in nominal prices, Schlagschatz rate constituted 1.36% of the production value. Additionally, the Table below introduces mint price (MP) – a value of a constant fine silver unit (Cracow mark). The value of the fine silver mark was based on the Reichsthaler price. According to 1580 Ordinance, thalers were minted from 14 lot silver alloy and 7 pieces from Cracow mark. Thus, from fine silver mark 8 thaler pieces were produced ($16 \text{ lot} \times 7 / 14 = 8$). Unlike its value, the thaler standard did not undergo significant changes in the research period. In 1581, 1 thaler was valued at 35 Polish groschen. One can calculate fine silver mark price as follows: $8 \times 35 = 280$ groschen.

⁸⁶¹ Source: Table 4.4.2.

⁸⁶² Motomura, “The Best and Worst of Currencies,” 111.

⁸⁶³ Mint equivalent is the nominal value of coins produced from a constant unit of pure silver. In this case I am speaking about the number of schillings produced from 1 Cracow weigh (201.8 g).

Table 5.4.3 Mint equivalent (ME), mint price (MP), Gross seigniorage⁸⁶⁴ and Schlagschatz fee of Riga schillings, in groschen

Date	ME (Polish groschen)	MP (Polish groschen)	Gross seigniorage (Brassage, Schlagschatz, salaries, Überschoss)	Mint master's salary (for each fine silver mark minted)	Schlagschatz fee (for each fine silver mark minted)	Schlagschatz fee, in %
1581–1597	330	280	50	10 ⁸⁶⁵	4.5	1.36
1598–1599	330	288	42		4.5	1.36
1600	330	288	42		3	0.90
1601–1603	330	304	26		3	0.90
1604–1605	371	304	67		3	0.80
1606	379	304	75		3	0.79
1607	379	312	67		3	0.79
1608	379	320	59		3	0.79
1609	379	320	59		4.5	1.18
1610	387	328	59		4.5	1.16
1611	371	336	35		4.5	1.21
1612–1614	406	336	70	10 ⁸⁶⁶	4.5	1.10
1615, pre-reform	418	336	82	1.5 ⁸⁶⁷	4.5	1.07
1615, post-reform	418	336	82		22.5	5.38
1616	430–536	344	86–192		2.5–27	5.81–5.03
1617	521	360	161		26.5	5.08
1618	569	384	185		26.5–93	4.65–16.34
1619	569	392	177		93–55	16.34–9.66
1620	652	504	148		57–69	8.74–10.58
1621	652	600	52		?	?

⁸⁶⁴ Gross seigniorage is defined as the sum of seigniorage and brassage.

⁸⁶⁵ Caspar zum Berge's report on thaler and real prices, 1585: LVVA 673-1-1281, fol. 8r.

⁸⁶⁶ L. Goldenstedt's notes, n.d.: LVVA 673-1-1280, fol. 31r.

⁸⁶⁷ Appointment letter of mint master Martin Wulff, 21.07.1615: LVVA 673-1-1280, fol. 3v.

As indicated by the above Table, in the first decade of the new century, Schlagschatz fee remained low and slightly decreased both in nominal prices and in respect of the ME. In 1599, Schlagschatz fee had been decreased partially to mitigate H. Wulff's debt problems, which had been mounting possibly due to rising minting costs and mismanagement of mint finances. Seigniorage stabilised above 1% in the years after 1608. Inconsistency in hard data and chronology forbids finding possible connections between Schlagschatz rate and debasement fluctuations at this time. Furthermore, there seems to have been little or no silver inflation-related Schlagschatz changes until 1615. After the five-fold rise of Schlagschatz rate in late 1615, in the following years, Schlagschatz ratio was relatively stable. 1615 to early 1618 ME of schillings would rise unmatched by MP increase, which suggests high demand for schillings in the market, i.e. the market absorbed increasing outputs of debased schillings without causing much inflation. Double-digit percentage figures were recorded in 1618–1620 with the highest rate of 16.34% from ME, which corresponded to 93 groschen or 1.5 thalers in the current exchange rates. In certain episodes, Schlagschatz constituted almost half of the gross seigniorage. In nominal prices, gross seigniorage increased less impressively, from approx. 25% in pre-reform years to approx. 30%, and for short episodes in 1616 and 1618 with rates as high as 42–43% from ME value. In the final year, however, gross seigniorage declined to the very low 52 groschen, which also explains the problems of sustaining schilling coinage and the necessity to sign a new contract with the mint master.

Although starting with 1615 increasing Schlagschatz incomes were generated in defence of aggressive debasement in neighbouring mints, the initial motive – the influx of debased schillings from Crown lands – diminished very soon (Appendix 1). The last Vilnius schillings, however, were issued until 1619, soon to be replaced with the intensive coinage of the more profitable 2-pfennigs in 1620–1621.⁸⁶⁸

In addition to the *defence debasement*, the stimulus for rising Schlagschatz could be caused by the introduction of what might be called *Crown fee*. In his 1614 supplication to the Riga City Council, mint master H. Wulff reported that warden Lambert Goldenstedt calculated crown revenue to 15 groschen.⁸⁶⁹ In his opinion, this did not make sense. He noted that the late Vilnius mint master Zacharias Boll used to make yearly Schlagschatz payments of 700 Polish florins, and now it had reached 1200 florins.⁸⁷⁰ Wulff's discontent could be well understood since the Schlagschatz rate was raised without consulting him. The disagreements between the mint master and warden and the terms of increasing Schlagschatz, unfortunately, do not allow to settle the questions as to the size and terms of possible charges of *Crown fee*, and neither the periodisation of

⁸⁶⁸ Grimalauskaitė and Remecas, *Money in Lithuania*, 206.

⁸⁶⁹ H. Wulff's report, n.d.: LVVA 673-1-1280, fol. 32v.

⁸⁷⁰ *Ibidem*.

taxation. Most likely *Crown fee* and the Riga City Council's shares were collected jointly in the form of Schlagschatz (and later divided?).

Although it is possible to conclude that Schlagschatz increasingly accelerated income rates, one should not overlook the importance of brassage, which could attest for a sizeable, yet hardly identifiable income share. Not being determined in accounts, it was subjected to extensive manipulations and various interpretations in the mint accounts. For example, the 1616 Warsaw Commission recognised a group of expenses "*zum Kupffer, abgange vndt Vnkostunge*" at the amount 5 fl 5 g 6 d for schillings.⁸⁷¹ In this particular case, the usage of terminology obscures any certainty of the size of brassage. But what is noticeable here, total expenses constituted 28.86% of ME, closely agreeing with the corresponding gross seigniorage percentage in Riga in the same year: $139 \times 100\% / 483 = 28.77\%$.

Careful reading of the 1615–1622 mint book records gives a more sophisticated impression of the manipulations with surplus (Uberschoss) as well. It was a custom that the income generated from schilling debasement initially was registered (most likely also charged) separately, along different sources of surplus. In fact, from 1615 until 1618 the majority of income from coinage was acquired through surplus, not Schlagschatz. Despite the gradual Schlagschatz rate increases, from 1616 until 1618, the Riga City Council continued to charge debased amounts of schillings. The praxis of double charges from schilling debasement was largely abandoned in early 1618.⁸⁷² Ultimately, this explains previously acquired results – the sudden rise of Schlagschatz rate from 0.88 florin in 1615 to 3 florin per fine silver mark in 1618, and an equally striking increase of yearly Schlagschatz income in the following years (Table 4.4.1). It also leads to an appreciation of Uberschoss as a source of tremendous unrecorded income; from 1615 until 1618 the Riga City Council was making a much larger income than recorded in Schlagschatz incomes.

While focusing on medieval debasements of English and French coins (14th–15th century.), Rolnick et al. conclude that “The increase in minting volumes appear to have coincided with the increases in seigniorage rates.”⁸⁷³ They show, that in France during the normal years gross seigniorage rate was 7.5 and 21.7% in debasement years. English rates were comparably lower, with respective figures of 4.6 and 16.2%. Only the Great Debasement, a series of silver coin reductions in 1542–1551, stands out from the statistics with extraordinarily high rates between 41 and 57% for silver.⁸⁷⁴ From the given comparative statistics we can gather that early modern Riga mint normally made gross seigniorage on par with Medieval France and England rates. Finally, the rise of Riga schillings

⁸⁷¹ Reform proposal by Warsaw Commission, 16 October, 1616: LVVA 673-1-1283, fol. 113r.

⁸⁷² Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 59v.

⁸⁷³ Arthur J. Rolnick, François R. Velde, and Warren E. Weber, “The Debasement Puzzle: An Essay on Medieval Monetary History,” *The Journal of Economic History* 56, no. 4 (1996): 795.

⁸⁷⁴ Rolnick, Velde, and Weber, 795–96.

exhibits the same features commonly acknowledged in the debasement practices in Western Europe since the Middle Ages, the experience, which followed certain, inherent logics, and assumed a distinct cause-affect character put in the words by Rolnick, Velde and Weber:

“First, debasements were accompanied by unusually large minting volumes that yielded unusually large revenues for the sovereign. Second, during most debasements, seigniorage rates increased, and revenues rose significantly. Third, both old and new coins circulated side by side following debasements [...]”⁸⁷⁵

5.5 Silver sources, transportation, and agents

Debasements and acquisitions of bullion were carried out in cooperation with at least two sides: the seignior, and entrepreneurs-bullion merchants, the latter being the main subject of this subchapter.⁸⁷⁶ In Livonia, the mint master’s connections with silver merchants and markets intensified in the early 16th century, when the Riga City Council renounced its close involvement in mint finances. This chapter reconsiders the former division of labour in bullion supplies. I argue that active collaboration between the mint master and his silver agents on the one hand and the Riga City Council’s fiscal policy for extraction of bullion in the domestic market, on the other hand, helped to diversify bullion supplies and enhanced the mint’s operation despite monetary and economic obstacles of the time.

Debasement was the main instrument for the attraction of silver. Silver suppliers would be paid more for the same amount of silver delivered to the mint than before. Moreover, acquisition of debased schillings granted them the upper hand in exchange with holders of higher quality schillings. Many debased schillings would come into circulation unbeknownst to the burghers’ intentions, meanwhile, bullion merchants would be relying on a premium from the exchange of debased pieces with older, better pieces at the same unchanged nominal value. In the end, the mint would be secured with bullion at a discount price. However, as the circulating monetary base deteriorated, so did the premium prospects plunge, and the mint was forced to increase the bullion purchasing price to remain competitive in the bullion market. Henceforward, both MP and premium prospects would encourage merchants and burghers to deliver bullion at the mint.

The effect or success of debasement was at its discretion, for only then both parties could expect to achieve their goals – merchants to create additional

⁸⁷⁵ Rolnick, Velde, and Weber, 790.

⁸⁷⁶ Monetary history generally views debasement as a byproduct of military hostilities, while at times rulers and town councils engaged in debasement out of greed. Carlo Cipolla listed at least 5 more causes or motives for coinage debasement, which however “[...] were of varying importance in different countries and in different periods.” Cipolla, “Currency Depreciation,” 414.

income, and the Riga City Council – to make income as well as avoid upsetting the population and the rise of inflation. Inflation could be avoided only for a limited time. The time lag or time required for the population to become aware of the debasement remains a source for discussion.⁸⁷⁷ Comparative price level analysis of pre and post-debasement prices ought to be carried out to prove the efficiency of debasement. I. Leimus' analysis of Tallinn's written accounts from the early 1570s and 1590 shows that a minimum of half year passed before the deterioration of currency had been noticed.⁸⁷⁸ John H. Munro makes at least two hypotheses in that regard: inflation was less pronounced than the debasement rate,⁸⁷⁹ and the second – debasing of silver coinage raised the relative value of the account unit, which automatically altered the bimetallic ratio in favour of silver. J. Munro adds: "He [seignior – V.D.] may have done so deliberately to attract an increased supply of silver into his mints."⁸⁸⁰ Either one or all factors combined did attract increasingly large amounts of silver to the mint in 1615–1621. In all, yearly consumption of silver amounted to 3.2 tonnes or 100% increase from the 1.6 tonnes in the earlier minting period (1609–1614) (Fig. 4.2.1).

5.5.1 Transportation of bullion

Acquisition of bullion is largely a question of the integration of the Duchy of Livonia's transportation and agent networks. Unfortunately, the issues have not been researched in more detail. Here one can recognise the same problem, which has hindered research of bullion flow as such, that is – the almost absolute absence of record keeping of bullion transportation.⁸⁸¹ In a series of studies on bullion exchange in Europe and beyond, Artur Attman explained this problem simply as not being treated as merchandise.⁸⁸² As long as no duties were levied on precious metals, there was no need for their registration. "This practice," Attman notes, "was almost universally followed in a large number of extant customs accounts from many places"⁸⁸³ and in such an aspect Duchy of Livonia was no different.

Even though most of the Baltic region possessed no silver and copper deposits, the proximity and connectivity to different markets in the west and east placed Riga mint in a rather favourable position in and beyond Polish Livonian borders. During the period under study, the most relevant supply mechanism of silver had been trading relations with western partners, with

⁸⁷⁷ Munro, "The Technology and Economics," 10–11.

⁸⁷⁸ Leimus, *Das Münzwesen Livlands*, 50.

⁸⁷⁹ Munro, "The Technology and Economics," 12–13.

⁸⁸⁰ Munro, 3.

⁸⁸¹ Doroshenko, *Torgovlia i kupechestvo*, 73. As an exception, Doroshenko refers to the town scale office register, which contains data for 14 January 1604 to 16 May, 1616. More about the source: chapter 6.3.1

⁸⁸² Attman, *Dutch Enterprise*, 22.

⁸⁸³ Attman, 22.

whom Riga enjoyed a positive trading balance. Bullion would arrive in Riga port on western vessels.⁸⁸⁴ Sea transportation was the most cost-efficient, fast, and comparably safe way of exchanging with bulky products. Firstly, all troubles for transportation of dispatches of silver often travelling over long distances had been put on the debtor's shoulders, secondly, the mint was freed from worries of establishing trustworthy and safe networks abroad. In this way, most of the large or 'heavy coins' (*grober*) – Spanish reals, guildens, thalers and their smaller fractions from central and western European countries found their way to Riga.

Disruptions of seaborne trade on the eastern shores of the Baltic Sea were a common occurrence. The start of the Polish-Swedish War and the repeated Swedish blockades of Riga port, most likely enhanced the importance of overland routes.⁸⁸⁵ The navigational season could be postponed or obstructed by natural causes and more distant events in the west. On 19 April 1621, Caspar Wiebers reported from Gdańsk to the burgomaster H. von Ulenbrock that the sea was covered in much ice, and no ships were arriving from the Dutch Republic except for the ones from Lübeck and other Baltic Sea ports. Furthermore, rumours were spreading that hostilities between the Dutch Republics and Spain would break out again. Because of that, there was little money in the Polish kingdom and grain prices had raised.⁸⁸⁶

Parallel to seaborne transportation, ancient land routes connected Baltic markets with the hinterland and the west.⁸⁸⁷ If needed, one transportation means could be exchanged for another at a desirable Baltic port town. In the early 18th century, parcels of ducats and guildens had been transported from Amsterdam and Hamburg to Königsberg and from there taking a land route to Riga.⁸⁸⁸ Locally, in the immediate hinterland – Northern Livonia, Courland, and Southern Lithuania, products were transported overland, in wagons and sacks. The land route from Riga to Vilnius took 9 days, while Warsaw could be reached within 21 days.⁸⁸⁹ Unless transported over short distances and during winter seasons, land routes were notorious for safety reasons, poor road conditions, and many toll stations, which greatly increased product costs.⁸⁹⁰

⁸⁸⁴ Doroshenko, *Torgovlia i kupechestvo*, 293.

⁸⁸⁵ More about Riga's trading networks with its immediate as well as Lithuanian, Belarusian and Muscovite hinterland, see Dorošenko, "Riga und sein Hinterland."

⁸⁸⁶ Caspar Wiebers to H. von Ulenbrock, 18.04.1621: LVVA 673-1-1252, fol. 36r; The hostilities between both nations did erupt in 1621. Part of which was caused by the Spanish embargo policy, that made a certain impact on Dutch trade, though it had limited results as they were well supplied with Spanish metals through other channels. Attman, *Dutch Enterprise*, 35.

⁸⁸⁷ Ivar Leimus, *Kaupmees Matheus Spielmanni arveraamatud 1568-1570 =: Rechnungsbücher des Kaufmanns Matheus Spielmann von 1568-1570*, Tallinna Linnaarhiivi toimetised = Veröffentlichungen des Stadtarchivs Tallinn, Nr. 15 (Tallinn: Tallinna Linnaarhiiv, 2017), 38.

⁸⁸⁸ Doroshenko, *Torgovlia i kupechestvo*, 39.

⁸⁸⁹ Doroshenko, 53.

⁸⁹⁰ Glamann, "European Trade," 455.

According to Minchinton, “In the sixteenth century a last of grain could easily double in price between Cracow and Vilnius.”⁸⁹¹ Based on an account of the same period, the price of grain would quadruple if conveyed by land route from Cracow to Venice.⁸⁹²

In eastern cross-border connections, hard currency from western countries had long dominated among the *Retour-waren*⁸⁹³ as means to cover the passive trading balance.⁸⁹⁴ To date, bullion exchange with northern partners in Swedish Estonia and southern GDL has attracted little interest. As to the southern connections, a comparably rich written sources group concerning the southern land route Riga – Biržai – Vilnius has been found within the Riga mint records. Also, a small record group pertaining to the Domain of Biržai (Ger. Birsen) is located in the Library of the Lithuanian Academy of Sciences (Vilnius), which I have not been able to study in detail.⁸⁹⁵ In this group, among other documents, one can find an order by the lord of Biržai and Field Hetman of Lithuania, Prince Krzysztof Radziwiłł (1585–1640) “to the overseers of Biržai and Salamiestis⁸⁹⁶ to repair and maintain the roads on which goods from Vilnius to Riga were conveyed”.⁸⁹⁷

Riga mint records are comparably better preserved and more informative on the subject. On February 25, 1621, a tripartite agreement was signed (renewed?) in the Lithuanian border city of Biržai between Riga mint, represented by mint master Martin Wulff II and accountant Johan Friedel, on the one side, Jacob Moß, burgomaster of the city of Biržai on the second, and finally Vilnius pharmacist Georgius Helvetius, to secure safe passage and exchange with goods between Riga and Vilnius in the following year. The agreement stipulated observing honest and unified border control procedures and levying of toll and logistic dues “*Zoll vndt quitgelt*”. On behalf of Jacob Moß, a fee of ½ 1 florin for checking each carriage parcel and carriage would be charged.⁸⁹⁸

5.5.2 Extraction of bullion

The accumulated wealth from the lucrative trade did not amass in the treasury immediately, neither did it overflow the vaults of the mint. Wealth was mostly

⁸⁹¹ Minchinton, “Patterns and Structure,” 107.

⁸⁹² Glamann, “European Trade,” 455.

⁸⁹³ In Riga’s economic hinterland silver was scarce and more expensive.

⁸⁹⁴ Dorošenko, “Riga und sein Hinterland,” 171.

⁸⁹⁵ Rima Cicenienė, “Library of the Lithuanian Academy of Sciences = Lietuvos Mokslų Akademijos Biblioteka.,” in *Baltic Connections. Archival Guide to the Maritime Relations of the Countries around the Baltic Sea (Including the Netherlands) 1450–1800.*, ed. Lennart Bes, Edda Frankot, and Hanno Brand, vol. 2 (Latvia, Lithuania, the Netherlands) (Leiden, Boston: Brill, 2007), 877–78.

⁸⁹⁶ Small village in southern Lithuania, 38km to the south of Biržai, obviously one of the stopover points on the main trading road.

⁸⁹⁷ Cicenienė, “Library of the Lithuanian Academy of Sciences = Lietuvos Mokslų Akademijos Biblioteka.,” 878.

⁸⁹⁸ Jacob Moß confirmation letter, 25.02.1621: LVVA 673-1-1279, fol. 7r.

shared by rich merchants, landlords, or artisans, while a comparably modest share went to the treasury through either regular or extraordinary taxation, fees, and fines that came from the pockets of peasants and lower strata of Livonian society. Further investigation is dedicated mainly to the fiscal policy of the city, i.e. how these different bullion sources could be extracted for the benefit of the mint, which, as previously suggested, would maintain the mint with extraordinary resilience.

A considerable share of Spanish reals and thalers, which are so often recorded in various mint sources, was levied from the various taxes at Riga harbour. Most notably, portorium. With an annual income of approx. 20 000 thalers, it was one of the largest budgetary income sources (see 5.2). So far only one reference to this connection has been detected in 1597 mint records.⁸⁹⁹ However, even handing over the whole yearly income of Riga's portorium share would not be enough to secure the mint demand.

Additional sources were secured through municipal subsidies and other taxes, for example, *Wagegeld*, the duty paid for the usage of town scales. Only one receipt from August 24, 1604 survives. Treasurer Johan Friderich had brought from the Weight house collected *Wagegeld* of different coins – 50 ¼ thalers, 23 “old rosenobels”, 2 “new rosenobels”, 114 Hungarian gulden, Polish and Lithuanian 3-groschen, schillings, etc. to the value of 4727 marks.⁹⁰⁰ The book of money exchange 1595–1601⁹⁰¹ records weekly money dispatches in Spanish reals to the mint or mint lords. One entry, which evokes particular interest dates from 30 October, in which burgomaster and mint lord Nicolaus Ecke is being reimbursed to the sum of 252 reals and 20 groschen.⁹⁰² This hint at Ecke being responsible for the large-scale precious metal deliveries in Riga. With the assistance of this book, I was provided with more detailed insight into silver sources delivered to the mint from 1597 to 1601, partially overlapping with the information registered in the 1598–1603 mint book. However, the potential of this source in reconstructing the reminted amounts in the missing years of 1595–1597, is yet to be proven.

It can be suggested that the reoccurring financial difficulties of the mint in some cases owed to the widespread praxis of using mint funds for non-mint-related expenses, i.e. for the Riga City Council's daily and emergency costs.⁹⁰³ One of the earliest pieces of evidence is suggested by the materials for the trial process of 1597, which feature an impressive credit of 20 000 florin. It was granted to a certain Hlebowitz in GDL from the finances of Riga mint (see 3.2). Suffices to look at the expense accounts of mint lord Frantz Nyenstedt (1606–1610)⁹⁰⁴ and Berent Dolmann and F. Nyenstedt for the economical year of

⁸⁹⁹ Entfang der Wesselgelden, 1595–1601: LVVA 8-4-62, fol. 78v.

⁹⁰⁰ LVVA 8-4-62, fol. 69.

⁹⁰¹ Entfang der Wesselgelden, 1595–1601: LVVA 8-4-62, fol. 75r-84r.

⁹⁰² Ibidem, fol. 78r.

⁹⁰³ The whole subject is too extensive for this study to grasp; therefore, it aims at giving only minor stepping points on the subject.

⁹⁰⁴ LVVA 673-1-1285, fol. 14r-23v.

1619/1620⁹⁰⁵ and 1620/1621⁹⁰⁶ to realise how much the mint had been turned into the extension of the Riga City Council's treasury. Prior and after that the Riga City Council received well-deserved criticism from the opposition regarding the lack of transparency of the city budget, also claiming that the city made not a single schilling out of its properties, including the mint.⁹⁰⁷

Alternative supply mechanisms were sought and embraced, such as the acquisition of silver through expropriation of property, which was arguably the most drastic and least popular method of all. In Estonia, during the Livonian War expropriation and melting of church, guild and private silver was quite a widespread phenomenon. In Riga, only a few such cases have been observed so far.⁹⁰⁸ However, during the Polish rule, such praxis seems to be completely abandoned as no similar cases have been documented.

Many more allowances from the municipal offices were made available to the mint for reinvestment in the mint. A likely very minor source of silver was secured from the transfers of fines and commissions. For example, on 29 July 1607 Lang Friderich paid a fine of 240 account marks for the excessive consumption of wine. On the same day 1 Hungarian florin to the value of 10 marks 24 groschen was paid as a commission fee for an appellation.⁹⁰⁹

The indirect tax was the most widespread and commonly used method of extracting silver from the coin users, which was charged in the form of Schlagschatz. In addition to the rather low Schlagschatz rates, in 1615–1618 Riga mint extensively charged silver in the form of Uberschoss, a surplus, which was later in 1618 integrated into Schlagschatz payment (see 5.4.). Besides, the mint charged regular transaction fees. Standard fee was 1 groschen for every exchanged real or thaler, which inflated four-fold in the final year.

Free coinage was by far the most significant mechanism of silver acquisition. The principle of free coinage (also known as *the right of free coinage*) granted unrestricted permission to deliver silver in exchange for convertible local currency.⁹¹⁰ Its importance derives from the fact that the option was open to anyone, irrelevant of their nationality (local or foreign citizen) and occupation (peasant, wandering artisan, etc.). Even Jews, who were commonly

⁹⁰⁵ LVVA 673-1-1285, fol. 25r-30v.

⁹⁰⁶ LVVA 673-1-1285, fol. 31r-34v.

⁹⁰⁷ Napiersky, "Das Buch Der Aeltermänner," 261.; Viktors Dāboliņš, "Rīgas monetārā vēsture Polijas-Lietuvas kundzības laikos (1581–1621)," *Journal of the Institute of Latvian History / Latvijas Vēstures Institūta Žurnāls* 113, no. 1 (2021): 13.

⁹⁰⁸ On 4 October 1558, Archbishop of Riga demanded that the Riga City Council handed out its silverware to be minted into coins needed for the soldiers' payment. On 1 March 1565, the Riga City Council had collected church silver – 71.5 marks of gilded silver and 42.5 marks of "white" silver. Leimus, *Das Münzwesen Livlands*, 17.

⁹⁰⁹ Expense accounts of mint lord Frantz Nyenstede, 1606–1610: LVVA 673-1-1285, fol. 14r.

⁹¹⁰ Starting from the 1580s at the latest Tallinn mint had become a free mint (*freien Prägeort*). Everyone could bring its silver to be reminted. Leimus, *Das Münzwesen Livlands*, 17. It can be assumed that 'the right of free coinage' principle had been guiding the work of Riga mint around the same time.

restricted from the free passage and taking certain offices in many parts of Europe at the time, could engage in speculations with money under Polish rule (see 5.5.3). The willingness of private entrepreneurs to exchange or melt down private silver or a collection of silver items (cutlery, jewellery, etc.) depended on either the offered mint price or the value of exchanged coins. It was also affected by the literacy in the coin values and the possibility to engage in barter relationship. The case of the 1609 undervaluation of silver shows that both could be a widespread phenomenon, and monetisation of economy was critical to the daily sustenance of the citizenry (see 3.6). The main motivation to bring silver to the mint was the offered mint price, which had to be identical to the market price or even higher. It was particularly relevant for the merchants, who valued coins not by their official, but intrinsic silver value and compared them to neighbouring prices.⁹¹¹ From the early 16th century, if not earlier, Livonian mint towns and rulers attempted to regulate circulating silver prices, as well as exchange rates of various current coins using issued regulations, mandates, and coin posters (*Müntz Placat*).⁹¹² Under Polish rule *Valvation* or attestation of current coin values was carried now and then, both in Riga, the earliest example of which is the valuation of 5 May 1582, and later during the Commonwealth mint Commissions in Warsaw in 1604 and 1616, and Cracow 1610.

Despite the Riga City Councils' active participation in securing a steady flow of bullion to the mint, it was not always available to the mint (at sufficient levels). The extension of the massive loan by mint lords in 1595 of 10 000 thalers (see 3.3), is especially noteworthy. The motivation to take the loan could not be related to the overall trends in monetary markets, which demonstrated high activity, comparably low silver prices in the Commonwealth markets, and predated inflation by some years. In this remarkable case, one can observe the active participation of the Riga City Council on behalf of the mint master, and somewhat letting down the mint lord.

During most of the research period, the source of bullion was not relevant, since all silver coins and silverware were bought at the official mint price. In critical times, however, the Riga City Council was the main actor in securing silver supplies below market price. The mint's capacity of acquiring silver sources ran low during the critical 1601–1603 when the mint was given old and low-quality coins, which could not be accessed otherwise than by the Riga City Council's mediation. A similar approach to silver shortages was applied in 1621 when the old coins from treasury chests were handed over to the mint⁹¹³ (see 5.4).

Getting hold of disposable administrative resources (old and possibly corrupted schillings) was an emergency solution. In this respect, the 1601–1603 and 1621 bullion crisis exemplify various tactics developed by mint authorities to overcome shortages. In the first case, there was no premium involved, i.e. the

⁹¹¹ Leimus, 21.

⁹¹² Leimus, 21, 50–51.; Platbārdis, *Die königlich schwedische Münze*, 375–80.

⁹¹³ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 143r.

nominal value of old schillings (ME), which were brought to the melting pot and new schillings was the same or even lower (see 3.4), while the silver price (MP) was higher for the new issues. The recoinage essentially was carried out at the Riga City Council's account. Additional costs would be borne in case the worn or corrupted coins went into the melting pot, because of their usually decreased silver content. Whereas in 1621, the Riga City Council withdrew worthy species from the monetary market in exchange for lower quality schillings to gain profit.

5.5.3 Agent network

As previously noted, the first decades of the 16th century saw the emancipation of Livonian mint masters from the Riga City Council into independent tenants of the mint.⁹¹⁴ The risky business of handling silver purchases had been bestowed on to the mint master's shoulders. The final years under Polish rule are especially illustrative of the mint master's efforts in foreign bullion markets. Evidently, the mint master worked in a very precarious environment, which was not nearly as safe and predictable as the domestic bullion market, where the Riga City Council's fiscal policy and private entrepreneurship was instrumental.

An extremely rich source of enquiry into the challenges facing overland transportation and networking is provided in a letter dated 18 April 1621.⁹¹⁵ The short descriptive note on the last page of this otherwise anonymous letter identifies Georgius Helvetius as its addressee. Neither the origin nor the occupation of the possible author can be established, although it seems to be Riga mint master Martin Wulff II. Anonymous author/Wulff ordered Helvetius to purchase "*Schwaren Sylbergroschen*" meaning, good dreipölkers to the amount of 10 000 zloty. One weight mark of heavy dreipölkers ought to be bought for 6 fl 26 groschen. The mint master planned to acquire additional pure silver worth 3000 florins from *Muntz Juden*. The desired price of fine silver mark was 16 florin (480 groschen). Based on these figures the following estimates on the silver price differentiation among the bullion sources can be made. First, silver was much cheaper beyond the borders of the Duchy of Livonia. In Riga, fine silver mark was purchased for 600 groschen or 20 fl. (Fig. 5.4.3). Second, according to Helvetius, ME of Bydgoszcz dreipölkler was 14 fl 4.5 groschen (424.5 groschen).⁹¹⁶ This silver price difference clearly explains the particular interest of Riga mint in these coins. One can also gather that dreipölkers were sought for a very low price, which was close to their nominal value: 6fl 26 g = 206 groschen; 206 groschen / 1.5 groschen (dreipölkler) = 137.33. This figure is only slightly above 133 pieces, which is the number of Bydgoszcz dreipölkers normally counted in weight mark of alloy. The minor

⁹¹⁴ Leimus, *Revaler Münzbücher*, 31.

⁹¹⁵ Martin Wulff (?) to Georgius Helvetius, 18.04.1621: LVVA 673-1-1279, fol. 10r-11v.

⁹¹⁶ In other words, it was the nominal price of the fine silver mark in dreipölkers.

difference may be explained either with the differences in coin weights or a minor cost for Muntz Juden service.⁹¹⁷

Wulff informed Helvetius about the dispatch of money on over land route to Vilnius. In this venture Wulff was financially supported by the Riga treasury:

“Danish öre	513 pieces
½ Danish öre	447
Reichsthalers	400
Hungarian guldens	996
1 and ½ reals	597
Orts and reals	196 ⁹¹⁸

Although Wulff regretted not having large denominations (*kein grob geld*) at his disposal, since no vessels had arrived yet, at least half of the coins in his post in fact were *grob geld*. In exchange for this dispatch, Wulff hoped to acquire from the *mint Jews* (ger. *Münzjuden*) pure silver or dreipölkers in the total value between 1500 to 2000 florin or 140 dreipölkers in the weight mark of alloy. Later in his letter, Wulff returned to the question of dreipölkers for the third time only to make certain that the purchased dreipölkers quality should not be below the noted 140 pieces in weight mark of alloy.⁹¹⁹ Wulff urged his addressee to wait a little bit more for the arrival of the ships, which was expected in 14 days. At the first opportunity, he would send 30 000 florin in “good coins”. In regards to the private shipment of goods from Holland, the mint master hoped for their arrival any time soon and that all ordered goods would be purchased from the ships according to Helvetius’ register. Last but not least, the mint master expressed serious concerns about the activities of Friederich Blom in Vilnius. He wished to give a lesson to the “untimely money changer” so that he did not want to visit Vilnius anymore. Money changers had been outbidding him in the quest for dreipölkers, which is why he was forced to pay higher price for them.⁹²⁰ One last detail, which catches attention in Wulff’s letter is that a “mint master Rudolphus” had sent a gift of 2 roes (*2 Rehn*) for him.⁹²¹ Because the addressee was in Vilnius, it is quite convincing to argue that he was referring to Rudolf Lehman, the Vilnius mint master (1623–1627).⁹²²

This letter creates an image of a highly busy and responsible official, who is well-connected and informed about recent events and price fluctuations, but likewise is socially tactful. In many places in the text he expresses his affection to the addressee and his wife, also stresses the necessity of keeping friendly ties

⁹¹⁷ More about Muntz Juden – below in the text.

⁹¹⁸ Martin Wulff (?) to Georgius Helvetius, 18.04.1621: LVVA 673-1-1279, fol. 10v.

⁹¹⁹ Ibidem, fol. 11r.

⁹²⁰ Ibidem, fol. 11r.

⁹²¹ Martin Wulff (?) to Georgius Helvetius, 18.04.1621: LVVA 673-1-1279, fol. 11v.

⁹²² Grimalauskaitė and Remecas, *Money in Lithuania*, 199.; Ruzas, *Pinigų muziejuje katalogas*, 300. This source, as we can see, redraws Lehman’s occupation in mint master’s office by a couple of years.

with other associates. Business success owed a lot to human relationships and trust in each other, hence the exchanges of gifts were seen as basic means of expressing and nurturing these ties.

The transit of bullion was not spared from the trouble, nevertheless. Shortly afterwards, on 26 April 1621, Emanuel Hunefeld reported from Biržai on the unfortunate events, where the local tax collector (pl. *Poborca*) had confiscated Riga's consignment of money. In a letter to Riga magistrate of law, Johannes Ulrich, he scrupulously recalls the further course of events, various testimonies of witnesses, and his failure to secure the return of the money.⁹²³ The confiscation was carried out in the new toll station, rented by tax collector Jacobus Szarawsky and stored in Biržai castle under the command of the local captain.⁹²⁴ Szarawsky was absent in Vilnius at the time of Hunefeld's arrival, whereas his *Succollector* Mikolaj Jenzowicz had fled to Goniewicz,⁹²⁵ and apprentice Jarmatowicz, who was left alone, had also fled. According to a letter by Christofer Naruszewicz, Grand treasurer of GDL (1618–1630),⁹²⁶ tax collector Szarawsky apologised for such deeds, which were carried by his servants against his will and unbeknownst to him.⁹²⁷ Szarawsky demanded the captain to send the letter with the dispatched money and ½ tonne of roe, and warned against such ill-doings in the future.⁹²⁸ In this situation the mint master of Vilnius sent a letter to Szurawsky saying that he was coming to Biržai in a short while to settle the case. In the presence of Szarawsky, mint master and Georgius Helvetius wanted to sign a contract with Moise, a Jewish tenant of Vilnius tax collector that all confiscated monetary dispatches “*abgeführte Müntzsachen*” from Riga and Vilnius would be exempted from taxation.⁹²⁹

A stream of letters was exchanged between Riga, Biržai, and Vilnius in the forthcoming months. After the rather limited success of Hunefeld's mission in Biržai another delegate, a secretary of Riga, Andreas Koy, was sent to Vilnius to finalise the agreement on the issue. In preparation, the mint master drafted a memorandum for Andreas Koy.⁹³⁰ Altogether it consists of six points, but here I will refer only to the sections dealing with the case of Biržai, and various

⁹²³ Emanuel Hunefeld to Johannes Ulrich, 26.04.1621: LVVA 673-1-1279, fol. 12r-13v, 15r-v.

⁹²⁴ Ibidem, fol. 15r; Christofer Naruszewicz's report, 14.05.1621: LVVA 673-1-1279, fol. 18r.

⁹²⁵ Goniądz, town in N-Poland.

⁹²⁶ Grimalauskaitė and Remecas, *Money in Lithuania*, 199.

⁹²⁷ Ibidem, fol. 18r.

⁹²⁸ Emanuel Hunefeld to Johannes Ulrich, 26.04.1621: LVVA 673-1-1279, fol. 15r.

⁹²⁹ “Münzmeister eine Post an der Szurawski mit dem schreiben *expedire*, das er bald anhero kommen vnd die sache schliessen wolte d[er] H[err] Münzmeister mit des H[err] Georgy Wilnisch[er] Apotekers schreiben bewehret, das er in seinem nahmen mit des Wilnischen Poboren *Arendatore* Moisse dem Juden in des H[err] Szurawski gegenwarth contrahiret das alle von Riga vnd Wilna hero vnd abgeführte Müntzsach[en] sollen frei vnd vnverzollt durchgestattet vnd *passiret* warden [...]” Emanuel Hunefeld to Johannes Ulrich, 26.04.1621: LVVA 673-1-1279, fol. 15r.

⁹³⁰ *Memorial* Andreas Koy, 1621: LVVA 673-1-1279, fol. 8r-9v.

questions raised by the illegal acquisition of the mint master Wulff letter. First, Koy was required to request the letter of obligation “*fer schreibung*” from the castle court, which had been issued to the Vilnius mint master (Helvetius?) and Andreas Stempelin (see below for more information). It was commonly agreed that Mikolaj, Szarawsky’s servant, was guilty of the “thoughtless theft” for which the town ought to punish the offender by dismissing him from office and penalise him for the theft of the mint master’s personal property.⁹³¹ But unexpectedly Vilnius mint lord interfered. Vilnius mint lord (Christofer Naruszewicz?) did not want to hand over either the letter or Mikolaj, and wished to keep the money for 3 to 6 months, or even a year against a security: “*Ehr die gelde wolte behalten, vnd der Stadt Ein fer schreibung gebehn auf Ein ¼ oder ½ Jahr oder Ein ganß Jahr*”.⁹³² In return, Vilnius was ready to pay compensation and issue a strong affirmation. The Riga mint master was willing to make such an agreement, although he wished *Species* to be returned, if not, they should be accounted in the current values in Vilnius.

Besides the confiscation, the key issue of discussions in Vilnius was dreipölkers. Getting hold of Wulff’s letter unfolded Riga mint calculations and secrets, which required some explanations. Regarding the ‘heavy silver groschen’ or dreipölkers, in Riga 140 dreipölkers were counted in weight mark. That is why they were being transported to Riga. Furthermore, good quality dreipölkers were in high esteem, for which one could buy ‘good silver’ from Muscovites, in Livonia or Riga. A. Koy had to give assurance to Lithuanian colleagues that Riga accepted only “good silver groschen”. The city of Riga had forbidden to exchange – either spend or accept – “light silver groschen”. Any trespasses were fined with 1 Reichsthaler for each exchanged piece.⁹³³ Should A. Koy be asked if Riga was more willing to get silver groschen or pure silver mark for 16 florin, he should answer that the fine silver mark was cheaper in Riga in good silver groschen than in Vilnius for 16 florin. Regarding the required barrels of gold (*Etzliche Thun goldeß*),⁹³⁴ Koy should answer that it was not about barrels but a few thousand thalers. The mint master was expecting to obtain good silver for the desired coinage of “very good coins”, but because these coins were requested by his majesty, nothing more could be said.⁹³⁵

In the context of the latest developments in Riga mint, where one could observe recoinage of dreipölkers rather than large standard coins, the aforementioned source testifies to what has been concluded: Riga was increasingly reminting dreipölkers to evade high costs for the silver paid in large denominations. Once more, an important detail to notice is that the accounts significantly decrease the mint price in Riga in 1621 from the previously

⁹³¹ Ibidem, fol. 9r.

⁹³² Ibidem, fol. 9v.

⁹³³ Ibidem, fol. 8r.

⁹³⁴ This issue is not mentioned anywhere else in mint records.

⁹³⁵ *Memorial* Andreas Koy, 1621: LVVA 673-1-1279, fol. 8v.

estimated 600 groschen⁹³⁶ (see 5.4) to 16 florin or 480 groschen in Vilnius and Riga. Firstly, it indicates a drastic and unexpectedly large difference in silver prices in Riga, suggesting higher gross seigniorage incomes than previously estimated. Secondly, it suggests large, base units were the carriers of silver inflation, being increasingly overvalued in contrast to the relatively cheap ‘good dreipölkers’.

If the mint or merchants preferred to settle accounts with large standard coins, it was for quality reasons. While the mint had resorted to dreipölkers, in the memorandum mint master Wulff repeatedly emphasised the importance of ‘good money’ and ‘good silver groschen’, arguably the pitfall of middle and small change market. However, the Livonian monetary market was surely too small to supply the mint with decent quantities of ‘good’ dreipölkers. Through setting the price and contracting coin collectors Riga invited dreipölkler importation from the rest of the Commonwealth. Moreover, the Riga mint jealously protected its interests in Lithuania, protesting against private rivalry in what it assumed its area of interest. Lastly, in the final years under Polish rule, the land route Riga – Biržai – Vilnius gained importance in bullion transportation, serving not just as an alternative to seaborne trade, but as an important bullion trade route in itself. There were clear signs that in the quest for precious metals the mint of Riga was actively outsourcing Lithuania, starting with its toll stations, in Vilnius and possibly markets, villages, etc. Quite in the same manner as Polish mint agents were busy in the bullion trade of German lands.⁹³⁷ This whole case is noteworthy proof of the importance of undisturbed, safe passage of precious metals, both as a prerequisite to the work of the mint and to promote capital flow.

Georgius Helvetius was probably the most prominent actor of Wulff’s agents in the GDL bullion market. The lord of Biržai, Krzysztof Radziwiłł, in one of his letters from 17 June 1621 describes Helvetius as mint master Wulff’s *factor*.⁹³⁸ Nothing much is known about Helvetius as a *factor*, nor the length and breadth of his service in this field. Thanks to Eugenius Ivanauskas detailed study, the Swiss-born “Factor and pharmacist” Helvetius is a relatively well-known historical figure in Lithuanian numismatics.⁹³⁹ According to the document issued in the name of Sigismund III on September 27, 1618, he had been the former warden of Vilnius mint, meanwhile holding a pharmacist’s practice. His career as a warden was cut short in 1616, the same year he took

⁹³⁶ In Gdańsk, the same price in silver thaler was paid for silver already in 1620. 1 thaler = 75 groschen. Gumowski, *Mennica Wileńska*, 135.

⁹³⁷ Mikołajczyk, S.102.

⁹³⁸ “Mincarz Risky marcin wolfi ich i factor iego Jerzi Helwetycy Aptekarz wilensky” Krzysztof Radziwiłł’s letter, 17.06.1621: LVVA 673-1-1279, fol. 29r.

⁹³⁹ Eugenijus Ivanauskas, “Georgius Helvetius, Assayer of the Vilnius Mint,” *Schweizer Münzblätter = Gazette Numismatique Suisse = Gazzetta Numismatica Svizzera* 43, no. 177 (1995): 14–15.

the position.⁹⁴⁰ During the short tenure period, he managed to participate in the Warsaw Commission. His signature can be found on the Commission proceedings and decisions among 5 other monetary specialist names,⁹⁴¹ the very same event which is noted also in the Ivanauskas testimony – the financial report of Vilnius mint (1615–1618) which was compiled by Grand Treasurer of Lithuania, Hieronim Wołłowicz (d. 1643). Several other records – mostly letters addressed to him are kept in the Riga mint archive, which sheds new light on his future career. They are indicative of Helvetius service or close cooperation with Vilnius mint at least until 1621. The mint records of Riga, including the earlier mention, however, persistently refer to his pharmacist occupation – “*Herr Georgius Helvetius Apothekern zur Wilde*”,⁹⁴² “*Georgy Wilnisch Apoteker*”,⁹⁴³ “*Georgio Heluetio Pharmacopola Vilnen*”.⁹⁴⁴

M. Wulff also recalls a person by the name Stempelín, who had been recommended to him by Helvetius. Although unfamiliar to him, Wulff trusted the positive feedback given by his bookkeeper (possibly, Johann Friedel⁹⁴⁵) and recruited Stempelín for a salary of 101 florin, trusting him not to spare energy in acquiring ‘jeavy silver groschen’.⁹⁴⁶

The mint of Riga sought after the ‘heavy dreipölkers’, which had to be collected and filtered among other bad dreipölk coins. For this task mint master, Wulff approached not only Helvetius and Stempelín, but also mint Jews. In the following year, he expected to transport several barrels of silver money with the help of mint Jews and other Jews even more.⁹⁴⁷ Mint master Wulff particularly trusted a certain Tutter Abraham to settle all the deliveries in the finest way “*alle sachen fein In der ßtyl halten*”.⁹⁴⁸

Completely unfamiliar to the Livonian numismatics so far, mint Jews are not a historically new or otherwise unique phenomenon in European monetary history.⁹⁴⁹ In the neighbouring Polish and Lithuanian territories, from the early Middle Ages, they were employed both in the service of mints and monarchs.⁹⁵⁰

⁹⁴⁰ Eugenijus Ivanauskas, “New Data of Johan Trilner,” ed. Krzysztof Filipow, *Wspolne Dzieje Pieniadza*, 1996, 118.

⁹⁴¹ LVVA 673-1-1283, fol. 110v.

⁹⁴² Jacob Moß confirmation letter, 25.02.1621: LVVA 673-1-1279, fol. 7r.

⁹⁴³ Emanuel Hunefeld to Johannes Ulrich, 26.04.1621: LVVA 673-1-1279, fol. 15r.

⁹⁴⁴ Christofer Narusewicz to Georgius Helvetius, 5.06.1621: LVVA 673-1-1279, fol. 27v.

⁹⁴⁵ Viktors Dāboliņš, “The Curious Case of Mint Master of Riga City J. Haltermann (1660-1663),” ed. Georges Depeyrot and Michael Märcher, *Documents and Studies on 19th c. Monetary History. Mints, Technology and Coin Production. Proceedings of the Round Table of the “Silver Monetary Depreciation and International Relations” Program (ANR DAMIN, Lab Ex Transfer S), Copenhagen May 28–29 191* (2015): 42.

⁹⁴⁶ Martin Wulff (?) to Georgius Helvetius, 18.04.1621: LVVA 673-1-1279, fol. 10v.

⁹⁴⁷ Martin Wulff (?) to Georgius Helvetius, 18.04.1621: LVVA 673-1-1279, fol. 10r.

⁹⁴⁸ LVVA 673-1-1279, fol. 10v.

⁹⁴⁹ See, for example, online publication by: Barbara Staudinger, “Von Silberhändlern Und Münzjuden,” <http://david.juden.at/kulturzeitschrift/66-70/68-staudinger.htm>. Accessed: December 8, 2022.

⁹⁵⁰ Gumowski, *Mennica Wileńska*, 27–28, 59.

Periodically, in the mid-16th century, Vilnius mint was rented to Jews. More often they were responsible and active in silver supplies to the mints.⁹⁵¹ If there were any mint Jews arriving in Riga, their arrivals had been sporadic and temporary unlike the neighbouring Jelgava mint, which employed Jakob Beer as its first mint master in 1575.⁹⁵² Duchy of Courland was a fiefdom of the Polish king. Here, the small Jewish community enjoyed a peaceful life.

Protestant Riga was rather hostile towards Jewish people. The Riga City Council treated Jews (and Scots) as “harmful people” owing to their offenses against the public order, such as speculations with money.⁹⁵³ However, Riga seems to have established closer contact with the Jewish community living in the Lithuanian border town of Biržai. Backed by the privileges of Prince Krzysztof Radziwiłł, the so-called *Birsischen Juden* became regular visitors to Riga in the early 17th century. In 1611, Radziwiłł approached the Riga City Council, demanding to lift the traditional entrance fee in Riga of one Hungarian gulden to the Jews under his patronage. Such protectionism created resistance among the burghers of Riga, who were actively fighting the prioritised group of merchants.⁹⁵⁴ Although we are unable to draw closer connection between ‘Jews from Biržai’ and mint Jews, the latter group makes frequent appearance in the accounts of Riga mint in 1620–1621.

As suggested by the mint Jews designation, there was a legally or/and occupationally distinct group of persons among the Jewish population who were dealing primarily with mint production, and supplying of silver to the mints. Moreover, judging from mint master Wulff’s letter to Helvetius, there were other groups – ‘other Jews’ (*Andere Juden*) and ‘customs Jews’ (*Zohl Juden*) handling the trade with currency with Riga and Vilnius mints.⁹⁵⁵ The mint master reckoned that getting in touch with customs Jews could make the transit of currency over the border more secure. After all, it is known that the old toll station in Biržai was rented by Marcus⁹⁵⁶ and tax collection in Vilnius – to Moise, both Jews by origin.

⁹⁵¹ Ivauskas and Douchis, *Lietuvos monetų kalybos istorija*, 77–79.

⁹⁵² Ivar Leimus, “Jakob Beer – Mint Master of Duke Gotthard Kettler in Mitau,” *Numismatica Baltica*, Numismatics in the Centenary Year of the Baltic States, 2 (2019): 83–87.

⁹⁵³ “Eine Instruktion, die der Rigische Rath seinen Abgesandten zum Reichstage nach Warschau unterm 15. September 1611 ertheilte, giebt darüber unzweideutigen Aufschluss. Da die Juden und Schotten, so schreibt der Rath, in diesem verwirrten Kriegswesen das Land durchstreichen und mit allerhand verfänglicher Vorkäuferei und betrügerlicher Münzwechsellung dem ganzen gemeinen Nutzen grosse Schaden zufügen, was nicht ein Jeder so bald vermerkt, und da nun leider im Lande keine Aufsicht geschieht, so sollen die Abgesandten ein königliches Mandat an die Obrigkeit im Lande auszubringen sich bemühen, dass alle solche Juden, Schotten und wie sie Namen haben möchten, aus dem Lande gewiesen und solche Vorkäuferei ernstlich gestraft werde.” Anton Buchholtz, *Geschichte der Juden in Riga bis zur Begründung der Rigischen Hebräergemeinde im J. 1842* (N. Kymmel, 1899), 9.

⁹⁵⁴ Aivars Stranga, *Ebreji Baltija: no ienaksanas pirmsakumiem līdz holokaustam: 14. gadsimts – 1945. gads* (Rīga: LU Zurnala “Latvijas Vesture” Fonds, 2008), 15.

⁹⁵⁵ Martin Wulff (?) to Georgius Helvetius, 18.04.1621: LVVA 673-1-1279, fol. 10r-11v.

⁹⁵⁶ Christofer Naruszewicz’s report, 14.05.1621: LVVA 673-1-1279, fol. 18r

Earlier observations of extensive gross seigniorage raised the question of redistribution of the wealth generated by increased schilling debasement. There are no explicit indications of the usage of this profit, however, studying of bullion acquisition mechanism – hiring of dealers, transportation costs, and upkeep of networks – ascertains the growing necessity to approach these costs in the future. Avoiding the much more expensive thalers and reals meant that the mint would be paying higher service costs for the deliverance of highly demanded dreipölkers, the costs which were normally very minimal if non-existent. What is most important: the previously reckoned mint price of thalers at 75 groschen reflected the upper price limit; with the intensifying of overland networks, Riga mint was provided with the silver from dreipölkers, which was expected to decline mint price by as much as 20%. Obviously, that did not happen, at least there is no evidence of the decrease of silver price, meaning that the difference between the silver price in terms of dreipölkers and mint price could be shared among the Riga treasury or reinvested in schilling coinage.

5.5.4 Dissemination of Riga schillings

There are no direct sources describing the outward movement of schillings, changing hands, and reaching customers far and wide. The subject offers very scant and rather fragmented reading in mint records. Mint books, like many other mint sources of its like, provided only required evidence from the city auditors. Delivering production to its customers was not on the Riga City Council's list of concerns. The bulk of the minted schillings, which went straight to the purchaser, was exchanged in sound money, i.e. thalers or reals, therefore securing the mint with immediate substitutes of precious metal. While the rest of the money would cover different expenses.

There could be various, hardly traceable ways in which schillings left the mint and disseminated. The mint book of Riga, 1615–1622 includes regular inscriptions of these transactions, but only some of these in 1617 and 1618 specified its customers. So, for example, in the only such inscription of 1617 one can read that the alderman Mattis Kock had collected 2354 marks 18 schillings, that belonged to burgomaster Nicholas Ecke. Also, a certain Horst (perhaps Rotger zur Horst, Ecke's son-in-law – see below) had received 1400 marks.⁹⁵⁷ Several more inscriptions in 1618 repeat previous and bring new purchaser names to light, although the listed names and invested sums in schilling purchases surely could be complemented with many more:

Mattiß Kock – 1000 reals,⁹⁵⁸

G. Horst – 1200 reals,⁹⁵⁹

Claß Kron – 1000 reals,⁹⁶⁰

⁹⁵⁷ “Dieser Poßt hatt der Olderman Mattiß Kock EndtFangen 2354 m 18 β Dath befellig den hern Borgermeißer Eke Hinauß hat der Her Horst 1400 mark Endt fangen” Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 31v.

⁹⁵⁸ Ibidem, fol. 58r, 59v.

⁹⁵⁹ Ibidem, fol. 57v.

Andreß Dasel – 800 reals,⁹⁶¹
Jurgen Rotthusen – 1000 reals,⁹⁶²
Nicolaus Ecke – 9000 reals.⁹⁶³

Identifying of these names is complicated by the differences in transcriptions of contemporary sources. Alderman Mattiß Kock, as suggested by his title, belonged to one of the two Guilds in Riga. In the Book of Great Guild, an alderman Matthies Koke can be found, with a phonetically similar name and last name. He was a member of the Great Guild (Merchant's guild) from 1605 until his death on 23 December 1621, dying he still held the position of a city councillor.⁹⁶⁴ Another merchant and long-time member of the Great Guild was Andreß Dasel, recognisable in the book of Great Guild as Darsell.⁹⁶⁵ J. Rotthusen was another man professing to trade with goods. He died in Riga in September 1621, during the siege of the city.⁹⁶⁶ Professional biographies allows one to assume that in the early stage schillings were primarily collected by local merchants. Non-natives might have been excluded from the direct access to Riga mint production of such amounts.

The only man on the list with a different background was Nicolaus Ecke (1541–1623), the most powerful, wealthy, and notorious man in Polish Livonia. Early in his career as the burgrave, he was responsible for the introduction of the Gregorian calendar in Riga in 1584, which became the cause of 'Calendar riots' (1584–1589). In one episode, his house had been sacked and Ecke was forced to flee for his life. After bringing down the civil unrest, Ecke was restored to his office and received compensation of 10 000 gulden from the city treasury. In 1605 an audit of the city treasury was carried out, after which a new case was opened against Ecke. It was found out that during the past years he had issued loans from the city treasury to private persons and noblemen against the yearly interest rate of 10–12%.⁹⁶⁷ Moreover, Ecke had exploited his authority to appoint his sons-in-law and other relatives to the most prominent public offices. Over the years he had amassed great wealth and managed to keep 12 houses. Ecke was found to be indebted for 70 000 marks. However, the debt was challenged and never repaid.⁹⁶⁸ In 1605 N. Ecke and his sons-in-law –

⁹⁶⁰ Ibidem, fol. 56v.

⁹⁶¹ Ibidem, fol. 58v.

⁹⁶² Ibidem, fol. 55r.

⁹⁶³ Ibidem, fol. 56r-57r, 58r-59r.

⁹⁶⁴ Napiersky, "Das Buch Der Aeltermänner," 327; Karina Kulbach-Fricke, "Riga, seine Bevölkerung vom 14. bis 19. Jahrhundert" (2011), 2513.

⁹⁶⁵ Ibidem, fol. 58v; Napiersky, "Das Buch Der Aeltermänner," 327.; Kulbach-Fricke, "Riga, seine Bevölkerung," 808.

⁹⁶⁶ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 55r; Napiersky, *Bodecker's Chronik*, 87.; See also Kulbach-Fricke, "Riga, seine Bevölkerung," 4100, 4200.

⁹⁶⁷ Usual interest rate was 6%.

⁹⁶⁸ The short history of Nicolaus Ecke's mishandlings is based on the accounts of Frantz Nynstedt's chronicle and handbook. Nyenstaedt, "Livländische Chronik," 103–4, 115, 141–57.

Rotger zur Horst (d. 1622)⁹⁶⁹ and Thomas Ramme (d. 1631)⁹⁷⁰ were forced to flee the city. His property was auctioned and rented. By order of the king, in 1612 the expatriates were free to return and hold their previous possessions.

The mint book of Riga indicates Ecke's active participation in another financially lucrative business – purchasing of Riga schillings. In the short period, from 3 January to 21 February 1618, he managed to amass 9000 reals to be exchanged with schillings. Ecke paid 1.2 reals or 60.5 groschen for each weight mark of schillings or 220 pieces which equals 73 groschen 1 β. Hence, in return for 1 real the mint paid 50.4 groschen in terms of Riga schillings.⁹⁷¹ At the same time, the market price of real was 46 gr 2 β.⁹⁷² It means that the mint paid 3 gr 2 β above the market price for the reals. The difference formed what is commonly known as *agio* – a premium charged from the exchange of a standard unit with the base unit. Charging of *agio* is explained both with the usually larger demand for standard units as well as deterioration of small change over time. Supposedly, it was also reimbursement for transportation and security costs, and other related risks, which were taken for the dissemination of schillings. One can also note that while the exchange rate remained fixed at 50.4 gr, the price of Spanish real fluctuated. In the following weeks, from 10 January to 21 February 1618, according to mint book inscriptions, real was appraised at 46 gr 1 β⁹⁷³, which would increase merchant revenue to 4.1 gr. As far as I am concerned with Ecke's revenue, it can be estimated at 36 600 groschen⁹⁷⁴ or 778.72 thalers, if converted in 1618 thaler price of 47 groschen.

Apparently, in terms of exchanged nominal values, the mint was losing capital. The nominal losses were offset by the intrinsic differences of reals and schillings. Whereas in 1618 the weight mark with schillings (220 pieces) contained 28.37 silver grams, 1.2 reals was equal to 30.675 g of silver.⁹⁷⁵ Hence, it makes clear while securing merchants' interests, the mint earned more than 2 g per each weight mark of schillings. Either way, the exchange process of schillings with the outside world had been created wisely enough to make it a win-win situation.

One can also speculate on the involvement of the mint master of Riga in currency dissemination. Being in charge of the minting process as no other, beginning with the calculations of necessary quality standards, prices, and available resources, to paying salaries and distributing earnings, he could be investing his

⁹⁶⁹ Böthführ, *Die Rigische Rathslinie*, 61.

⁹⁷⁰ Thomas Ramm(e) (d. 1631), the son of former mint master of Riga, Christopher Ramme (until 1571). In 1600, elected to the Riga City Council. After the return to Riga in 1612, he made a successful career in the Riga City Council, succeeding to the burgomaster's position in 1621. Böthführ, 61–62.

⁹⁷¹ 60.5 gr / 1.2 reals = 50.4 gr.

⁹⁷² Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 56r.

⁹⁷³ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 56v.

⁹⁷⁴ 1000 reals x 3.8 gr + 9000 x 4.1 gr = 40 700 gr.

⁹⁷⁵ According to monetary reform of 1497, real or piece of eight, which gained distinction in international markets in 16–18th century, contained 25.563 g of pure silver.

private earnings simply to balance shortages that may arise. Another issue is whether he was one of the currency merchants. Polish monetary regulations rewarded mint masters very handsomely. It seems that for most of the period, until the passing of mint master Henrich Wulff sometime at the end of 1614, his salary was constantly above the Schlagschatz rate (Fig. 5.4.3). Although, the mint master's salary was cut drastically from 10 to 1.5 groschen from each fine silver mark struck, increasing emission rates in forthcoming years, delivered hundreds and thousands of thalers to the mint master's private account. Perhaps, cutting of salary was intended to stimulate the mint master's interest in minting schillings, which brought little income, unless minted in large quantities. Since the local market was too small, this might have entailed some interest in foreign sales markets. The widespread correspondence suggests that mint masters were well-updated on the current situation in foreign monetary markets and commodity prices. Mint masters could use their specific knowledge and connections to foster their profit. Owing to all the responsibilities, he was no less a merchant than a mint master. As demonstrated by the ship captains/skippers arriving to Riga port in 1629 and their clients, mint master Martin Wulff II (1615–1633) was a busy dealer. One can only guess, what was in the cargo of ship captain/skipper Berendt Simonsen,⁹⁷⁶ Jerrigs Simensen,⁹⁷⁷ Jan Claeßen,⁹⁷⁸ Peter Hanßen arriving from Horn,⁹⁷⁹ Jochim Alwert arriving from Rostock,⁹⁸⁰ Hinrich Simensen – from Wiborg,⁹⁸¹ and Nylß Matzen – from Priozersk (Swe. Keksholm).⁹⁸² Did ever any ship captain go to the port cities of the Polish Kingdom with Riga schillings in their cargo? The question is open for further research.

Military men constitute another group of actors, answering for the coin dissemination. Their role has been previously examined in light of the influx of Lithuanian groschen in the mid-1560s and 1580s (see 3.1) but needs to be addressed in the context of Riga schillings as well. The analysis of the dissemination of Lithuanian half-groschen and 3-groschen suggests that the Lithuanian troops were remunerated with the extensively issued medium-value coins and most likely from the treasury of the Grand Duchy of Lithuania.

It was not until the onset of the Polish-Swedish war in 1600 that the next massive movement of troops over the southern border of the Duchy of Livonia occurred. Unlike the earlier episodes of the Lithuanian coin dissemination, the problem of addressing Riga schilling dissemination is its occurrence under the common monetary rule. On such circumstances, movement of coins in one or another direction can not be accurately attributed to military intervention. However, the analysis of hoards found in Estonia and Latvia (see 4.6) allows to

⁹⁷⁶ *Copia Proventuum Portorii per Praefecto Portorii Andream Koyen, 1588–1605: LVVA 673-1-1253, fol. 86r.*

⁹⁷⁷ *Ibidem, fol. 88v.*

⁹⁷⁸ *Ibidem, fol. 89v.*

⁹⁷⁹ Formerly town in Dutch Republic. *Ibidem, fol. 90v, 91r.*

⁹⁸⁰ Former Holy Roman Empire, town in modern Germany. *Ibidem, fol. 93v.*

⁹⁸¹ Capital of former Swedish province of Ingermanland. *Ibidem, fol. 96v.*

⁹⁸² Former county in Swedish province of Ingermanland. *Ibidem, fol. 99r.*

connect shifting positions of some of the Polish and Lithuanian issues to the fatal military incursions of the early 17th century. The war terminated the circulation of Lithuanian half-groschen in the territory of Latvia as most coins would be concealed (the presence of Lithuanian 3-groschen, however, is felt throughout the Polish period). Simultaneously, the war seems to have introduced large amounts of Polish 3-groschen and 6-groschen (particularly issues of the 1590s, but also more recent ones) in domestic circulation. Since the hoarding pattern of pre-war years does not indicate the circulation of these issues in Polish Livonia, one might attribute their appearance to the arrival of the Polish-Lithuanian Commonwealth troops.

Finally, what was the role of the massive migration of the Polish-Lithuanian troops in the dissemination of Riga schillings over the the Commonwealth? During the war years, Riga schilling was the only coin that was minted and supplied in sufficient amounts in the city. It would be logical to assume that it was the most comfortable and cheap currency for any remuneration. However, the first principal objection to such an assumption is the lack of any credible evidence in written sources. Further examination of the sources related to the financing of war efforts is required. Secondly, there are practical obstacles to a small change-based payment model of troops which required large sums of money. Collecting the necessary amount of money for hundreds and thousands of mercenaries using small change was much less practical than collecting the required sums in hard currency.⁹⁸³ Since most armies suffered from underfunding, speed would become a serious circumstance to consider as well. However, one can not exclude the possibility that troops acquired a large number of schillings by way of looting or ransom, which was a commonplace practice. Therefore, we may conclude that the movement of troops could have played only a secondary role in causing the massive outflow of Riga schillings; troops were primarily paid in hard currency from the treasury, that is, with Polish or Lithuanian coins.

⁹⁸³ Settling accounts in small change was time consuming and also more problematic for transfer; moreover, small change lacked the high liquidity of standard units.

Chapter 6. THE MINT

The mint of Riga (*Stadt Muntze*)⁹⁸⁴ was a municipal institution, the primary emitter of monetary means, and overseer of the domestic monetary market. It was the oldest institution of that kind in Livonia. While the Riga City Council held full ownership over the building complex, machinery, and its instruments, in the research period the mint was characterised by a shared leadership – with the mint master as the leaseholder on the one side, and two mint lords as coordinators and custodians on the Riga City Council’s side. Mint masters were entrusted to take good care of the property, pay a fixed rate of Schlagschatz, and organise the minting process. The minting process required a special division of labour, hiring of the different – both skilled and unskilled workforce, and supplying the mint with necessary raw materials. All of that was in the hands of mint master and personnel at his service at the mint and abroad. This chapter seeks to examine in more detail the above-mentioned features of the mint arguing that Riga mint was a vivid example of preindustrial enterprise in early modern Livonia, highly resource intensive, driven by machinery and division of labour.

6.1 Mint complex

The main building complex of the mint (*Muntz(e) Hauße*) was located in the central part of the city, next to the town square and St. Peter’s church. J. Straubergs mapped the complex in a quarter surrounded by Lime Street, Big Coin Street, and Small Coin Street. It was built in the early 1420s at the site of a previously collapsed mint⁹⁸⁵ and served for the initial purposes until 1707.⁹⁸⁶ Small Coin Street is first mentioned in written sources in the mid-15th century,⁹⁸⁷ which is a clear indication of the mint’s whereabouts in the specified quarter. On the facade of the mint on Small Coin Street 16, three pediments and a portal, constructed in the style of the 1640s could be seen a century ago. The building structure belonged to the communal building type represented also by the foundry house of Riga.⁹⁸⁸ After the collapse of the original building in the bombing of the town in the Second World War, little more can be said about its visual appearance. The cartographical material of Riga – map-plans and pano-

⁹⁸⁴ This term is most commonly used in the legislative documents and official correspondence. Very often “Muntze” or “Müntze” are used. In one document, it is called “Kleine Müntze”, which could be used as vernacular term in order to distinguish between the city mint and the Crown mint of Riga, that was in operation from 1644 until 1665.

⁹⁸⁵ The plan is published in: Berga, “Monētu kaltuvju darbība Latvijas teritorijā (13.–18., 20. gs.),” 118. Original: Jānis Straubergs, “Rīgas plāns 14.–16. gadu simteņos” (Rīga, 1969).

⁹⁸⁶ Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 157.

⁹⁸⁷ “Vecrīga. Mazā Monētu Iela,” [zudusilatvija.lv](http://www.zudusilatvija.lv), <http://www.zudusilatvija.lv/objects/object/23727/>. Accessed May 11, 2022.

⁹⁸⁸ Anna Ancāne, *Rīgas arhitektūra un pilsētībūvniecība 17.gs. otrajā pusē: promocijas darbs*. (Rīga: Latvijas Mākslas akadēmija Mākslas vēstures institūts, 2016), 121.

ramas, do not allow to distinguish the mint in the city landscape anymore. No significant archaeological excavations have been carried out on this plot of land. The primacy of archival evidence thus remains uncontested.

The earliest description of the complex is dated to the 1571 Riga City Council's lease contract with mint master Martin Wulff I. Wulff was requested to rebuild the nearly collapsing mint in a two-storey house with cashier at the gate and warden's house with exit to the street.⁹⁸⁹ The new mint house was completed around 1574/75.⁹⁹⁰ What remains unclear though, is whether the new mint house was built on the foundations of the old mint house or new premises had been allocated. Before the promotion, in an August 1571 letter to the Riga City Council, Martin Wulff expressed his will not only to rebuild the mint house, but also to build a new house on the plot of the Jochim Wittings⁹⁹¹ house – all at his expense. In return, he wished to acquire ownership over the house until the end of his life. He also promised the house would make the Riga City Council and the city proud.⁹⁹²

M. Wulff's grand plan of building a completely new mint house, whilst retaining the old one, seems to have been realised, as hinted by the lease contract with Henrich Wulff II (30 August 1633). The term *Muntz(e) Hauß* commonly found in the mint documentation, in this source is replaced with "the old and new house" (*alte vnd neue Muntz Hauß*).⁹⁹³ The same terms appear in a related document, 25 July 1633 taxation of mint inventory, which took place in preparation for handing over the mint to the new tenant.⁹⁹⁴ Making a distinction between both structures – new and old houses – proves that they could be localised in the landscape. Moreover, the source could not be referring to another structure because the Crown mint of Riga was yet to be established in

⁹⁸⁹ "Dagegenn zusagenn wir ihm vnnser muntzhaus, neben vnseren darzu gehorigen werkezeuge vnnnd einenn freienn Burgerlichenn sitz, so viel diesen ampte vnnnd nicht weiter belangend, Vnnnd nach dem gemelteß vnser muntzhaus baufellig, auch notturfftig, mit erweiterung vnnnd eherenn gebauen, angerichtet werdenn muß, soll ermelter vnser muntzmeister auch verpflicht seynn, dasselbe muntzhaus vonn neuen aus dem grunde, nach aller notturfft, als eyner wesselböden, vnnnd zwenn gemecher hoch, vber der pfortenn, neben einem warde gemach mit einem ausgang nach der strassen, wiedervmb aufzubauen vnd zuzu fertigen [...]" Appointment letter of Martin Wulff, 30.11.1571: LVVA 673-1-1280, fol. 1r; Ivar Leimus, "The Livonian Mintmasters of the Sixteenth Century," *Nordisk Numismatisk Årsskrift*, no. 1989–90 (1994): 114.

⁹⁹⁰ Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 157.; Leimus, "Livonian Mintmasters," 114.

⁹⁹¹ J. Witting was the former Riga mint lord. He is mentioned in C. zum Berge's appeal to the Riga City Council, 28.11.1599: LVVA 673-1-1278, fol. 12r.

⁹⁹² "Als den will ich mit gottes hulpe nicht allein de olde munte, sunder ein nie gebeute van der olden munte ahnn, beth ahn her Jochim Wittinges hus strecken, vngefherlich wo dit bigelege munter toget, vnd alle vnkost vnnnd arbeidts lhonn vp my nhemen, dat ich als dann mochte versekert werden, de tidts mines leuendes, des tho gebrucken hebben, vorhaps mich dat duth gebute der munte gar nodich sey, vnnnd sholde einem Erbarren Rade vnnnd der Stadt eine ehre seyenn" M. Wulff to Riga City Council, 1571: LVVA 673-1-1280, fol. 20v.

⁹⁹³ Appointment letter of H. Wulff, 30.08.1633: LVVA 673-1-1280, fol. 11r.

⁹⁹⁴ Taxation of Riga mint inventory, 1618: LVVA 673-1-1279, fol. 1v.

1644. There is also no knowledge of moving the previous premises of the mint or any extension of the mint complex after signing the lease contract with M. Wulff. Wulff's offer was very generous and clever. Granting ownership over the mint house for life would rule out any competition for the mint master's position. The Riga City Council was tempted by M. Wulff's plan, and thus became the first and only member of the Wulff dynasty to earn a lifelong promotion to the mint master's position.

With the progress of time and technological improvements, as well as ongoing specialisation of work, new adjustments could be made at the mint house with additional allocations made for the mint complex. Warfare and accidents at the mint could also be the cause of the reconstructions of the mint. In November 1617, an oven broke down because of overheating; the ensuing leakage of the alloy made things worse, therefore a whole new oven had to be built, arresting the operation of the mint for one week.⁹⁹⁵

In his 15 April 1646 letter to the Riga City Council mint master Henrich Wulff II recalled two times the mint had suffered fire outbreaks.⁹⁹⁶ Regrettably, he did not expand on their timing and causes. On 29 July 1647 reconstruction works began at the mint, which lasted well into 1650. There exists a detailed day-to-day account of the workload and payment of different workers, expenses for transportation and raw materials, manufactured and imported articles. The source names different kinds of dwellings and work premises being renovated: "Schraub",⁹⁹⁷ vault (*Gewelb*),⁹⁹⁸ dormitory (*Stuben*),⁹⁹⁹ mint house (*Hauß*),¹⁰⁰⁰ cellar (*Keller*),¹⁰⁰¹ chamber (*Kammer*),¹⁰⁰² rolling mill driven by horses (*Newpferde werck*),¹⁰⁰³ apartment for the principal engraver (*Erstenschneider's Losament*),¹⁰⁰⁴ workers' dwellings (*Völcker kammer*).¹⁰⁰⁵ Renovation and building works went hand in hand with manufacturing thousands of nails and bricks, clinkers, screws, window frames, and glass. More specific orders included repairing of stoves¹⁰⁰⁶ and furnaces,¹⁰⁰⁷ making an oak chest with a hanging

⁹⁹⁵ Das Münzhaus, 1615–1622: LVVA 673-1-1287, fol. 52r.

⁹⁹⁶ "[...] bei meineß denckenß 2 Mahl der Muntze abgebrannt" H. Wulff's report, 1646: LVVA 673-1-1283, fol. 177r.

⁹⁹⁷ The meaning of "Schraub" is not certain in this context. "Verzeichnus was in der Müntze an Nohtwendigen Sachen von Ao 647 ad 29 Julio Biß Ao 1649 d 29 auf Bawen vndt verfertigen laßen": LVVA 673-1-1285, fol. 58r; 60v.

⁹⁹⁸ Ibidem, fol. 61r.

⁹⁹⁹ Ibidem, fol. 58r.

¹⁰⁰⁰ Ibidem, fol. 58v.

¹⁰⁰¹ Ibidem, fol. 58v.

¹⁰⁰² Ibidem, fol. 60r; "Stuben" and "Kammer" can probably be identified as "Herberge" or hospice for accommodating travelling journeymen and juniors.

¹⁰⁰³ Ibidem, fol. 59v.

¹⁰⁰⁴ Ibidem, fol. 58r.

¹⁰⁰⁵ Ibidem, fol. 59r.

¹⁰⁰⁶ Ibidem, fol. 58v.

¹⁰⁰⁷ Ibidem, fol. 58r.

locker for money keeping,¹⁰⁰⁸ repairing or constructing of mills at the horse mill.¹⁰⁰⁹ Some rooms were installed with imported items – 200 bricks from Jelgava,¹⁰¹⁰ 10 Swedish planks,¹⁰¹¹ and 50 tiles from Gotland.¹⁰¹² Total repair costs amounted to 647 “Rß” (probably Reichsthalers). This was not a large sum for renovation works lasting for more than 3 years. Therefore, it can be assumed that only the most urgent repairs were carried out.

As indicated by the names of renovated spaces, there were two kinds of premises at the mint complex – work premises designated for carrying out specific tasks in the minting process and auxiliary, and dwelling places. Apart from *Schraub* and *Newpferde werck*, mostly secondary group premises seem to be refurbished. The main engraver settled in a separate dwelling space, meanwhile, most of the daily workforce inhabited shared workers’ lodgings (*Stuben*, *Völcker kammer*).

The list of dwelling places can be extended further. The mint warden would be occupying part of the warden’s house for his contract granted him free use of an apartment (*Wohnung*).¹⁰¹³ The residence of the mint master’s family, based on the analogy with Tallinn mint, could be the most spacious of all,¹⁰¹⁴ however, given the activity of mint masters’ in the real estate business, they might be living somewhere else. The living conditions at the mint could be rather harsh. In a rare glimpse of everyday life at the mint, H. Wulff II (17 April 1646) described the mint to burgomaster Nicolaus Barneken (d. 1647),¹⁰¹⁵ as a crowded and noisy place, demanding plenty of his attention, in other words, quite an inappropriate place for enjoying private life and well-being due to the master’s social status.¹⁰¹⁶

From later period records one may gather that the mint complex consisted of other auxiliary buildings: horse stables¹⁰¹⁷ and 3 barns for keeping firewood and

¹⁰⁰⁸ Ibidem.

¹⁰⁰⁹ Ibidem, fol. 59v.

¹⁰¹⁰ Ibidem, fol. 60r.

¹⁰¹¹ Ibidem, fol. 60r.

¹⁰¹² Ibidem, fol. 61r.

¹⁰¹³ Appointment letter of warden Lambert Goldenstedt, 29.09.1588: LVVA 673-1-1280, fol. 25r.

¹⁰¹⁴ In Tallinn the mint master inhabited half of the main building. Leimus, “Livonian Mintmasters,” 124.

¹⁰¹⁵ Böthführ, *Die Rigische Rathslinie*, 64–65.

¹⁰¹⁶ “[...] die Muntze an sich selbest eine Unruhig Wergk, so alleß mit großer Mühe, aufsicht versichtigKeitt, vndt vnglaubliche Vnkosten muß verrichtet warden und dabei in großer gefahr steckt [...] vndt mihr wolselber was miht gutte vorsorge vndt aufsicht getragen wied fahren, dahero ich nicht bemechtiget alle gefahr vndt schadenß halber so fast vnglaublich waß darauf stehet mich fast einen tagk recht zu *absentieren*, mein eigen thum vndt *prifat* sachen vorzustehen, sonderß daßselbige mit meinen schaden hinder setzen muß, geschwiege der Mühe vndt vberlauffunge d[er] Soldatten vndt andere gemeine Volcker [...]” H. Wulff’s report, 1646: 673-1-1283, fol. 177r.

¹⁰¹⁷ The existence of stables has come to our knowledge from a later period source: Mint note, 10.08.1695: LVVA 673-1-1279, fol. 261r.

coal.¹⁰¹⁸ The mint complex did not have the capacity of keeping all the mint sources under its roof. In 1654 a mint barn stood near the Weaver gates.¹⁰¹⁹ On 9 March 1664, the Riga City Council of Riga decided to buy two parcels of land within the city walls from the heirs of the late mint master Jost Haltermann (d. 1663). When possible, it was planned to build a brick house for keeping horses and wood.¹⁰²⁰ Assigned plots may have never been used for the intended purpose as the mint terminated the production process in 1665.

Some rooms cannot be identified or recognised completely. As noted by Hubert Emmerig, the naming of various chambers and rooms did not follow the same pattern. For example, early modern Habsburg mint chambers with comparably similar names could be equipped with different items.¹⁰²¹ “Despite that,” he continues, “there are of course typical room names that come up again and are therefore of interest to us”.¹⁰²² One comes across the typical labelling in the municipal mint house inventory of 30 June 1663.¹⁰²³ The inventory was carried out by the mint lord Johan Zimmermans and put in written form by Michael Stein. Based on the literature and analysis of the inventory of each chamber one can clarify their functional role in the minting process. The original listing of chambers is reorganised according to their chronological position in the minting process. Given the original date of the source and technological development aspect, reconstruction of the minting process during the research period may not be thoroughly correct. Moreover, until the mid-18th century, not one, as in typography, but several alternative mechanical minting devices were available in the minting process.¹⁰²⁴ Thus many instruments or machines could be substituted or varied with others.

“Wechsel Kammer” (also *Münz Cassa*)¹⁰²⁵ – cashier. Incoming precious metal/monetary means of exchange was being weighed, exchanged/paid for and stored.

“Misch Kammer” (*Gwelb, da man schaidt und zimentiert tuet*)¹⁰²⁶ – the place for alloying and testing.

¹⁰¹⁸ Heinrich Wulffs unkosten vffsatz, 12.05.1646: LVVA 673-1-1279, fol. 112r.

¹⁰¹⁹ Christoffer Dirich to the Riga City Council, 14.11.1654: LVVA 749-6-1406, fol. 604; the barn could belong to the Crown mint of Riga.

¹⁰²⁰ Minutes of the Riga City Council, 9.05.1664: LVVA 749-6-10, fol. 106-107; 139.

¹⁰²¹ Hubert Emmerig, “Inventare habsburgischer Münzstätten der frühen Neuzeit,” *Abhandlungen der Braunschweigischen Wissenschaftlichen Gesellschaft* 61 (2008): 503.

¹⁰²² “Trotzdem gibt es natürlich typische Raumbenennungen, die immer wieder vorkommen und deshalb für uns von Interesse sind”. Emmerig, 504.

¹⁰²³ Riga mint inventory, 30.06.1663: LVVA 673-1-1285, fol. 66r-67v.

¹⁰²⁴ Henner R. Meding, *Die Herstellung von Münzen. Von Der Handarbeit Im Mittelalter Zu Den Modernen Fertigungsverfahren* (Frankfurt am Main: Gesellschaft für internationale Geldgeschichte, 2006).; Volker Benad-Wagenhoff, “Die Maschinerisierung der Münzfertigung Entwicklung und technikhistorische Stellung der Prägetechnik zwischen 1450 und 1850,” *Abhandlungen der Braunschweigischen Wissenschaftlichen Gesellschaft* 60 (2008): 226.

¹⁰²⁵ Emmerig, “Inventare,” 504.

¹⁰²⁶ Emmerig, 505.

“Schmelzhauße” (*Giesscamer, Guess Camer*)¹⁰²⁷ – melting house; silver alloy of prescribed fineness was cast into bars (*Zaine*). Various sizes of moulds were used for making silver bars depending on the denominations to be struck.

“Probier Kammer” (*Probier Gwelb, Probierstuebl*) – warden’s working premises, in which he tested the fineness of silver alloy.¹⁰²⁸ Silver proof was tested twice, before melting of metal and after alloying silver with copper to ensure coins were produced of the desired quality standard. At the end the warden checked the weight and quality of coins.¹⁰²⁹

“Schmiede” (*Münz oder Schmitt Stube*)¹⁰³⁰ – in this room silver ingots were hammered into sheets of metal (*Rohzaine*). This was the first processing stage of silver sheet.¹⁰³¹ Because of the irregular thickness of silver sheets, they had to be smoothed.

“Dreh Cammer” – in this room, hammered silver plates were flattened and smoothed. Passing between the walzwerk rollers several times produced strips of metal (*fillets* or *Zaine*). Walzwerk press was constructed of a pair of cylinders rotating around their axis; complemented with imprints, this machine (*Prägewalzwerke*), could be used as an alternative to *Stoßwerk* for impressing the dies on the coins.

“Schraub Kammer” – (equal to *Schraub* from 1647–1650 inventory?) inventory recorded two unidentified and unfinished machines in this chamber. Terminological similarity with the *Schraubenpresse* indicates striking of *Zaine* with screw-press. According to Benad-Wagenhoff, the press developed in two forms, each performing different tasks. One, the cutting press (*Durchstoß*), was used for cutting out circular blanks (*Platten*). Another *Stoßwerk* (also *Balan-cier*) was used for stamping an image of dies onto the blank strips.¹⁰³² The latter form of screw-press was invented somewhat later, making its earliest appearance in visual sources in the 1620s.¹⁰³³

“Durch Schneide Cämmer” (*Durchdruckstuben*)¹⁰³⁴ – a cutters’ room. In Riga mint two rooms were reserved for cutting the stamped strips into blanks either with tin shears or/and *durchstoß* (swing arms with weights). The manual work with shears was an integral part of this stage of the minting process.¹⁰³⁵

“Preg Kammer” – inventory description of this room is very short: “5 Vn fertige Pregen”, e.g. unfinished detachable dies with imprints, which could be part of *Taschenwerke*, i.e. *Taschenwerk auf Platte*.¹⁰³⁶

¹⁰²⁷ Emmerig, 505.

¹⁰²⁸ Emmerig, 505.

¹⁰²⁹ Benad-Wagenhoff, “Maschinisierung der Münzfertigung,” 217.

¹⁰³⁰ Emmerig, “Inventare,” 506.

¹⁰³¹ Benad-Wagenhoff, “Maschinisierung der Münzfertigung,” 267.

¹⁰³² Benad-Wagenhoff, 235–36.

¹⁰³³ Benad-Wagenhoff, 238.; Meding, *Die Herstellung*, 97.

¹⁰³⁴ Emmerig, “Inventare,” 507.

¹⁰³⁵ Meding, *Die Herstellung*, 93.

¹⁰³⁶ Benad-Wagenhoff, “Maschinisierung der Münzfertigung,” 277.

“Weis Sieder Haus” (*Weissied Camer*)¹⁰³⁷ – literally a ‘whitening house’, e.g. bleaching, where the oxidised money was boiled in salt water or wine stone and polished to obtain the ‘natural’ silver colour. The final step of coin production process.

“Gewölbe” – (*Gewelb* from 1647 inventory) – vault for keeping money chests.

“Eisen Kammer” (*Eisen Gwelb*)¹⁰³⁸ – warehouse for used and unused tools and machinery.

6.2 Technologies and tools

For centuries recruitment of additional workforce was imperative to the expansion of mint outputs. Early modern Europe introduced improvements in minting technologies and tools (*Muntz Wercke*), which allowed to expand coinage without the rise of running expenses for a manual workforce and resulted in reduction of production costs. Technological proficiency became one of the leading aspects of one’s progress and fortune. The usual term, which is applied to the early modern progress of the minting process, is *Mechanisierung* or partial replacement of manual work with mechanical tools.¹⁰³⁹ According to Domenico Sella, minting was one of the rare industries, in which new machinery made inroads, others being metallurgy, weaponry, clothmaking, watchmaking, and printing. Otherwise, “Before the eighteenth century, examples of labour-saving techniques and devices are notoriously rare.”¹⁰⁴⁰

One of the main technological innovations of the day, not only in minting but metallurgy as a whole, was *walzwerck*, a cylinder press,¹⁰⁴¹ which for minting needs was engraved with the specific coin die. In another version, a cylinder press was encrusted with mushroom-like punches with engraved dies. First introduced in Augsburg in 1551, the machine was made more applicable to the minting process by Johan Vogler from Zürich in 1565. After being set up in several central European mints, the machine was soon adopted in various Baltic Sea region mints as well. The Gdańsk-born Göbels brothers, having secured a royal patent for the operation of their mint-press enterprise, stood at the frontline of this endeavour. In 1574/1575 the new machine finally arrived from

¹⁰³⁷ Emmerig, “Inventare,” 506.

¹⁰³⁸ Emmerig, 505.

¹⁰³⁹ More on the topic in the context of early modern minting industry: Benad-Wagenhoff, “Maschinisierung der Münzfertigung.”

¹⁰⁴⁰ Domenico Sella, “European Industries, 1500–1700,” in *The Fontana Economic History of Europe*, ed. Carlo M. Cipolla, vol. 2 (New York, 1977), 397.; This is but one opinion about the progress and diffusion of technological innovation in early modern Europe. Rupert Hall, for example, shared a more positive attitude in the question of the length and breadth of mechanization of production, see Rupert Hall, “Scientific Method and the Progress of Techniques.,” in *The Cambridge Economic History of Europe*, ed. Edwin Rich and Charles Wilson, vol. 4 (The Economy of Expanding Europe in the Sixteenth and Seventeenth Centuries) (Cambridge: Cambridge University Press, 1967), 96–219.

¹⁰⁴¹ Sella, “European Industries,” 398.

Ducal Prussia to Riga.¹⁰⁴² The new machine was first successfully used for the mintage of 1575 Free City of Riga schillings¹⁰⁴³ as indicated by the regular, circular form and the identical die axis alignments of the coins. According to Bahrfeldt, the machine (including setting up?) cost as much as 4000 Reichsthalers.¹⁰⁴⁴ Mechanisation required serious investments from the municipal budget. It was a long-term investment, which paid off through the decreased expenses on the workforce and significantly increased mint outputs.

When discussing the mechanisation of the minting process in Riga, one cannot bypass the name of Hans (Johan) Stippelt. After more than a century-long discussion¹⁰⁴⁵ two Stippelts by the same name (probably relatives) have been recognised as the real inventors of the rolling press, not the Göbels brothers.¹⁰⁴⁶ Stippelt the older (d. 1578/1579) was regularly commissioned to install the new minting press (Königsberg, Dresden, Riga), as well as work as mint master (Königsberg). Stippelt the younger was no less productive than his namesake in equipping the mints (Tallinn, Jelgava, Vilnius) with the machinery. At times he would also fulfill the tasks of mint master in the named mints.¹⁰⁴⁷ In his final years, from 1611 to 1618, Stippelt was in Vilnius working as mint administrator.¹⁰⁴⁸ After Stippelt's passing, his private instruments and machinery seem to have been auctioned. A note from 6 March 1619, informs about buying of several instruments and machinery for Riga mint "from the widow of the late Vilnius mint master".¹⁰⁴⁹ The Riga City Council spent 1000 marks or

¹⁰⁴² Ivar Leimus, "Mintmasters as the Nodes of the Social and Monetary Network. The Life and Career of Paul Gulden (c. 1530–93)," in *Making Livonia: Actors and Networks in the Medieval and Early Modern Baltic Sea Region* (London and New York: Routledge/Taylor & Francis., 2020), 293.; Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 160.; Sargent and Velde, *The Big Problem*, 58–59.; Emil Bahrfeldt, *Die Münzen- und Medaillen-Sammlung in der Marienburg.*, vol. 1 (Münzen und Medaillen der Provinz Preussen vom Beginn der Prägung bis zum Jahre 1701) (Danzig: Verlag des Vereins für die Herstellung und Ausschmückung der Marienburg, 1901), 95.; Bahrfeldt, *Münzen der Stadt Danzig*, 5:16–18.

¹⁰⁴³ Berga, "Monētu kaltuvju darbība Latvijas teritorijā (13.–18., 20. gs.)," 123.

¹⁰⁴⁴ Bahrfeldt, *Die Münzen und Medaillen*, 1 (Münzen und Medaillen der Provinz Preussen vom Beginn der Prägung bis zum Jahre 1701): 95.

¹⁰⁴⁵ Max Kirmis (1851–1926), in his book *Handbuch der polnischen Münzkunde* (Posen: Eigenthum der Gesellschaft, 1892), 62. stated that the machine was invented by Göbels brothers. Ten years later, Emil Bahrfeld expressed different view based on a newly discovered record, in which Stippelt was presented as "inventor" (Erfinder), while Hans Göbel as "publisher of press machine" (Verleger des Druckmaschine). Bahrfeldt, *Die Münzen und Medaillen*, 1 (Münzen und Medaillen der Provinz Preussen vom Beginn der Prägung bis zum Jahre 1701):95.

¹⁰⁴⁶ Leimus, "Mintmasters as the Nodes," 292–93.

¹⁰⁴⁷ Ivar Leimus, "Die Münzbeziehungen zwischen Livland und seinen Nachbarn im 16. Jahrhundert," in *Die baltischen Länder und Europa in der Frühen Neuzeit*, ed. Norbert Angermann, Karsten Brüggemann, and Inna Pöltsum-Jürjo (Köln, Weimar, Wien: Böhlau, 2015), 193.

¹⁰⁴⁸ Grimalauskaitė and Remecas, *Money in Lithuania*, 199.; Ruzas, *Pinigų muziejuje katalogas*, 296.

¹⁰⁴⁹ Mint note, 6.03.1619: LVVA 673-1-1279, fol. 1r.

approx. 166 thalers for three different cylinder presses and 3 “*snyt Eyseren Spon Ney*”.¹⁰⁵⁰

Several more notes and records suggest a large-scale mechanical upgrade or replacement at the mint in the final years under Polish rule. In 1617 the Riga City Council installed a new rolling mill (*Newes Werck*). According to the 1618 taxation, the mint was equipped with another three large rolling mills (*grosse ZehWerck*) for flattening silver strips. Valued at 1,000 thalers a piece they were arguably the most expensive mint property.¹⁰⁵¹ On 20 November 1620, the mint master started constructing and setting up 4 rolling mills, 3 of which were operated by manpower and one with a horse. In addition, five iron rolling mills, one device for cutting dies for Reichsthalers, and a “*Dreigbank*” was installed.¹⁰⁵² These works were finished on May 10, 1623, and cost 5000 thalers, for which the mint master was later reimbursed.¹⁰⁵³ The logical explanation for the upgrade could be the intensification of mint work. The extraordinarily large outputs of 1615–1620 on the one hand increased the wear on the machinery, while on the other hand – increased demand for mechanical assistance.

Utilising machinery was a precarious task, since “wood entered to a greater extent than iron or steel in the making of tools and mechanical devices.”¹⁰⁵⁴ Machinery was notoriously clumsy and prone to fatigue.¹⁰⁵⁵ To make sure it did not disintegrate, which eventually could lead to disruptions in the minting process, there had to be spare parts or whole sets of machinery at the mint’s disposal. However, as time went by and local artisans learned the craft, there was less demand for imported mechanisms. Mint master Marten Wulff (probably with the assistance of carpenters and other craftsmen) learned the know-how of building machines himself. In acknowledgement of being reimbursed (1623), Marten writes: “I have received 5000 thalers at 36 groschen each for my work, which I have built for the city needs with my own money”¹⁰⁵⁶.

The talent for inventiveness must have run in his family. His younger brother and future mint master of Riga, Henrich Wulff II (since 1646 Wulffenschildt) made a scientific invention described in the letter to his mentor and good friend Axel Oxenstierna (1583–1654), Lord High Chancellor of Sweden, as “*Monument*, modest work of my invention and science.”¹⁰⁵⁷ Henrich wished to demonstrate it to Axel Oxenstierna and with his permission also to, Queen

¹⁰⁵⁰ Ibidem, fol. 1r.

¹⁰⁵¹ Taxation of Riga mint inventory, 1618: LVVA 673-1-1279, fol. 1r

¹⁰⁵² M. Wulff’s receipt, 10.05.1623: LVVA 673-1-1279, fol. 61r.

¹⁰⁵³ Ibidem, fol. 61r; see Dāboliņš, “Riga Mint in 1621,” 114.

¹⁰⁵⁴ Sella, “European Industries,” 392.

¹⁰⁵⁵ Hall, “Progres of Techniques,” 104.

¹⁰⁵⁶ “Habe Enbfangen funftuisent daler a 36 g[roschen] weigen miner werck so yck der ganßen stadt zu nutze gebuwet vnd vorfertigt habe mit minem gelde”. M. Wulff’s receipt, 10.05.1623: LVVA 673-1-1279, fol. 61r.

¹⁰⁵⁷ “*Monument*, meiner einfältigen *invention* vnd wissenschaftt, geringes wercklein” H. Wulff to Axel Oxenstierna, 26.01.1643: SRA, E 751.

Christina. Unfortunately, Wulff did not expand on the nature of his “discovery” in his letter (26 January 1643). The fate of this invention remains a mystery.¹⁰⁵⁸

Training the mint staff, and re-arranging the process of minting coins was another side of introducing technological innovations in everyday work. Countless pieces of evidence from around Europe speak of strong resistance towards manpower-saving machines. London, which was leading the British industrial revolution, refused the introduction of milled coinage until the mid-17th century. It was resisted by the moneyers, who acted as “intensely private and self-perpetuating body which jealously guarded its rights and privileges and which, like a medieval guild, kept its secrets to itself.”¹⁰⁵⁹ In other words: “Strong prejudices and interests stood in the way of innovation.”¹⁰⁶⁰ Another obstacle was the emphasis on plentiful and cheap labour supply, which was the driving force behind the industrial expansion.¹⁰⁶¹ Hence, innovations in the minting process had to be justified with careful reasoning.

The evidence of the late 16th century Vilnius mint is exemplary of bad organisation and lack of competence in the introduction of a technological upgrade. E. Ivanauskas notes at least two failed attempts before the establishment of rolling mills in routine use in 1590–1591, attributing the main obstacles to an unqualified workforce, lack of supervision, and maintenance.¹⁰⁶² Ivanauskas draws attention to the interrogation of Cracow mint warden Georg Prunner (1604), in which the technical, as well as qualification problems of the mint staff in the usage of cylinder presses, were voiced.¹⁰⁶³ In light of these problems, it becomes clear why despite the gradual mechanisation process of minting, manual striking of coins long remained competitive.¹⁰⁶⁴

Apart from the incompetence of staff and technical setbacks, which occurred everywhere, for the machine to justify its high upkeep and instalment costs several (if not all) requirements had to be met. Rupert Hall names the following economic and technological factors to their success: communal effort and large capital expenditure; heavy and continuous demand; “the industrial unit had become of considerable size”, i.e. it had to satisfy both economic and technological needs.¹⁰⁶⁵ Riga mint qualifies for each of the considerations. Ever since the first appearance of milled schilling in 1575, the total outputs of Riga schillings grew considerably.¹⁰⁶⁶ Although Riga mint did experience periodical

¹⁰⁵⁸ See Dāboliņš, “Die Dynastie,” 44.

¹⁰⁵⁹ G. P Dyer, *The Royal Mint: An Illustrated History* (Llantrisant: Royal Mint, 1986), 16.

¹⁰⁶⁰ Hall, “Progres of Techniques,” 103.

¹⁰⁶¹ Sella, “European Industries,” 400.

¹⁰⁶² Along with the failure of the Vilnius mint in introducing the rolling mill, Eugenijus Ivanauskas mentions the case of Cracow mint, which had originally been facing the same problems, and the mint decided to retreat to hammering of coins. Eugenijus Ivanauskas, “Roll-Milled Lithuanian Coins,” ed. Bernd Kluge and Bernhard Weisser, *XII Internationaler Numismatischer Kongress Berlin 1997. Akten Proceedings Actes.*, 2000, 1159–60.

¹⁰⁶³ Ivanauskas, 1160.

¹⁰⁶⁴ Benad-Wagenhoff, “Maschinisierung der Münzfertigung,” 223.

¹⁰⁶⁵ Hall, “Progres of Techniques,” 103.

¹⁰⁶⁶ Leimus, Kiudsoo, and Haljak, *Sestertsist sendini*, 99–100.

shortages of silver supplies, unlike other mints in the Commonwealth (Cracow, Vilnius), Riga mint did not suffer meaningful setbacks long enough to retreat to a fully manual workforce. Thus, in the case of Riga, introduction of new technologies generated power that was necessary for extending the production of the mint.¹⁰⁶⁷

Regarding the tools of the mint, two records must be mentioned – 1618 taxation¹⁰⁶⁸ and the already noted 1663 mint house inventory. The advantage of the former source is the given value for items. Values are expressed both in the account units of marks and thaler. Notably, thaler was reckoned in old, 1598 value of thaler – 6 marks (36 groschen).

“3 large presses (<i>ZehWerck</i>), each 1000 thalers	18 000 marks
4 minting presses (<i>Prege Werck</i>), each 90 thalers	2160 marks
6 forge ironclads, each 50 thalers	1800 marks
2 anvil, each 10 thalers	120 marks
2 hammers, each 2 thalers	24 marks
3 bellows for 100 thalers	600 marks
1 copper mould	24 marks
1 hook	8 marks
2 pliers	12 marks
2 shovels	6 marks
2 lead pliers	6 marks
1 grid (<i>Rost</i>)	30 marks
1 iron oven for checking quality of metal	180 marks
236 ½ marks of weight	
1 lathe (<i>Drey Banck</i>)	300 marks
2 screw presses (<i>Schrau Stuck</i>)	120 marks
3 iron boxes	1620 marks
6 <i>Begell</i> (?)	12 marks
1 hook	36 marks
1 weight in the melting chamber	72 marks
1 pestle (<i>Mösser Kuhl</i>)	12 marks
1 large mortar (<i>Grossen Mösser</i>) from brass and large anvil	
	<u>1209 marks 27 chillings</u>
In total:	26 243 marks 27 schillings ¹⁰⁶⁹

The second source listed instruments, some furniture and machines. However, this source is only partially complete, and not nearly as rich and descriptive as the similar inventories of the Crown mint in 1657¹⁰⁷⁰ and 1665.¹⁰⁷¹ Some

¹⁰⁶⁷ Industrialisation of minting process allowed to expand the processed silver plate 10 to 100 times. Benad-Wagenhoff, “Maschinisierung der Münzfertigung,” 254.

¹⁰⁶⁸ Taxation of Riga mint inventory, 1618: LVVA 673-1-1279, fol. 1r.

¹⁰⁶⁹ Taxation of Riga mint inventory, 1618: LVVA 673-1-1279, fol. 1r.

¹⁰⁷⁰ Platbārzdīs, *Die königlich schwedische Münze*, 461–64.

¹⁰⁷¹ Platbārzdīs, 464–69.

descriptions of chambers are particularly general. In the “*Dreh Cammer*” one could find a “lathe with equipment”, in the bleaching house – only a boiler.¹⁰⁷² The inventory gives large numbers of weights ranging from 1 to 100 weight marks in the melting house, exchange house and “*Mischs Kammer*”. Furnishing is barely noticeable, only some tables are noted – one in the vault and two in the cashier, sleeping bench in the cashier, large number of boxes and bowls.

According to the mint master’s appointment agreements, the city owned machines, tools and basic furniture for which “mint masters had to give an account of”¹⁰⁷³. The only estimates of the mint tools is available from the 1618 Taxation – 26 243 mark 27 schillings or approx. 4374 thalers.

6.3 Material resources and coinage expenses

By material sources of the mint two groups of sources are distinguished – first, silver as a main component of alloy, and others – copper and natural resources used as prime movers of mechanisms as well as used for heating numerous furnaces and keeping warm during the cold season. The latter expense group formed what is known as minting costs (brassage), and together with fiat components of *Schlagschatz* and surplus (*Uberschoss*) they would define the final value of a single denomination or mint equivalent (ME). Regardless of denominations, availability of natural sources remained instrumental to the mint’s ability to satisfy market requirements for ready money at the stated quality. In correspondence with earlier attempts to approach the subject,¹⁰⁷⁴ this chapter demonstrates the immense capacity of the mint to acquire and utilise different resources as well as the enormous financial demands of schilling coinage.

6.3.1 Silver expenses

Silver by all measures was the most expensive and central component of every minting process (See 4.2; 5.5.1–5.5.2), accounting for the largest expenditure of the mint and mint equivalent of every denomination. Due to the fluctuations in silver price as well as the regular debasement of schillings and their devaluation, it did not have a constant value. If I concentrate on Riga schillings alone, their changing values can be easily expressed on a timeline by contrasting the formerly calculated figures of ME with MP (Table 5.4.3). For the reminder, in the following Table Mint price (MP) represents cost of a fine silver mark in Polish groschen, while Mint equivalent (ME) stands for the nominal value of produced schillings from a fine silver mark in Polish groschen. Silver roughly accounted for 80% of schilling’s nominal value. Gross seigniorage attested for the rest of 20% – copper, minting costs, and fiat components of seigniorage and surplus. In late 16th century Spain, for example, copper, silver,

¹⁰⁷² Riga mint inventory, 30.06.1663: LVVA 673-1-1285, fol. 67v.

¹⁰⁷³ Taxation of Riga mint inventory, 1618: LVVA 673-1-1279, fol. 1v.

¹⁰⁷⁴ Dāboliņš, “Case of J. Haltermann,” 41.

and minting components accounted for 1/3 of the nominal value of small change. The rest was seigniorage.¹⁰⁷⁵

Table 6.3.1.1 Relative share of silver expenses of schilling value, in Polish groschen

Date	ME	MP	Silver share from the nominal value, in %
1581?–1597	330	280	84.84
1598–1599	330	288	87.27
1600	330	288	87.27
1601–1603	330	304	92.12
1604–1605	371	304	81.94
1606	379	304	80.21
1607	379	312	82.32
1608	379	320	84.43
1609	379	320	84.43
1610	387	328	84.75
1611	371	336	90.56
1612–1614	406	336	82.75
1615	418	336	80.38
1616	430–536	344	80.00–64.17
1617	521	360	69.09
1618	569	384	67.48
1619	569	392	68.89
1620	652	504	77.30
1621	652	600	92.02

6.3.2 Copper and other minting expenses

Depending on the denomination, the metallic alloy of each coin was composed of a mixed share of copper. Gradual decline of schilling standard from the initial 18% to roughly 13% in the final three years (Appendix 3), accompanied in the final minting period by heightened issue rates, secured steady demand for copper in Riga. Copper, unlike silver, would not make the list of top priorities for the mint given the rather seldom appearance in the mint records. This might serve as indirect evidence of the relative cheapness and availability of copper in the internal and external markets. In terms of copper availability, Europe was well supplied with local origin production, especially from Sweden which led the expansion of copper production in the early 17th century.¹⁰⁷⁶ Copper was

¹⁰⁷⁵ Sargent and Velde, *The Big Problem*, 232.

¹⁰⁷⁶ Glamann, “European Trade,” 491.; Dunsdorfs, “Merchant Shipping,” 30.; I was unable to access the main reference work on the subject: Joseph Wolontis, *Kopparmyntningen i Sverige 1624–1714*. (Helsingfors: Centraltryckeriet, 1936).

increasingly exploited in Swedish state politics, as the Swedish royalty had a purchasing monopoly of all copper mined in Stora Kopparberg, the largest mine in Europe.¹⁰⁷⁷ In one of the letters to her sister Sophie of Schleswig-Holstein (11 April 1611), Christina, spouse of Duke Charles of Södermanland (future king Charles IX), writes about the copper, saying that she does not know how much copper her sister could receive. Charles had answered, that Sophie can have as much as she needs, even if it was a couple of hundred ship pounds. The price tag was not stated, but Christina told her sister she could have a ship pound for 28 or 29 thalers.¹⁰⁷⁸

Assuming that the market price of the “raw copper”, to which refers the spouse of Duke Charles, was higher, let’s say 30 thalers¹⁰⁷⁹ a ship pound (~ 170 kg¹⁰⁸⁰), I can estimate copper price for one weight mark and make some preliminary cost apprehension for the processing of 1 pure silver mark (201.8 g). First, if a ship pound costs 30 thaler (à 42 groschen) it makes all together 1260 groschen. One ship pound contained 800 weight marks, thus $1260 / 800 = 1.575$ groschen for a mark copper. At the same time, a pure silver mark was bought for 336 groschen (Table 6.3.1.1), which means that silver was 213 times more valuable than copper.

To appraise the 1611 copper costs for the production of a pure silver weight mark, I have to consider minting standard of schillings in 1611 – 2.875 lot and 200 pieces in weight mark; the required copper amounts: $13.125 \text{ lot} \times 201.8 \text{ g} / 2.875 \text{ lot} = 921.26 \text{ g}$ of copper; In current value, it makes: $921.26 \text{ g} \times 1.575 \text{ gr} / 201.8 \text{ g} = 7.19$ groschen.

Copper was so cheap that it rarely caught special attention. Only once, on 12–19 July 1619, the mint book reflects on expensive copper “*das kopper so hoch stiget*”¹⁰⁸¹. How much would that be, is not certain, while the causes for that could be of a temporary nature. Copper constituted only a minor part of minting expenses, but considering the number of variables – silver, copper, Vnkostunge, Schlagschatz, Abgang – the slightest deviations from the stated values, would restrict a mint’s ability to continue work.

The mint operated practically without weekends or holidays because the money for the upkeep of the mint and workforce was spent notwithstanding the intensity of work. Except for the mint master (warden and the smith were on the Riga City Council’s payroll), each employee earned a constant yearly salary, living spaces still had to be heated and meals had to be served. Every delay in silver supply chains, silver price increase, or whatever reasons there might cause losses to the Riga City Council and mint master. Countless mentions of the breaks in the length of one day to several months are recorded in the mint

¹⁰⁷⁷ Lawrence Stryker, “The King’s Currency: Gustav II Adolf and the Copper Standard (1619–1632),” *Scandinavian Economic History Review* 65, no. 1 (2017): 52.

¹⁰⁷⁸ Schwerin Archiv, 2.11-2/1, 94, fol. 15.

¹⁰⁷⁹ Possibly, Reichsthalers.

¹⁰⁸⁰ In Sweden, it was around 170 kg and 169 kg in Poland. Jānis T. Zemzaris, *Mērs un svars Latvijā 13.–19. gs.* (Rīga: Zinātne, 1981), 236, 239.

¹⁰⁸¹ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 98r.

accounts. While the longer breaks at the mint most likely cost the employees their jobs, shorter periods would lead to cuts in remuneration. Only a few examples of idleness-related expenses could be traced, one of which comes from B. Dolmann and F. Nyenstede's account for the 1619/1620 fiscal year. The mint had been reimbursed for the inactivity at the mint on:

- 1 April 1620 – 308 marks 21 schillings;
- 8 April – 478 marks 21 schillings;
- 15 April – 291 marks 11 schillings;
- 22 April – 406 marks 32 schillings.¹⁰⁸²

Although the mint lord states only one day, the mint book permits to precisely show the idleness at the mint lasting four weeks, from 25 March to 22 April.¹⁰⁸³ The expenses for the upkeep of the working regime normally had been higher. The only such kind of evidence for the weekly expenses is provided in the fiscal accounts for 1620/1621. Weekly expenses (*Wochentlich Vnkosten*) of the mint averaged from 600 to 900 marks and were deducted from the surplus (*Uberschoss*).¹⁰⁸⁴ Unfortunately, it is not possible to establish a clear connection between the expenses and the workload or outputs. Only much later, in 1646, H. Wulff tried to determine cost and output.

H. Wulff's 1646 calculations¹⁰⁸⁵ were the only known attempt in the mint history of Riga to offer a complete study of a price-performance ratio of a single denomination. The document has been studied and published once and requires only a few more clarifications.¹⁰⁸⁶ In his special account, H. Wulff/Wulffenschildt (1633–1659) calculated expenses for processing of 4000 fine silver marks (0.807 t), the major groups of expenditure being silver, copper, losses in fire and white-boiling (*Abgang im feuwr vndt Weißuden*), Schlagschatz and minting costs (*Vnkostunge*). In addition, he explicated in detail the last section of minting costs. Wulff failed to notify the minted coins, however, judging by the output value (171 733 fl 20 gr) and the high costs for copper (17 600 fl), in this source one is dealing with Riga schillings.

By 1646 MP, i.e. the price of fine silver mark stood at 24 fl (or 720 groschen), which was quite a significant increase from 20 fl (or 600 groschen) in the final year under Polish rule (Table 6.3.1.1). However, the silver price rise was more than compensated by the high Schlagschatz rate – 9 fl 2 groschen (or 21.1% of schilling nominal value), which was achieved by decreasing schilling

¹⁰⁸² Expense accounts of B. Dolmann and F. Nyenstedt, 1619–1620: LVVA 673-1-1285, fol. 28v.

¹⁰⁸³ Das Münzbuch, 1615–1622: LVVA 673-1-1287, fol. 119r-120v.

¹⁰⁸⁴ Muntze Rechnung von Ao 1620. Michaelis bis Ao 1621: LVVA 673-1-1285, fol. 31v-32r.

¹⁰⁸⁵ Heinrich Wulffs unkosten vffsatz, 12.05.1646: LVVA 673-1-1279, fol. 112r.

¹⁰⁸⁶ Viktors Dāboliņš, “The Curious Case of Mint Master of Riga City J. Haltermann (1660-1663),” ed. Georges Depeyrot and Michael Märcher, *Documents and Studies on 19th c. Monetary History. Mints, Technology and Coin Production. Proceedings of the Round Table of the “Silver Monetary Depreciation and International Relations” Program (ANR DAMIN, Lab Ex Transfer S), Copenhagen May 28–29 191* (2015): 41, 47. (Appendix III).

standard to 1 lot 1 q and 302 pieces in weight mark, allowing schilling ME to reach 42 fl 28 gr 2 schillings. Silver thus answered for 55.9% of schilling nominal value, which is below the lowest points recorded in 1616 and 1618 (Table 6.3.1.1). One more thing should be noticed about this source is that the stated outputs and expense components were only theoretical. With that amount of pure silver 15 462 400 schillings could be minted.¹⁰⁸⁷ However such results had not been reached until 1652.¹⁰⁸⁸

Minting of 4000 weight marks of silver in schillings required an awful lot of copper, more precisely, 9.524 tonnes. Processing of fine silver mark cost a copper worth 4 fl 12 groschen and 17 600 fl altogether. Hence, 1 weight mark of copper cost 11.18 Polish groschen, which means almost doubling the copper price from the earlier estimates of the 1611 copper price.¹⁰⁸⁹ Compared to the Polish period, this allowed copper to overtake Vnkostunge in the expenditure, answering for 10.2% of schilling nominal value. Vnkostunge attested merely for 2 fl 11 groschen or 5.5% of the nominal value of schillings. An additional 3 fl 2 groschen of total costs or 7.2% of nominal value accounted for losses. When put together, all expense components make a considerable schilling production value of 23%. One might conclude that the production costs (brassage) in the Swedish period had somewhat inflated. It is possible to make such a suggestion only by looking at the difference between the MP and ME in the Polish period, which often went below the 10 and 15% levels. However, the Polish period minting costs cannot be established with any precision, since the sources do not disclose production costs in detail, leaving room for possible speculation. In any case, brassage was a highly variable index. Production costs of small coins being much higher than for larger ones, “since the same effort was required to strike a coin of any size, and not much less to prepare smaller blanks than larger blanks.”¹⁰⁹⁰

The most ancient and likewise most demanded fuel in the early modern market was charcoal and firewood.¹⁰⁹¹ They were consumed both on production lines and for heating purposes. As with horses, they were the only locally available natural resource in the minting process. Geographical location of the mint was not suitable for installing other alternative sources of power, such as windmills or water mills, at least there is no such information to be found. 1646

¹⁰⁸⁷ 16 lot x 302 coins / 1.25 lot (fineness) = 3865 schillings minted from fine silver mark; 4000 x 3865 = 15 462 400 schillings.

¹⁰⁸⁸ Viktors Dāboliņš, "Case of J. Haltermann", 45.

¹⁰⁸⁹ 14.75 lot x 201.8 g / 1.25 lot = 2381.24 g of copper needed for producing 1 pure silver mark with schillings; 201.8 g x 132 groschen / 2381.24 g = 11.18 groschen – the price of 1 weight mark of copper.; Mint book inscriptions suggest the same, unchanged copper price at least from 1633. See LVVA 673-1-1289, fol. 2r.

¹⁰⁹⁰ Sargent and Velde, *The Big Problem*, 50–52.

¹⁰⁹¹ According to the eminent French historian Fernand Braudel the importance of wooden products could not be underestimated: “Civilizations before the eighteenth century were civilizations of wood and charcoal, as those of the nineteenth were civilizations of coal.” Braudel, *Civilization and Capitalism*, 362.

calculations put the consumption of wood to the amount of 500 fathoms (*Faden*)¹⁰⁹² with the value of 600 Rtl (852 fl).¹⁰⁹³ The costs for charcoal reached 500 Rtl (710 fl). From the perspective of price history, wood products could be assumed as one of the most inflation-affected products. In 1601 1 fathom – traditional measurement of wood or firewood, was purchased for 6 M (36 groschen),¹⁰⁹⁴ in 1606 it was still the same,¹⁰⁹⁵ but by 1618 the price had climbed to 8 M (48 groschen).¹⁰⁹⁶ In 1646 the price had more than doubled to 18 marks (108 groschen).¹⁰⁹⁷

Although the municipal territory was densely covered with forests, these prices suggest that the wood products were bought in the open market, where prices were higher. For example, in 1600 the Jesuit College in Riga bought a fathom of firewood, which was priced at only 2.5 M (15 groschen). The wood originated from the College's forest (*ex Syluis Pargensibus*)¹⁰⁹⁸ near the domain of 'Bishop's forests' (see below). That the taxation of Jesuits was several times below the actual market price, has also been shown by Dorošenko.¹⁰⁹⁹

Dunsdorfs¹¹⁰⁰ and Platbārzdīs¹¹⁰¹ write that charcoal was produced within close reach of Riga in the nearby Ropaži (Ger. Rodenpois) district, a distance of some 35 km.¹¹⁰² Ropaži forests were located in the king's domain and leased to private persons. In 1592 Sigismund III granted a special privilege to the city and Livonian nobility to exploit natural sources among which they could acquire wood stuff from Ropaži forests with the consent of private owners.¹¹⁰³ In the later decades, the Riga City Council let the crown mint use its charcoal supply chain. Until the closure of both mints in 1665, charcoal production had been the main source of subsistence for many peasant families, as the land was not good

¹⁰⁹² In the 17th century, 1 Rigan fathom measured 1.756 m3.

¹⁰⁹³ In 1646, 1 Reichsthaler was valued at 1.42 florins or 42.6 Polish groschen.

¹⁰⁹⁴ F. Nyenstedt's Schlagschatz accounts, 1607–1610: LVVA 673-1-1285, fol. 17r.

¹⁰⁹⁵ Late Johan Schoman's Schlagschatz accounts, 11.10.1606–10.10.1607: LVVA 673-1-1285, fol. 8v.

¹⁰⁹⁶ F. Nyenstedt's debt calculations, 1617: LVVA 673-1-1285, fol. 23r.

¹⁰⁹⁷ Heinrich Wulffs unkosten vffsatz, 12.05.1646: LVVA 673-1-1279, fol. 112r.

¹⁰⁹⁸ "Libri Duo Rationum Collegii Rigensis, in quorum promi Accepta, in secundo vero Expensa continentur (1592–1621)" (Rīga, n.d.), fol. 437.

¹⁰⁹⁹ Doroshenko, *Myza i rynok*, 68. Dorošenko explains the price difference with the fixation of product rates.

¹¹⁰⁰ Edgars Dunsdorfs, *Latvijas vēsture, 1600–1710* (Stokholma: Daugava, 1962), 314.

¹¹⁰¹ Platbārzdīs, *Die königlich schwedische Münze*, 405.

¹¹⁰² In 1582 Stephen Báthory created the Livonian bishopric, part of which was formed by the Ropaži manor. The manor and bishopric changed hands in 1620's with the conquest of Swedish King Gustav II Adolph, who handed over the previous bishopric territories to the chancellor Axel Oxenstierna. Oxenstierna family held control over these territories, colloquially known as the 'Bishopric', until 1710.

¹¹⁰³ "Vt autem nostrum etiam in eam rem rite peragendam habeant adiumentum aliquod, damus, & concedimus eisdem Civibus Rigensibus, & Nobilitati Livoniae, tu illis integrum sit ligna, trabes, arbores maiores, & minores ad usum aggeris necessarias ex sylva nostra in bonis Redonpois cum assensu, & permissu eius, qui illa bona nostra possidet loco illi propinquo caedere." Dogiel, *Codex Diplomaticus*, 5:339.

for agriculture.¹¹⁰⁴ “Under such conditions,” as a recently published study on ironworking in the 16th and 17th century Vidzeme, in particular, Ropaži manor shows, “a heightened interest in the potential of craft activities can traditionally be observed among residents – an interest that in this particular case could have been additionally stimulated by the proximity of Riga.”¹¹⁰⁵ The authors of the study had concluded that the production of charcoal had been highly developed in Ropaži manor in the 16th–17th century with production far exceeding local needs. Further, they put forward a general hypothesis that “part of the charcoal could have been used for iron production.”¹¹⁰⁶ Whilst hinting at the proximity of Riga, the authors didn’t make any further attempts to localise supplies of charcoal production to any specific facility in Riga. The high minting issues allow for the suggestion that the municipal mint, was among the largest metal working enterprises in early modern Riga, if not of iron production then silver and copper for certain.

Private landowners were requested to behave in their forests with modesty, which could be also viewed from the perspective of rising awareness towards deforestation. When Riga mint master J. Haltermann (d. 1663) signed a lease contract for land in Üxküll in 1661, the agreement stated: “that he uses forest moderately so that it is not completely ruined, devastated and hewn out.”¹¹⁰⁷ Another clause restricted the usage of wood and wood products only to private needs: “He may use the forest wood for charcoal-burning and use as much of it as he requires, but it is not to be brought to the city for minting.”¹¹⁰⁸ This remark hints at the possibility that the forest produce had been used at the mint in the past.

Other resources which were required in the minting process were: German soil (*teutsche Erde*), glue soil (*glueherde*), wires – 30 Rthl, oil (*Olge*) and fat derived from cattle hoof (*klawen fette*). Among the most imported goods were tartar (*Weinstein*) – 600 Rthl (852 fl) and potassium alum (*Allaun*) – 350 Rthl (497 fl). For example, on 30 September 1620 Mattias Gewitzen was refunded for the purchases of tartar and potassium to the amount of 7103 marks or 103 thalers.¹¹⁰⁹ With this amount, it was roughly possible to satisfy half a year’s

¹¹⁰⁴ Dunsdorfs, *Latvijas vēsture, 1600–1710*, 314.

¹¹⁰⁵ Valda Kļava et al., “Evidence of Sixteenth- and Seventeenth-Century Iron Production and Ironworking in Vidzeme (the Example of Ropaži Manor): An Interdisciplinary Approach,” *Journal of Baltic Studies* 49, no. 4 (2018): 424.

¹¹⁰⁶ Kļava et al., 441.

¹¹⁰⁷ “Jedoch daß Er sich in diesem die Walden mäßiglich gebrauchen damit derselbe dardurch nicht gantz *ruiniret*, verwüestet vnd außgehauen werde.” The lease contract of Üxküll land, LVVA 673-1-1280, fol. 54v.

¹¹⁰⁸ “Daß Holtz im Walde mag Er Zum Kohlen brennen, und so viel Er derer daselbst benötigt, aber nicht dieselbe nach der Stadt zum Münzen Zuverführen, gebrauchen.” *Ibidem*, fol. 54r.

¹¹⁰⁹ 1 thaler = 11 mark or 66 groschen; Expense accounts of B. Dolmann and F. Nyenstedt, 1619/1620: LVVA 673-1-1285, fol. 29v.

demand of the mint.¹¹¹⁰ Thus, in the Polish period, tartar and potassium alum had been much cheaper. From the local origin resources and items mentioned in 1646 calculations, one can name also hay – 100 Rthl, oats – 200 Rthl, bricks, trowel, fat.

6.4 Mint staff

Unlike much of the history of the Crown mint of Riga (1644–1665), which was beset by incessant conflicts with the Riga City Council and the crown officials,¹¹¹¹ the history of the municipal mint was more peaceful. One of the main reasons for this was that the Riga City Council was an almost uncontested ruler of the mint and the main executive power in the monetary market of the Duchy of Livonia. However, in the early 17th century, as the local artisan guild system had grown stronger and wealthier, there was an internal demand for the extension of communal rights. In 1604, an agreement was signed between the Riga City Council and the Merchant's (Great) and Craftsmen (Small) guilds, aiming to restrict the undisputed council's monopoly over communal earnings and hence decided to transfer communal incomes from the mint, the fishery, city manors, etc. in the city treasury, and to report accordingly. Jānis Straubergs held that the Riga City Council didn't respect the law and was not accountable for these incomes to anyone.¹¹¹² However, few records in the mint book prove that there had been realised an extension of the rights over the mint at some periods. The mint incomes (Schlagschatz) for 1 February – 4 October 1606 had been checked by the Burgomaster, Treasurer and representative of both guilds.¹¹¹³

The mint organisation and employee system remained largely intact for most of the period. The formal structure was composed of two categories of personnel: officials – mint lords, mint master, warden, and possibly accountant, most of whom were contracted and paid by the Riga City Council, and second – common workforce, which was employed, accommodated and paid by the mint master. The following surveys are arranged in order of seniority.

6.4.1 Mint lords

The Mint lord institution was introduced during the 1422–1424 Livonian mint reform as a representative organ of the Riga City Council's interests in its property. In the period under discussion, mint lords were elected from the body of the Riga City Council, among whom one had to be burgomaster. As the main executive power, their main duty was to follow the implementation of minting

¹¹¹⁰ Expense accounts of B. Dolmann and F. Nyenstedt, 1619/1620: LVVA 673-1-1285, fol. 29v.

¹¹¹¹ Platbārzdīs, *Die königlich schwedische Münze*.

¹¹¹² Jānis Straubergs views have not seen significant revision since then. Straubergs, *Rīgas vēsture*, 350, 365.

¹¹¹³ J. Schoman's Schlagschatz accounts, 25.01–4.10.1606: LVVA 673-1-1285, fol. 6.

decrees and supervise the work at the mint. Each Sunday they charged the Schlagschatz,¹¹¹⁴ checked the production quality, wrote a report in the mint books based on the warden's notes, and provided necessary financial support in case of emergency.

A more accurate description of their duties is provided in an ordinance from 1633,¹¹¹⁵ which outlines the main principles of cooperation between the mint lords and the future mint master as prescribed by the Riga City Council. The basic principles do not change, however, there are some details, which deserve more attention. The Riga City Council expected the mint lords to observe the "following order" accordingly, meaning that both officials were held accountable for their deeds and the results of the mint production. After being sworn, each Thursday the mint master delivered a metal box of Schlagschatz to the mint lords. Whereas mint lords either weighed or counted the calculated income based on the warden's notes and the fineness of coins. In addition to that, mint lords kept weekly updates of the incoming Schlagschatz¹¹¹⁶ in the mint book, which had to be stored in the same ironclad box¹¹¹⁷ of the coin chamber (*Muntze Kammer*). The Riga City Council reserved the right to make corrections or amendments in the regulations of mint work.¹¹¹⁸ A comparative analysis of other mint documents proves that similar procedures could have been observed in the Polish period.¹¹¹⁹

At the conclusion of the economic year (around Michaelmas) the burgo-master carried out a thorough inspection of the mint complex and Schlagschatz incomes as well as minting results. On this occasion, he gave a brief report in the mint book, put his signature, and rewarded the scribe for his service. The coin box with the mint book was carried to the treasury for the final examination of the treasurer and burgomaster. In the aftermath of the disputes regarding the guardianship of public finances and its use, in 1605–1607, Johann (Hans) Schoman (d. 1606), a councillor and a representative of Small and Great guild was put on the board of custodians.¹¹²⁰ However, after Schoman's death, there is no evidence of anyone else taking up his position.

Mint lords managed the public finances of Schlagschatz and transfers from other Riga City Council institutions as well as private assets. The earliest mint lord reports were kept in a very concise form in the mint book, apart from the minting results, only reporting on the paid salaries to the warden and scribe, and some financial liabilities. Perhaps as a result to the deposition of the burgo-

¹¹¹⁴ Rahts abscheidt vnd Müntzers Beliebung, 24.08.1633: LVVA 673-1-1280, fol. 7.

¹¹¹⁵ Mint ordinance, 1633: LVVA 673-1-1279, fol. 89r.

¹¹¹⁶ Very often as a synonym of *Schlagschatz* is used *Vberschoss*. See Rahts abscheidt vnd Müntzers Beliebung, 24.08.1633: LVVA 673-1-1280, fol. 7r.

¹¹¹⁷ Sometimes referred as Schlagschatz box "schleglschatz Kastenn" – Das Neuwe Muntz Buch, 1598–1603: LVVA 673-1-1284, fol. 29v.

¹¹¹⁸ Mint ordinance, 1633: LVVA 673-1-1279, fol. 89r.

¹¹¹⁹ Dāboliņš, "The Mint Book," 91.

¹¹²⁰ Late Johan Schoman's Schlagschatz accounts, 11.10.1606–10.10.1607: LVVA 673-1-1285, fol. 7r-9r.

master and mint lord Nicolaus Ecke and his clique in 1605, mint lords were ordered to keep extensive reports on the usage of mint finances. One cannot assert with certainty whether it had something to do with the political climate change in the Riga City Council, introduced control measures of in- and outgoing finances from the mint boxes, or the growing number of transactions between the mint and treasury. Finally, it remains unclear if the compilation of such documents was recent at all and what conditions prescribed their preservation. Future provenance studies might be useful to find out. In every case, only the reports from the final 15 years, starting with the tenure of Johann Schomann (1605–1607),¹¹²¹ are preserved. Among his peers, F. Nyenstedt and Berent Dolman were the most prolific in terms of report production: 1607–1610,¹¹²² 1619–1620,¹¹²³ 1620–1621,¹¹²⁴ and 1625–1626.¹¹²⁵ This record group is also most helpful in the reconstruction of his occupation period. Meanwhile, many other mint lord names are still missing from the written sources. The time each mint lord spent in the office is hardly traceable, but clearly, they were often re-elected.

Table. 6.4.1 Preliminary list of Riga mint lords and their tenure periods

Years	Name	Source
1594?–1595	Otto von Meppen	LVVA 673-1-1294, fol. 4v; 673-1-1278, fol. 8
1599?–1600	Henrich von Ulenbrock	LVVA 673-1-1285, fol. 1-2
1595?–1599–1600	Caspar zum Berge	LVVA 673-1-1461, fol. 3; 673-1-1278, fol. 11
1595?–1604	Nicolaus Ecke	LVVA 673-1-1461, fol. 3; 673-1-1283, fol. 21r
1600–1601	Frantz Nyenstedt	LVVA 673-1-1285, fol. 17r
1605–1606	Johann Schomann, Casper von Hoffe	LVVA 673-1-1285, fol. 4a, 6
1607–1611?	Johann Bodkern, Frantz Nyenstedt	LVVA 673-1-1285, fol. Fol. 10, 11r ¹¹²⁶
1615–1617	Berent Dolmann, Nicolaus Ecke	LVVA 673-1-1287, fol. 5, 32v, 34v
1617	Frantz Nyenstedt	LVVA 673-1-1285, fol.
1619–1621	Berendt Dolmann, Nicolaus Ecke (<i>Ober Muntze Heer</i>)	LVVA 673-1-1285, fol. 27, 30v, 33r; 673-1-1287, fol. 145v, 146r

¹¹²¹ LVVA 673-1-1285, fol. 5-9.

¹¹²² LVVA 673-1-1285, fol. 10r-24r.

¹¹²³ LVVA 673-1-1285, fol. 25r-30v.

¹¹²⁴ LVVA 673-1-1285, fol. 31r-34v.

¹¹²⁵ LVVA 673-1-1285, fol. 38r-40r.

¹¹²⁶ See also Napiersky, “Das Buch Der Aeltermänner,” 256.

The single most important difference of these sources from other accountancy-related documents of mint books or warden notes lay in the diffusion of weekly Schlagschatz income reports with the accounting of the occasional transfers (*Enttpfang*) and expenses (*Ausgabe*) from the mint. Consequently, these sources provide insight into the widest range of issues, both related to the mint as well as current events in Riga, Duchy of Livonia, and personal issues. From these sources, we get the impression that besides the primary function of issuing coins, the mint functioned as a certain kind of treasury. Here the weekly production and incoming sources were collected and spent at the request of the mint lords. It is however beyond the task of this chapter to give a more detailed overview of their content, therefore, I will provide just some examples of the main subject matters covered in these accounts.

On 28 October 1606, F. Nyenstedt records payment of 5 marks to a poor, old gunsmith at the request of the Riga City Council; on 24 November unspecified Scots arriving from Valmiera were paid 6 marks; on 22 December, Nicolaus Mollinus, the founder of the first printing house in Riga, received funding of 100 marks for the new year calendar and prognosticon; in the first record from the new year, from 12 January 1607, one can read about the supplication from a widow's house, the Riga City Council decided to grant their claim by endowing 11 widowed ladies with 2 Polish florins each (60 groschen).¹¹²⁷ The necessity to address common people's needs, therefore, composes the basic group of records.

The final years before the outbreak of the Polish-Swedish War in 1621, had been very productive at the mint, but similarly full of confusion and everyday fear to the municipality and mint lords. On 25 October 1619, mint lords and the Riga City councillors sat down at the treasury to discuss the mint results. The mint had achieved respectable results and in gratitude for that mint lords were awarded a premium.¹¹²⁸ Much larger sums went for the remunerations of the Riga City councillors (*Honorarium*) in 1620 and 1621.¹¹²⁹ Meanwhile, despite the signed truce between Poland-Lithuania and Sweden in 1618, there were continuous human life losses. More often than in the preceding years, in 1619–1620 there are reports in the records on the compensations for shot horses and the burghers' servants. The city treasury was experiencing major shortfalls in the supplies of money. On 12 April 1620, one can read of the first shortages of money at the city treasury, soldiers' remuneration couldn't be fulfilled, and mint lords had to hand out 2500 marks from the mint reserves.¹¹³⁰ In early 1621 rumours spread about the approaching Swedish invasion in Livonia. The Riga City Council feverishly prepared to fend for itself by strengthening walls and

¹¹²⁷ All cases originate from the same source and folio: LVVA 673-1-1285, fol. 14v.

¹¹²⁸ Expense accounts of B. Dolmann and F. Nyenstedt, 1619–1620: LVVA 673-1-1285, fol. 27r

¹¹²⁹ *Ibidem*, fol. 30r; B. Dolmann and F. Nyenstedt accounts, 1620–1621: LVVA 673-1-1285, fol 34r.

¹¹³⁰ Expense accounts of B. Dolmann and F. Nyenstedt, 1619–1620: LVVA 673-1285, fol. 28v.

enlisting troops. Additionally, some of its gold and silver valuables were deposited at the mint in exchange for ready money.¹¹³¹

Quite often mint lords reported on private expenses, costs and remuneration. For instance, Nyenstede didn't forget to mention personal merits during the long wartime years, that is, providing the city walls with two fully equipped cannons – 1 copper cannon from Jelgava and another iron cast cannon from England.¹¹³² Based on the 1606/1607 F. Nyenstede's inscriptions, mint lord's yearly salary amounted to 250 marks and compensation for the daily subsistence – firewood, cereal, cheese, and butter.¹¹³³ However, throughout his long career as mint lord, he and his predecessor Johan Schomann suffered from being underfunded by the Riga City Council, which is why they were forced to invest their private assets. Another possibility is that some of these were unplanned expenses from the periods when the mint master was not able to fulfil his duties, and the mint lord had to compensate for these from his pocket.¹¹³⁴

The oldest claims are dated to 1600–1601. From 1600 the Riga City Council owed F. Nyenstede 200 marks for the purchased 1 last¹¹³⁵ of grain, 1 stack of hay (*koy*) – 50 marks and a servant's salary – 250 marks. The list of debt was even longer for 1601:

“1 last of grain	200 marks
Servant's salary	250 marks
Weekly fish for a full year	250 marks
½ year wine	90 marks
40 fathoms of firewood	240 marks
1 hay stack	50 marks
Cheese and butter	50 marks
Salmon	40 marks
¼ year wine	64 marks
Bread	48 marks” ¹¹³⁶

In monetary terms, the debt amounted to an average weekly expense of the mint in 1620/1621, but adjusted to inflation of prices for goods, the purchased amount of goods might have been sufficient for a longer period. As one can note from the 1601 debt list, the mint lord was provided with a servant (*Diener*).

¹¹³¹ Expense accounts of B. Dolmann and F. Nyenstedt, 1620–1621: LVVA 673-1-1285, fol. 34v.

¹¹³² Frantz Nyenstedt's Schlagschatz accounts, 1607–1610: LVVA 673-1-1285, fol. 19r.

¹¹³³ *Ibidem*, fol. 17r.

¹¹³⁴ Numerous F. Nyenstedt's claims to the Riga City Council are a good source for price historians. Being trained in the merchant profession, which bridged his success to the highest rankings in the municipality, Nyenstedt was accustomed to paying attention to details.

¹¹³⁵ 1 last = 1920 kg.

¹¹³⁶ Frantz Nyenstedt's Schlagschatz accounts, 1607–1610: LVVA 673-1-1285, fol. 17r.

In 1610 Christoffe Kilian was in service with a salary of 200 marks a year. It was a decrease from the previous 1600/1601 level, which could be explained by the fact that Nyenstede rented a house for him that cost 300 marks for a year and a half.¹¹³⁷

6.4.2 Mint master, warden, and accountant

A Mint board consisted of two principal posts of mint master and warden, and in the later decades possibly also of an accountant. The master was the head manager of the mint, who was responsible for the daily round of the mint affairs, and most importantly, the quality of coins. In the local written sources, he was known as *Muntz Master* or *Muntzer*. During the period under the description, the mint master office underwent some changes in social, political and judicial aspects, much of that in response to the requirements of the day and those of Riga city.

By occupation, **mint masters** belonged to a group of highly skilled craftsmen of goldsmiths, who learned the craft usually from an early age (10–11 years) and often accomplished a three or more year journeymanhood before admission to the goldsmith guild. Only accession to the guild gave a license to work as self-employed craftsmen and to keep a household with apprentices and journeymen on their own. The adherence of goldsmiths to the mint was explained by professing techniques and skills necessary in minting coins that were used in the goldsmith craft.¹¹³⁸ Many biographies of Livonian mint masters are testimonies to high transmission of social practices and knowledge as well as the mobility of this group of artisans.¹¹³⁹ Being a significant and well-paid authority in the economic life of the municipality, they were not politically neutral and could not make lengthy and successful careers with good work alone. Having a strong patron or nurturing good relationship with the Riga City Council was the key to a master's success.

Unlike the neighbouring Tallinn or Vilnius mints, Riga generated the Wulff mint master dynasty (1557–1659), which ruled throughout the Polish period almost undisturbed. Wulff members were affluent and good negotiators, but not

¹¹³⁷ Frantz Nyenstedt's Schlagschatz accounts, 1607–1610: LVVA 673-1-1285, fol. 17v.

¹¹³⁸ A vivid example of this notion is provided in the trial case of Claues Kreychel (1594). During the interrogation Kreychel once exclaimed that “He hadn't specifically learned to cast copies of coins from anyone, because- “ein Ieder goldschmidt khönte nachgiesen.” In: Viktors Dāboliņš, “The Trial of Non-Guild Artisan Claues Kreychel (1594),” in *Pecunia Omnes Vincit*, ed. Barbara Zajac, Szymon Jellonek, and Paulina Koczwara, Conference Proceedings of the Fourth International Numismatic and Economic Conference, Krakow 12–13 May 2017 (Krakow, 2019), 132.

¹¹³⁹ Some of the most significant papers: Leimus, “Mintmasters as the Nodes.”; Ivar Leimus, “Mint Master of Tallinn Urban Dene († 1560) and His Social Network,” ed. Ivar Leimus, *Between Klaipeda and Turku: Decennary Volume of the Association of Baltic Numismatists* 1 (2016): 129–38.; Viktors Dāboliņš, “Riga Mint Master's Georg Albrecht Hille (1700) and Johann Christian Hille (1700-1701),” *Between Klaipeda and Turku: Decennary Volume of the Association of Baltic Numismatists* 1 (2016): 149–60.; Dāboliņš, “Die Dynastie.”

always committed to their immediate tasks at the mint. The founder of the Wulff mint master family, Martin Wulff I (1557–1588), filled the tasks of warden for fifteen years before successfully applying for the semi-vacant post of the mint master in 1571.¹¹⁴⁰ He was the first and last in the family to rise in the hierarchy of the mint from the warden position. His son Henrich Wulff I (1588–1614/15) and both of his grandsons Martin II (1615–1633) and Henrich II (1633–1659) were immediately transferred to the mint master's office. It was one of the most successful examples of co-option of the office in early modern Livonia. However, the birth of this praxis could be traced back to even earlier times. The Mint master's office was held either by blood or matrimony, hence one can speak about the Ramm-Wulff dynasty since the first Wulff was a relative of former mint master Christopher Ramme.¹¹⁴¹

As previously noted Martin Wulff I 'bought' his life-long tenure to the post by making a generous offer to the Riga City Council to build a new mint house.¹¹⁴² Moreover, granting the mint master rights of coinage for a lifetime, was obviously in line with the previous tradition.¹¹⁴³ His grandsons, on the contrary, were granted only temporary contracts, usually a length of three years. The reasons for the change of contract length remain a source of speculation because it was nowhere stated in the available sources.

Mint masters took all responsibilities for the upkeep of the mint buildings, instruments as well as hiring and paying salaries to the employees, and in exchange received a 'free burger's seat' (*freienn Burgerlichenn Sitz, Bürgerliche Unpflichten*), meaning that he was exempt from ordinary citizen's obligations – town guard, the housing of soldiers and taxes. Mint master was entrusted with large sums of mint income – while he would need to pay rent in the form of *Schlagschatz*, he could keep the rest of the income.¹¹⁴⁴ In the years following the change of lordship over Riga in 1581 only minor changes had been introduced to the mint master's special institutional status. Future mint masters were promised a fixed percentage income from each fine silver mark being struck. Thus, H. Wulff, earned 10 Polish groschen for each fine silver mark,¹¹⁴⁵ meanwhile his son Martin Wulff II – 1.5 groschen.¹¹⁴⁶

¹¹⁴⁰ Due to his senility the former mint master Thomas Ramm was unable to fill the obligations of mint master. Dāboliņš, "Die Dynastie," 29.

¹¹⁴¹ Dāboliņš, "Monētu meistari Vulfi," 11.

¹¹⁴² Appointment letter of Martin Wulff, 30.11.1571: LVVA 673-1-1280, fol. 1r.

¹¹⁴³ In 1547, the Livonian Master Herman Bruggeney granted mint master Thomas and his son Christopher Ramme rights to mint in Riga mint for a lifetime; in 1557, Livonian Master Wilhelm von Fürtenberg, granted them the same rights; 28 July 1561, the same rights were repeated by Archbishop of Riga, Wilhelm von Brandenburg.

¹¹⁴⁴ Leimus, "Livonian Mintmasters," 116–17.

¹¹⁴⁵ L. Goldenstedt's notes, n.d.: LVVA 673-1-1280, fol. 31r.

¹¹⁴⁶ Appointment letter of mint master Martin Wulff, 21.07.1615: LVVA 673-1-1280, fol. 3v.

The last mint contract with Martin Wulff, signed on 1 April 1621, was compiled in anticipation of hard times and facing huge inflation.¹¹⁴⁷ There was no mention either of his special privileged status or his salary, whereas he had to keep the mint together with its 4 rolling machines (*4 Muntz Werken*), instruments, and the warden's house in order and check the quality of coins. Before the handing over of the mint complex, a special inventory of all belongings, materials, instruments, and horses was drafted. After the conclusion of the one-year term, the mint master was to return all the enlisted items in the inventory. In exchange for making benefit from minting coins (*früchtniessung*) the mint master was obliged to make quarterly rent payment (*Arrende*) of 4000 florin. To secure the realisation of contract rules, the mint master deposited his movable property as well as real estate to the Riga City Council. This contract stipulated possibilities of withdrawal to each of the sides. The contract was not binding to the Riga City Council anymore, should there be any changes in the Polish mint order. A clause stipulated for the first and only time something that in judicial terminology is known as the force majeure clause – in case of pest, war, or fire the contract with the mint master could be terminated.¹¹⁴⁸

Biographies of mint masters point out the different roles Riga mint masters performed during their time in office.¹¹⁴⁹ With a mint complex and employees ranging between 40 to 60, mint master was more of a managerial than technical position, coordinating and filling multiple tasks within and outside of the mint, supplying with a continuous stream of precious metals, resources and finances. Besides the mint masters actively engaged in trading activities with the Vilnius mint master and overseas partners with colonial goods and mint resources. The correspondence of Riga mint master H. Wulff I with Vilnius mint master Zacharias Boll demonstrate the mutually beneficial character of networking (see 3.4). Through the wide communicative networks, Wulff's kept updated on the recent news in European politics and economics – an essential capital to local monetary politics as well as forging a private fortune. Outside of the daily routine masters often participated in the decision-making of municipal and state monetary politics as well as provided expertise.¹¹⁵⁰

Warden (*Warderer, Wardeyn*) or assayer was the second highest authority in the mint hierarchy after the mint master.¹¹⁵¹ In his capacity as the immediate representative of the Riga City Council, the warden was present at each step of

¹¹⁴⁷ Copies of the document: LVVA 673-1-1280, fol. 6r-v.; LVVA 673-1-1278, fol. 15r-v; LVVA 673-1-1278, fol. 17r-18r.

¹¹⁴⁸ *Ibidem*, fol. 15v.

¹¹⁴⁹ Dāboliņš, "Die Dynastie."

¹¹⁵⁰ Mint master H. Wulff I was consulted during the trial process of Claues Kreychel (1594) to determine the functional role of some of the items found at Kreychel's workshop. See Dāboliņš, "Claues Kreychel," 131.

¹¹⁵¹ On the history of the warden office: Leimus, *Das Münzwesen Livlands*, 16.; Their profession as goldsmiths has attained some scholarly interest: Valda Vilīte, *Sudrabs Latvijas lietišķajā mākslā 5.–20. gs.: izstāde Rundāles pilī: katalogs = Silber im Kunstgewerbe Lettlands vom 5. bis 20. Jahrhundert.*, ed. Dainis Bruģis (Rīga: Avots, 1991).

the minting process and fully responsible to the mint lords. Upon entering office, a warden was sworn in by the Riga City Council and signed a contract. Appointment letters of Lambert Goldenstedt (1588 Michaelmas)¹¹⁵² and Hans Goldenstedt (24 September 1617)¹¹⁵³ are primary sources of that kind to survive to this day, providing some insight into the professional aspects of the warden's office.

The first contract was written at the request of Lambert Goldenstedt, who had held the warden's post for several years, however without an official appointment.¹¹⁵⁴ To erase the uncertainty regarding his status, the Riga City Council decided to grant his request with a letter of appointment. Under the given oath, he had to control every step of the minting process – from testing a probe and introducing the mint lord's requirements to checking imported issues and preventing counterfeits. Everything had to be done in close cooperation with the mint lords. For faithful service, the warden received a free apartment, a yearly salary of 300 marks from excise duty¹¹⁵⁵, and an exemption from ordinary citizens' obligations. After Lambert's passing, his son Hans was selected for the position based on the recommendation and in the good memory of his father. Hans was perfectly suitable for the position. In the book of graduate journeymen of Riga goldsmiths, we can read that he learned goldsmith skills at his father's workshop for 5 years¹¹⁵⁶ and must have been trained in the warden's profession as well. The list of obligations comes in similar wording, but with some new nuances: his task was to keep the mint in good condition, test a probe, control counterfeits, register all incoming sources and the outgoing production in a special book as long as his health did not prevent him and every week inform the mint lords of minting results.¹¹⁵⁷ In exchange, the warden was exempt from the ordinary citizen's obligations¹¹⁵⁸, received a yearly salary of 400 Rigan marks, and a free apartment. Thus, the mint system incorporated a strict two-level safeguard system.

Four warden contracts (1557; 1559; 1560; 1561) are related to the early career years of Martin Wulff I in Riga mint. The unprecedented number of contracts owe as much to the unfortunate Livonian War as to the division of power in Riga among the Archbishop of Riga and the Livonian branch of the Teutonic Order, each one having the princely rights of coinage. Preliminary

¹¹⁵² LVVA 673-1-1280, fol. 25r (original); LVVA 8-4-59, fol. 33r (copy).

¹¹⁵³ LVVA 673-1-1280, fol. 5r-v.

¹¹⁵⁴ "Lambert Goldenstedt, etzliche Jahrhero vff vnsre Muntze, fur einen Wardeyn fleissig vnnd getwewlich gedienett, vnnd aber ihm dergestaltt ferner in Vngewisheitt zu sein, vnd vns solchenn Dienst zu leistenn gans beschwerlich angezogenn, vnnd derwegen vns gebeten, wir ihm auff ein gewisses bestellen, vnd da es gelegen in fernen Dienst annehmen wolten." LVVA 673-1-1280, fol. 25r.

¹¹⁵⁵ Mint lords reported only on the reward from the Schlagschatz income.

¹¹⁵⁶ Rīgas Mazā ģilde, zeltkaļu amats. Mācības beigušo reģistrācijas grāmata, 1571–1743: LVVA 224-1-2644, fol. 59v.

¹¹⁵⁷ Appointment letter of Hans Goldenstedt, 24.09.1617: LVVA 673-1-1280, fol. 5r-v.

¹¹⁵⁸ On a sidenote it says: "die wacht wall vnd quartal schlosfriheit anlagend" Ibidem, fol. 5v.

analysis of these sources produces some new perceptions on the warden's status during and before the arrival of Polish times. The first striking difference with the Polish period documents is that the Livonian period obligations and rights were much less articulated than the remuneration of warden. Obligations are formulated in more or less constant phrases showing unconditional trust in the given oath, according to which the warden promised to "work hard and faithfully". Unfortunately, there is no piece of evidence to help find out if the oath described obligations or if there were any at all. All contracts, however, are explicitly clear on the remuneration of warden, which remain almost equal to the formulation of the 4 July 1560 contract issued by the Master of Order Gotthard Kettler.¹¹⁵⁹

The last seignior of Riga, Archbishop of Riga Wilhelm of Brandenburg in his 28 July 1561 letter was the first one to promise stable income to the amount of 1 Riga schilling from each fine silver mark struck and extra schilling from Schlagschatz payment from the fine silver mark.¹¹⁶⁰

The great uniformity of the content and phraseology of the records owes to the usage of a single sample. The overall impression is that by the mid-16th century professionalisation of the warden position had not made deeper roots, as if it was only a formal request to keep the fiction of control. In the Polish period, the wardens seem to have experienced their emancipation. Warden contracts became filled with the listing of tasks and obligations as the city council could be showing more attention to the implementation of control measures. An active warden's participation is demonstrated by several quarrels between the mint master and the warden. The warden was paid by mint lords and was also granted various privileges, such as baking, brewing, and weighting, which helped to earn their living in previous times.

Similar to mint masters, a warden was commonly appointed from among the goldsmith guild members. Among the known representatives of the research period, everyone was a qualified goldsmith. Martin Wulff, the first member of the Wulff family in the mint, can be singled out. He was merely a journeyman before being nominated to the vacant warden position in 1557 by the Livonian Master Henrich von Galen (1551–1557). The Riga City Council granted the Livonian Master's request, however, after the dissolution of the Livonian branch of the Teutonic Order in 1561, the rights of appointing a mint master and warden had been appropriated by the Riga City Council and kept throughout the Polish rule. However, the selection and election process for the office remains unclear. None of the discussed contracts were terminated, at least not until the

¹¹⁵⁹ "Krafft dieses vnsers Brieffs bestendilich hiermit vorschreiben in Vnser vnd vnsers Ordens stadt Rige allerfreicheitten, wie solchs in Deutscher Nation, Stende vnd Stetten des Heiligen Reichs vff ein sodans ampt vnd Beuhelich gebruechlich, zugeniesen, als Nemlich, aller Burgerlichen pflicht, shatzung, wacht, grafft, vnd achzis frey zusein, vnd sich alle freicheitt handell, wandell, wicht, wage, backen, Brawen, wie solchs alls nhamen hat, oder genandt mag werden zu besten seinem Vortheill ohn menniglichs behinderung zugebrauchen" LVVA 673-2(K-6)-78.

¹¹⁶⁰ LVVA 673-2(K-6)-122.

death of the office holder. Keeping of office by father and son Lambert and Hans Goldenstedt demonstrates a similar co-option of the office by bloodline or matrimonial relations as observed in the generational change of the mint masters post.

Table 6.4.2 Wardens of Riga mint

Name, period in office	Salary	Source
Lambert Goldenstedt (?–1588–1617)	300 marks	LVVA 673-1-1280, fol. 2, 5, 14; 224-1-2644, fol. 59.
Hans Golsenstedt (1617–1622)	400 marks	LVVA 673-1-1280, fol. 2, 5.

Accountant was a seemingly new position in the mint employee system. No sooner than 1621 their existence can be traced in the mint records.¹¹⁶¹ In early 1621, mint master Martin Wulff II and his accountant Johan Friedel travelled to the border city of Biržai in the Great Duchy of Lithuania to approve the new control measures and duty regarding the dispatches from Riga to Vilnius and in the opposite direction.¹¹⁶² In this case, the accountant’s role seems to have been limited to that of a bystander (see 5.5.1). Accountants may not have been very keen on reflecting on their work, but they surely held an important position in the mint structure. According to the 1646 taxation records, accountants received a yearly salary of 200 thalers which was one of the highest-paid positions in the mint structure after die-cutter, warden, and mint master.¹¹⁶³

It is practically impossible to have a closer look at bookkeeper’s relations with the mint master and Riga City Council in the Polish period. Drafted appointment contract with Henrich von Collen (1663) describe him as an official of the Riga City Council and attribute him with authority and tasks similar to that of a warden.¹¹⁶⁴ Collen was the acting company accountant or simply *Adjuncti*. Collen was ordered to check the fineness of the coinage every week, to melt and silver coat (*Beschickung*) coins accompanied by the mint master, register the income and expenses of the mint, and inform the mint lords on the condition of the mint. Every year the accountant was to finish the book-keeping (*seine Bücher schließen*) and deliver them to the mint lords. Besides, the accountant had to take care of the mint house and its upkeep (*oekonomi*), control the usage of coal, wood, candles, and steel, so that nothing was squandered or stolen. In return for his services Collen received a salary and was exempted from the ordinary citizen’s obligations.

¹¹⁶¹ Dāboliņš, “Case of J. Haltermann”, 41.

¹¹⁶² Jacob Moß confirmation letter, 25.02.1621: LVVA 673-1-1279, fol. 7r.

¹¹⁶³ Heinrich Wulffs unkosten vffsatz, 12.05.1646: LVVA 673-1-1279, fol. 112r.

¹¹⁶⁴ Muntz Ordnung, 11.07.1663: LVVA 673-1-1280, fol. 58r-61r.

Previously it has been held that the accountant's service came in demand as a result of the expansion of Riga mint output.¹¹⁶⁵ Another suggestion is to pay attention to the possible terminological development of this position. In a document from May 1589, one comes across the signature of mint scribe Henrich Wulff – “*Henrich Wulff Muntz schreiber*“.¹¹⁶⁶ The position of a scribe is the first that comes to mind when thinking of the evolution of accountant. However unapproved it is, this could be the first mention of an accountant. Another issue in this signature is related to the dating of the tenure period of Henrich Wulff I as mint master. So far, his appointment in 1588 has not been proven with any written evidence but based on the premise that he was installed after his father's passing on 29 June of the same year. This inscription might postpone Henrich's appointment to no sooner than 1589 or could as well be a sign that the contract had not been signed yet and he was titled by his former occupation.

6.4.3 Different labour force

The labour division in the Polish period is practically unknown. One can try to assess their numbers and tasks based on later period sources and publications of 16th century mint history.¹¹⁶⁷ The most complete list on the mint master's employees dates back to the 1646 minting calculations, and the well-known explication of the mint's yearly expenses (Vnkostungen).¹¹⁶⁸ The list names the following persons with their yearly salaries:

3 smiths, which work with iron mill	1400 Rd (Rixthalers ¹¹⁶⁹),
26 workers	1500 Rd
1 accountant	200 Rd
1 journeyman and checker	200 Rd
1 blacksmith	250 Rd
1 purchasing agent	150 Rd
3 cutters (<i>Abschneid</i>)	210 Rd.

Including the mint master and warden, the number of mint staff reached 49. In the list, one can note two types of workers: skilled craftsmen and unskilled workers, the last being the most numerous group of all – 26 persons, and each earning a yearly salary of just 53.84 Rd. The number of workers as well as skilled workers might not be static. The workforce might diversify based on the workload and special requirements. For instance, the same list from 1646, mentions rewarding for the shoeing of horses, saddler, runner of horses (*Renner*), carpenter “and similar”.¹¹⁷⁰

¹¹⁶⁵ Dāboliņš, “Case of J. Haltermann”, 39–47.

¹¹⁶⁶ LVVA 673-1-1210, fol. 69v.

¹¹⁶⁷ Leimus, “Livonian Mintmasters.”

¹¹⁶⁸ Heinrich Wulffs unkosten vffsatz, 12.05.1646: LVVA 673-1-1279, fol. 112r.

¹¹⁶⁹ Swedish state thalers.

¹¹⁷⁰ Ibidem, fol. 112r.

In the archive records, workers make only occasional appearances, most of these consist of simple remunerations and rare petitions. Purchaser was surely on the list of mint master's servicemen in the Polish period. According to the contract with the mint master M. Wulff II on 21 July 1615, he was requested to appoint a purchaser for the mint. A later employment contract with his brother Henrich Wulff II (30 August 1633) states that the purchaser had to work hand in hand with the mint lord.¹¹⁷¹

Purchaser Jacob Petersens is better-known thanks to the preservation of his petition to the Riga City Council. In his letter, dated 20 June 1666, Petersens complains that due to the prolonged inactivity in the minting of small change and the great losses of the mint he had become jobless. Petersen had been a purchaser (*Einkauffer oder Schaffer*) for over 20 years starting with H. Wulff II, J. Haltermann, and the Riga City Council. In his own words, he had spent his best years in this work. Unfortunately, due to the low salary, he was not able to attain something more in his life. He had become a man with no means and no job. Being well advanced in years he was asking to be shown great mercy and granted a place at the convent with free bread.¹¹⁷² Without earning the reader's sympathy for his touching life story, this is a unique testimony of the history of the mint from the insider's point of view.

Very little is known about the smiths and their tasks at the mint of Riga. Johan Göttens is the first smith to appear in the records, e.g. mint master's H. Wulff's I debt papers (1594–1603).¹¹⁷³ In the mint lord Berent Dolman (25 October 1619 – 28 October 1621) calculations several inscriptions inform of the paying of salary to the smith Bendix Steinkul. His yearly salary was set at 740 marks, which was paid in parts.¹¹⁷⁴ Thus, judging only by the remuneration level gives an impression of a principal artisan after mint master and warden.

A cutter Hans Krammer (*Hans Krammer schniediker*) had been working at the mint in 1625. He was rewarded with 97 marks for an uncertain amount of work.¹¹⁷⁵

The sources are particularly irresolute regarding horse keeping. Only once, a saddler by the name of Pawel Schmydt is noted in written sources. On 14 August 1621, he was paid 59 marks and 24 schillings.¹¹⁷⁶

Apart from the skilled craftsmen, the majority of the workforce was the common labourer. Very little is known of their origins. However, it is quite clear that it was not a homogenous and ethnically solid workforce. In the Riga

¹¹⁷¹ “[...] Vnsern MüntzHern den Vberschuß getreulich Vnd Vnfeilbar außliefern Vnd entrichten, die aufgegangene VnKosten fleissig verZeichnen Vnd berrchnen deßgleichen den ein Kauffer daZu anHalten daß er zu rechten Zeit alles redlich einKauffe.” LVVA 673-1-1280, fol. 9r. There are two other copies or drafts of this contract which do not include the part concerning purchaser. LVVA 673-1-1280, fol. 11; 12.

¹¹⁷² LVVA 749-6-1409, fol. 317–318, 320.

¹¹⁷³ LVVA 8-4-62, fol. 62v.

¹¹⁷⁴ LVVA 673-1-1285, fol. 27r – 29v, 33r-34r.

¹¹⁷⁵ LVVA 673-1-1285, fol. 40r .

¹¹⁷⁶ LVVA 673-1-1285, fol. 34r.

City Council's documents, few cases come up with locals of non-German origin being occupied at the mint. On 26 November 1661, the Riga City councillors discussed conditions of "non-German fellow" working at the mint, who should be released from guardianship.¹¹⁷⁷ Thus, a man of local origin was brewing beer for the mint.¹¹⁷⁸ Another case between a "non-German Moriz" (*Muntzenbaur Moriz*), who was working at the mint and the baker's guild was tried at the Court of crafts in 1615.¹¹⁷⁹ In 1655 the same court was summoned to examine the plea of the Craftsmen guild. The Crown mint of Sweden sued the guild for not allowing their journeymen to work at the mint. In turn, the guild called for testimony from the journeymen to verify the charges. According to their testimonies, the Craftsmen guild had supplied mint masters of the city and crown mints day and night with all the necessary help. However, the absence of journeymen had fallen hard on the finances of the guild. The guild had to "sit without journeymen" (*ohn gesellen sitzen*) and reject citizens' orders until the closing of mints when they were again available. As a consequence, the guild was not able to pay salaries to its workers and was short of food. Moreover, the mint master of the Crown mint had not paid journeymen to the full extent.¹¹⁸⁰

Although the last case was not specifically dealing with the city mint, it gives some evidence to the fact that some of the skilled craftsmen had been recruited among the personnel of guilds and that such a great enterprise as the mint had been a burden to the local artisans to some degree. To meet the large workforce requirements of the mint, it was essential to have access to the skilled workforce pool of the guilds. Most of the cited sources relate to the irregularities in the mint work when the Riga City Council would take a more active role in the hiring or even recruitment process.

Last but not least, despite the highly divergent remuneration of the daily workforce at the mint, manual work was considered highly valuable and was more expensive than, for example, horsepower. According to the previous figures, the least skilled worker's yearly salary reached 57.69 Reichsthalers (1600 Rd / 26 workers), almost equal to that of the upkeep (rent?) of 6 horses (60 Reichsthalers).¹¹⁸¹ Put in simple numbers, the service of daily workers was valued almost 6 times higher than that of a horse. However, it is not the most objective estimate and comparison, since recruitment does not inform on the expenses for their accommodation and nourishment. Moreover, horsepower was a highly unaccountable unit of power, for their property rights kept changing intermittently. They could be conscripted, lend, or sold.¹¹⁸² An undated note, perhaps from 1618, reckons 16 horses as being employed at the mint, all of

¹¹⁷⁷ LVVA 749-6-8, fol. 70.

¹¹⁷⁸ LVVA 673-1-46, fol. 46.

¹¹⁷⁹ LVVA 1382-2-488, fol. 19v, 25, 35v, 38v The results of this case can not be said. These record inscriptions can be hardly deciphered.

¹¹⁸⁰ LVVA 749-6-1406, fol. 1291.

¹¹⁸¹ Heinrich Wulffs unkosten vffsatz, 12.05.1646: LVVA 673-1-1279, fol. 112r.

¹¹⁸² At the Crown mint of Riga (1644–1665), mint horses were bought, sold and lent. Platbārdis, *Die königlich schwedische Münze*, 400.

them belonging to the Riga City Council.¹¹⁸³ Another two horses, according to the calculated expenses of former mint lord Frantz Nyenstedt (1 September 1618), belonged to him but had been “lost during service”. The best one with the finest armament was valued at 46 thalers, while the second was reimbursed by a certain Hinrich Plüger.¹¹⁸⁴ In the 1646 calculation of minting expenses, mint master H. Wulff II lists only 6 horses.¹¹⁸⁵ In 1666, during the time of the dissolution of the mint, there were discussions on what to do with 11 horses of the mint. The Riga City Council suggested to use them based on economic considerations: “*Es sollte die pferde auff die Oeconomiten verlegt werden*”.¹¹⁸⁶

¹¹⁸³ Taxation of Riga mint inventory, 1618: LVVA 673-1-1279, fol. 1v; The same amount of horses was occupied in the horse-powered mill at the Crown mint of Riga in 1644/45. See Platbārzdīs, 400.

¹¹⁸⁴ LVVA 673-1-1285, fol. 23r.

¹¹⁸⁵ Heinrich Wulffs unkosten vffsatz, 12.05.1646: LVVA 673-1-1279, fol. 112r.

¹¹⁸⁶ Minutes of the Riga City Council, 12.09.1666: LVVA 749-6-11, fol. 402.

CONCLUSIONS

On the eve of the subjugation to the Polish rule in 1581, the Riga mint stood before major changes. Riga mint established itself as a central coin producer and monetary authority in the Duchy of Livonia, while at the same time outgrowing a provincially seclusive character as a result of integration into the extensive monetary-market system of the Polish-Lithuanian Commonwealth. The system was defined by the centralised legislature, common monetary rules, and a monetary market potentially 20 times larger than that of the Duchy of Livonia. With at least 10–20 active mints, which struck 12 or more denominations, it was a far more diverse and complex system than the previously existing Livonian monetary system. The lifting of the monetary barriers between the Duchy of Livonia and the rest of the Commonwealth not only opened up a potentially much larger monetary market for the produce of Riga mint but also exposed it to common challenges, which could not be dealt with locally since Riga had limited executive power in monetary matters on the provincial level. Within this set of monetary principles, Riga mint realised a very successful expansion of schilling coinage, unparalleled by any other Commonwealth mint either in regularity, geographical outreach or output rates.

At the beginning of the current study, I hypothesised that “the expansion of Riga schillings was fostered by the extraordinary changes in the monetary system of the Commonwealth and Riga’s overarching interest in schillings”. Considering the research status of the primary sources and the coverage of the subject in literature, I further focused on four research questions. This conclusion part is mainly built on the presentation of the main methods and findings, and the assessment of the expansion of Riga schillings in the early modern monetary market of the Polish-Lithuanian Commonwealth.

The character and preservation level of the relevant data compel to address the first research question – the **emission rates of Riga schillings** – within the framework of two emission periods: 1582–1597 and 1598–1621. The first period was analysed using the collection of data about the relevant hoards from Estonia, Latvia, Lithuania, Ukraine, and Poland. The principal reasoning behind this national representation was to cover the lands, which were part of the realm of the Polish-Lithuanian Commonwealth, the common currency area. The statistics on hoards were also used when dealing with the second period, however, the results are less representative than the estimates based on the accountancy records of Riga mint, which are arguably the most reliable hard data on the subject. The estimated emission amounted to 299 million coins in the years 1598–1621. Yet these figures require caution because for some periods the relevant data are missing and the exact timing of debasement before 1615 is not known. Should I or fellow researchers find additional written sources in the archives, the figures would certainly need updating.

Although attempts have been made in the Lithuanian numismatics to reconstruct missing emission rates of various monetary units based on the

relations between the available emission figures and the corresponding share of coins dated to these years in the aggregate composition of relevant hoards, I argue that it is impossible to extrapolate emissions for the unrecorded years with this method. Likewise, the emission rates of Riga schillings in 1598–1621 and the respective representation of Riga schillings in hoards found in Latvia cannot be used for the reconstruction of the emission rates and dynamics of coinage of other Commonwealth mints.

However, I attempt to use the reconstruction method, applying it to more stable periods of coinage, such as 1582–1597, for which there is no data on schilling emission figures. I argue that in peace-time conditions with solid prices and good quality of domestic currency, on the one hand, and the availability of a broader set of data on hoards, on the other hand, the average productivity of mints can be extrapolated with some precision. Also, I did not estimate the coin emission rates for specific years but rather offer average emission rates for four mid-term periods (1582–1592, 1593–1608, 1609–1614, and 1615–1621), in which years 1593, 1609, and 1615 serve as turning points, indicating intensification of schilling production and rise in deposited numbers of schillings. In the first decade of schilling production, yearly issue rate is inferred at just below one million pieces. Meanwhile, a manifold increase of productivity, at around five million a year, is suggested in the timespan until 1608. In the period of 1609–1614, the annual average productivity of Riga mint reached 9.3 million and between 1615 and 1621 expanded to 26.44 million coins. According to the most cautious appraisals, 345 million schillings were produced in Riga within the 37 years of their coinage. That makes an average of 9.32 million schillings a year.

For now, the causes of the rising output of coinage in 1593 are impossible to establish. The increase in output after 1609 is explained by the acquisition of a minting ordinance from the treasurer of GDL. Its content remains unknown, but there is a marked decrease in the average diameter of the schillings issued after 1609. Concerning the 1615 schillings, I argue that schilling coinage gained momentum as a result of a major monetary policy shift, which took place in 1613/1614 with the coinage of debased Vilnius and Bydgoszcz schillings. These issues demonstrated a state-authorised debasement of coins issued in a few selected mints. The permission to issue debased coins was obtained in exchange for a share of income.

1593, 1609, and 1615 not only marked the laying of groundwork for future growth, but also the overcoming of stagnation in the coinage of schillings. Symptomatic of these key moments was that they were preceded by a pause in coinage since the mint master was unable to continue with his duties due to the above-described circumstances. The shutdown had a shock effect on the welfare of the local citizens and merchant community, forcing the mint lords and the Riga City Council to take resolute steps to resolve the situation.

Unprecedented monetary policy change regarding the coinage of schillings took place in 1620 when the mint unilaterally (with the Riga City Council's consent) decided to equalize the fineness of the schilling to the Lithuanian 2-

pfennig fineness. Unlike the 1609 and 1615 decisions, it was not authorised by the king or Lithuanian treasurer and potentially could have cost Riga mint its coinage rights had the city not been invaded by the Swedish king Gustav II Adolph.

The exploration of the second research question about the **quantity of schillings disseminated outside the Duchy of Livonia** is complicated by two factors: there is no documentary evidence to trace the movement of coins across the border – border controls did not register bullion or currency movements. Neither the mint master nor the Riga City Council was alarmed by the decreasing number of schillings as long as the mint avoided speculations with schillings in Livonia, which instantly set in motion Gresham's law (as was the case during the 1614–1615 monetary crisis). The second aspect that makes the research of this question difficult is the lack of methodological tools that would allow tracing the dynamics of coin circulation with reasonable precision. The existing numismatic scholarship reveals the dynamics of the circulation of schillings through the prism of hoards. *Tpq* method, which sets the upper chronological boundary of the deposition of the relevant hoards, does not allow to specify the time of the arrival of schillings in the respective territory. This question, therefore, is approached in two ways. First by establishing the relation between the emission figures and numbers of hoarded coins, and secondly, by following general monetary developments in the Duchy of Livonia.

Hoard statistics display a remarkable uniformity in the proportional distribution of 1582–1601 schilling emissions, suggesting an outflow of around one-half of these schillings from the core area of the Duchy of Livonia (Latvia and Estonia). Widely divergent distribution rates of 1602–1621 coin issues emerge both in relative and absolute numbers. I conclude that the large differences between the two chronological emission groups owe to the shocks of 1600 and 1601 – the years marking the beginning of the Polish-Swedish War and the renunciation of coinage rights of most of the crown mints, respectively. Both events would have had a lasting impact on the supply-demand structure of small change, and caused more active state intervention in an attempt to regulate coinage and monetary markets. Although for twelve consecutive years (until 1613) Riga remained the only major issuer of schillings in the Commonwealth, emission rates lagged behind the pre-war productivity levels. During this period, comparably few schillings entered domestic use, which suggests direct extraction of most of the outputs from the mint. GDL may have become the largest sales market of Riga schillings, while the Polish hoards attested for a much smaller share of imports in total numbers than either Lithuania or the Duchy of Livonia. The high percentage of Riga schillings in Polish hoards, however, hints at two possibilities – the relatively small schilling market or the distortion of the picture due to the massive melting down of Riga schillings owing to their good quality. The second possibility implies that initially a much larger quantity of schillings was exported and only a minor share was hoarded. The popular hypothesis about the production of the Riga schillings as being targeted for the eastern monetary market therefore cannot be fully supported.

The expansion of the Riga schillings is distinguished by two traits: extremely high emission rates and territorial dissemination. The following periodisation of the expansion of schillings is based on the observation of the monetary policy developments, which set the underlining trends. The offered periodisation exceeds the chronological borders of the Thesis by adding the period of 1621–1629 to include in the statistics the later coin issues of the Polish period, which could not have been hoarded before 1621. In 1629 the Truce of Altmark was signed between both warring parties, which marked the de jure dissolution of the Duchy of Livonia. Lastly, it should be noted that this periodisation does not encompass the full spatial and chronological spread of the expansion of schillings. Riga schillings arguably circulated beyond the Commonwealth borders and the set upper chronological boundary.

- 1) 1581–1601 – a period of relatively undisturbed expansion.
- 2) 1601– ~1615 – the Riga schillings entered another phase of dissemination amid the concentration of schilling coinage primarily in Riga and the resulting small change shortages. The demand for schillings heavily exceeded the mint's production capacity, as indicated by the massive occurrence rate of Riga schillings in the Lithuanian archaeological material. In Latvian hoards, the 1602–1615 schillings are represented as sparsely as the 1582–1591 issues.
- 3) 1615–1621 – the peak years in schilling outputs, massive dissemination of schillings across the borders, and the return of schillings into the domestic market.
- 4) 1621–1629 – the final episode of the dissemination of the Riga schillings caused by active warfare in the Duchy and reactionary monetary policy towards the Polish coin issues by the Swedish overlords. Spectacular re-appearance of schillings in the domestic (Estonian and Latvian) hoards and significant reduction of the southward movement of schillings.

Yet, another striking aspect of the extraordinary rise of Riga schillings is that it serves as an exception rather than an illustration of the theoretical and political monetary framework. The success of Riga schillings runs contrary to the general notion of the Commonwealth's monetary policy as being extremely cautious not to endanger the stability of the currency market. The cautiousness of the monetary policy owed much to contemporary monetary thought as well as to the long-term struggle to limit inflation and the influx/output of low-quality currency. These are also some of the most regularly disputed issues in the written sources of the period. The Commonwealth consistently restricted the increase of hard currency prices and the coinage/influx of small-change with various legal instruments at its disposal until around 1614–1615. By then the only inflationary money to be introduced in circulation were orts (1608).¹¹⁸⁷ The current Thesis shows that this exceptionalism of Riga schillings was in the making for many decades, among many factors owing to Riga's successful

¹¹⁸⁷ 1604 Warsaw Commission introduced heavily debased Polish schillings, which were produced in very small amounts. See chapter 3.5 and 5.3.

monetary diplomacy as well as the stability of schilling quality (inflationary principles were introduced only in 1615) and unmet demand for a small change in the Commonwealth.

In examining the third research question regarding the **factors contributing to the ‘expansionism’ of the Riga schillings** I premised that schilling coinage had to be beneficial for these coins to become a widespread export commodity. Since there is no evidence to prove that Riga mint held the exclusive rights in schilling coinage or monetary market, the prime movers of the emission figures and dissemination were discussed within the context of the monetary policy and general market tendencies as well as speculations with schilling variables and changes in the monetary structure.

In the first two decades under research, schillings were no match for 3-groschen. Twice as many mints (20 to 30) participated in the coinage of 3-groschen all over the Commonwealth than in the schilling coinage. The ‘3-groschen era’ was characterised by some of the highest bullion coinage rates ever recorded in the Commonwealth monetary history. As testified by the results of coin output in 1598–1600, Riga was one of the leading producers of 3-groschen. The study of the annual tax revenues of the portorium in Riga shows that ‘3-groschen era’ coincided with the flourishing of trade in the city in the 1590s. The prosperity of the city and the mint moreover was fuelled by low and stable bullion prices. The shutdown of crown mints in 1601, which was partially caused by the rise of silver price, turned out to be lethal to 3-groschen coinage and nearly ruinous to schillings.

Riga mint was unable to fully capitalise on the shutdown of Polish mints. The expected heightened demand for Riga schillings manifested in the meaningful increase of schilling output only starting with 1609. Even then it was unable alone to increase the outputs to the level that had been normally achieved with the collective efforts of various mints. The main cause of delay was the suppression of the incentive to interfere in the minting standard or enhancing schilling value, which mirrored the hard-line policy towards small change assumed by the state authorities.

The launching of the small change restriction policy does not explain the fact that Riga mint remained an uncontested issuer of schillings for the coming decade. I claim that the longevity and success of Riga schillings were the results of joint efforts of the Riga City Council and mint masters, who often assumed a proactive and protective stance with regard to schillings. In the forthcoming 20 years of war that saw periodic invasions in the vicinity of Riga, only once, in 1621, the mint closed its doors due to military hostilities. Interestingly, the war did not leave any impact on the quality of schillings, although the quality of coins was usually manipulated under such conditions. It was an imperative of the monetary policy of Riga of that time to ensure a reliable and uninterrupted flow of money at all times. The economic losses incurred to the city treasury and the mint were probably weighed against the dangers of boosting inflation and civil disobedience.

The Riga City Council actively agitated for the conditions, which could relieve its domestic market of unwelcome competition posed by the invasion of debased or devaluated coin issues from elsewhere in the Commonwealth and other countries. In the worst-case scenario, as was the case during the 1608–1609 and 1614–1615 crises, Riga’s protectionism of the local interests in the monetary market would involve a temporary closing of the mint, but also turning against its closest competitors (Jelgava) and aspiring mints (Tartu). In addition to that, the Riga City Council intensified its monetary diplomacy in the royal court. The mint successfully negotiated the debasement of its coinage after witnessing the appearance of debased Bydgoszcz and Vilnius schillings in 1613–1614, which signalled the loosening of the state monetary policy regarding the small change. Followed by the irresolute discussion by the 1616 Warsaw Commission, these events seemed to have an encouraging effect on the Riga City Council, which opted for the illegal coinage of new schillings in 1620–1621. Further confusion regarding the 1616–1617 issues of dreipölder hints at the possibility that the mint was disrespectful of monetary agreements and set its interests above common interests.

The protectionism of the Livonian monetary market went hand in hand with the lavish support mechanism on the part of the Riga City Council. Large volumes of taxpayers’ money from the municipal institutions went into the mint’s melting pots. It was a form of capital reinvestment, which, unlike other forms of capital saving or investment, such as loans and real estate, would secure instant revenue. Numerous entrepreneurs as well as merchants and statesmen acted following the same ‘free coinage’ principle. There was a heightened incentive to remint bullion into schillings in the timespan from 1615 to 1619 when the debasement rates outgrew silver price increases. In other words, schillings became one of the most profitable investments. It was the golden age of schilling capitalists. However, these were not mutually trustful relations. Metal dealers had other markets and options for investing in precious metals apart from the mint. Dealers, who brought bullion for recoinage could demand the rise of silver price. The tendency was especially pronounced between 1619 and 1620. By 1620, the silver market price was pushed to such extremes that debasement was no longer able to catch up with it and the mint was unable to pay the demanded price. The mint continued the coinage of schillings by entering more aggressively into the monetary market of GDL – buying off the valuable dreipölder and reminting older Riga schillings. In contrast to the booming silver prices and a general decline of purchasing power of almost all other middle and small change units, schillings retained relatively high quality, sufficient to stimulate their dissemination over provincial borders.

Finally, to some degree, Riga mint might have profited from the monetary difficulties of the neighbouring mints. Starting from the 1590s, Jelgava, Vilnius, and Tallinn mints were confronted with precious metals shortages and high inflation, leading to protracted breaks in their activity. The withdrawal of competitors enhanced the position of Riga mint in broader markets of precious metals and facilitated the interdependence of Riga’s finances and monetary

means, including schillings, by then possibly the most affordable and widespread small change in the Commonwealth.

The fourth research question pertains to **the history, policy, staff, and equipment of the mint**. The mint was one of the central financial institutions of the municipality performing several social-economical tasks simultaneously: serving as a safe target for the reinvestment of private and communal capital; a facility for testing and collecting unsound and forged coins; a depository of precious metals and a treasury, where all incoming precious metals, regardless of their origin, could be melted and turned into legal tender; a creditor of public and private enterprises; a centre for the redistribution of communal and private finances. It is practically impossible to uncover the full scope of tasks or the volume of turnover of the mint since the mint and the officials of the Riga City Council kept accounts only of the production of coins. The sensitivity of fiscal information determined the principles of bookkeeping. However, the mint was an impressive early modern industrial enterprise, which worked on a grand scale day and day out. In the period from 1598 to 1621, the total consumption of silver for schilling coinage reached 43 tonnes. A staggering 236.85 tonnes of copper had been used for the silver alloy. If we consider also the coinage of 3-groschen and dreipölkers, the overall consumption of these metals would probably amount to 70 and 300 tonnes, respectively. The output of Riga mint substantiates the fame of the mint as one of the largest and resource-intensive pre-modern industrial enterprises in Livonia.

The estimated coin emission rates and nearly completely acquired data of coinage-related variables are by any measure the most valuable and unique findings of the Thesis. The doctoral research was premised on the importance of the 1604 and 1616 Warsaw Commissions as suggested by the monetary historiography; thus, the main discussion points and outcomes of the commissions were studied in detail. The 1604 Warsaw Commission discussed the prohibition of Riga schillings, which, however, was never carried out. The main outcome was the introduction of a Lithuanian schilling standard, which was adopted also by Rigans, thus forming a common schilling coinage area.

The 1616 Warsaw Commission better coordinated the reconciliation of group interests, debasing four different monetary units and introducing orts and dreipölkers into the denomination structure. However, as a member of the Commission, Riga mint master Martin Wulff reported, the fineness of (Riga) schillings was not defined. Collective monetary policy largely failed to meet the expectations of cementing the stability of the monetary system, rather becoming a source of dissent. The empirical evidence from Riga shows that in the face of re-occurring challenges, the mints could pursue their monetary policies independently or in union with other mints. Therefore, contrary to expectations, the Warsaw Commissions of 1604 and 1616 had a more limited impact on the rise of Riga schilling expansion than the 1609 and 1615 ordinances.

This brings us to another finding of the Thesis – Riga forged special relations with Vilnius mint. Despite the decades-long Riga's discontent with the former and current Lithuanian coin issues, in the most important venues, the

two mints could demonstrate surprising unity. In 1616, the mint book of Riga started recording the change of fineness according to the minting standard of Vilnius mint. As shown by the letters of Vilnius mint master Zacharias Boll, these relations were based on the common interests of the two cities and close personal relations between the mint masters' families, Vilnius accepting the financial superiority of Riga and Riga accepting its monetary policy subordination to its neighbour. The demonstration of common interests and coordinated political goals is suggestive of a particular group identity which could be illustrative of a larger 'regionalisation' pattern within the landscape of the Commonwealth monetary policy.

A major finding of the Thesis is that there were at least four active dissemination phases and four emission periods of various intensities. There were no constraints to schilling dissemination aside from military-political shocks and monetary policy changes in Warsaw and Polish Livonia. These eventually had massive implications on the chronology and quantitative parameters of coins found in hoards, which differ from region to region. The Thesis also rejects the previously circulating assumptions regarding the deliberate character of schilling mintage policy and the low quality of Riga schillings, concluding that Riga mint was neither able to realise a consistent, fully independent emission policy, or to control the distribution of schillings to selected markets.

Some concluding remarks and future perspectives. This is the first comprehensive study of the primary Latvian numismatic sources – hoards and written records. Both record groups of Riga mint under Polish rule have been inspected carefully; obtained results are organised in data series. The various data collections offer new perspectives to the international research community to analyse the social-political landscape of the region under Polish rule, which has been fragmented to this day. The results are equally relevant to the general understanding of the early modern monetary history of the Commonwealth opening a new perspective not only on schillings but also on other small and middle-size coins. Although the Thesis challenges some of the entrenched notions and assumptions in Polish and Lithuanian monetary theory, it aims to raise awareness about the debate on the small change problem in the early modern period, which has not been given sufficient attention in Baltic numismatics, and hopefully to serve as a stepping stone for theoretically and methodically more innovative research of the subject in the future. The rise of Riga schillings results from a remarkable shift towards schillings in the monetary policy of the Riga City Council; it was a central topic in many provincial and state-level discussions and had the potential not only to disrupt monetary and fiscal stability but also to impact diplomatic relations.

It should be noted that the predominant part of the narrative sources used in this research expresses the perspective of the mint and Riga City Council, that is, the official opinion. The scarcity of relevant written sources in other national and provincial collections has been a major hindrance on the path of attaining the objective of unbiased and more systematic knowledge on the subject. The

study of different institutional histories and personal archives might be fruitful in this regard.

Last but not least, the present Thesis, which was started as research into the Latvian monetary history, largely has outgrown its spatial and chronological boundaries, once more illustrating the notion of history as an unstoppable river flow.

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SUMMARY IN ESTONIAN

Riia killingi tõus (1582–1621)

Käesolev doktoritöö vaatlleb Riia killingi esiletõusu Poola-Leedu rahaturul aastatel 1582–1621. Pärast alistumist Poola kuningale Stefan Batoryle 1581. aastal sai Riia tagasi oma varasemad õigused ja privileegid, sh müntimisõiguse, mis tegi Riia Liivimaa hertsogkonna (1566–1629) sisuliselt ainsa rahalööja ja andis talle raha- ja finantsajades suure voli. Liivimaa hertsogkond, mis hõlmas osa tänapäeva Eesti ja Läti territooriumist, lõimiti kiiresti Poola-Leedu rahaturuga. See oli tollal üks Euroopa suurimaid valuutapiirkondi, mida ühendas kuninga suveräänne võim, ühised mündialused, nimiväärtused ja vahetuskursid. 1582. aastal hakati Riia rahapajas lööma uusi killingeid. Riia killingist sai Poola-Leedu üks kõige vastupidavamaid, populaarsemaid ja laiema levikuga münte, mille edulugu kestis kuni Riia vallutamiseni rootslaste poolt 1621. aastal. Selle doktoritöö eesmärk on rekonstrueerida killingite jõudsa leviku kulgu ja uurida tegureid, mis sellele kaasa aitasid.

Vaatamata üle 250-aastasele historiograafiale on Liivimaa numismaatika käsitlustes antud vaatlusalusest perioodist üsna killustunud ülevaade. Selles valdkonnas on esirinnas olnud Poola numismaatikud, ennekõike Andrzej Mikołajczyki teedrajavad uurimused. Mikołajczyki mitmetahulisest ja süstemaatilisest mündiaarete analüüsist ilmses Riia killingite suur ülekaal arheoloogilise materjali hulgas, mis andis ka Leedu numismaatikutele tõuke sarnaste uuringute tegemiseks. Sellisel meetodil on siiski mõningaid puudusi, millest hoidumiseks põhineb käesolev uurimus kolmel esmaste allikate rühmal: Poola, Ukraina, Leedu, Eesti ja Läti mündiaarded, Riia rahapaja arhiiv ning Riia Ajaloo- ja Laevandusmuuseumi killingitekogu. Laiem allikate valik võimaldab teemat uurida süstemaatilisemalt ja metoodiliselt täpsemalt. Vastuseid on otsitud neljale peamisele uurimisküsimusele, mis on seotud emissioonide kogumahuga, väljaspool hertsogkonna piire käibivate müntide hulgaga, killingi „ekspansiooni“ toetavate teguritega ja Poola-aegse rahapajaga. Doktoritöös rakendatud peamised analüüsivahendid on esiteks nn agendi- ja võrgupõhine lähenemine, mis rõhutab nähtuse mudeldamisel mehhanismide ja struktuuride loomise ning vanade ja uute reeglite ülevõtmise ja ümberkujundamise rolli, ja teiseks nn vaba müntimise põhimõte, mille kohaselt müntimisprotsessi määratletakse peamiselt ärilise tegevusena, mis lähtub tulu teenimisest ja kohalikest vajadustest.

1.–3. peatükis antakse taustinfot rahasüsteemi kohta üldiselt ja konkreetsemalt Liivimaa hertsogkonna rahapiirkonna kohta. Esimeses peatükis kirjeldatakse Poola-Leedu riigi raha ajalugu, mündialuseid, rahapoliitilisi suundumusi, rahalisi-majanduslikke suhteid, arutelufoorumeid ja otsuseid – kogu seda raamistikku, milles rahapajad müntimisõigust ellu viisid. Kronoloogiliselt on peatükk viidud vastavusse perioodiga, mil Riia rahapaja allus Poola võimule (1581–1621), mis kattub üsna täpselt numismaatika historiograafias kasutatava periodiseeringuga (1580–1623/27). Juhindudes varasematest uuringutest, on periood peatükis kaheks jaotatud: enne ja pärast 1601. aastat, mis on Poola-

Leedu rahasüsteemi arengus tähtis verstepost. Aastal 1601 suleti Poola kuninglikud rahapajad, mis vähendas järsult müntimismahtusid. Põhiteguriks Liivimaa rahaturul toimunud suurte muutuste taga aga oli Liivimaa hertsogkonnas vallandunud Rootsi-Poola sõda (1600–1629). Poola mündinduse varajase õitsengu põhjuseid võib otsida odavast hõbedast ja kolmekrossiste löömisest – need olid laialdase spekulatsioonide objektiks, mida toodi massiliselt naabruses asuvatele Saksa aladele. Teist ebastabiilsuse perioodi iseloomustasid korduvalt sõjalised sissetungid ning majanduslike ja sotsiaal-poliitiliste tingimuste halvenemine, millega kaasnes kiire inflatsioon ja väärismetallide kättesaadavuse vähenemine. Peatükis antakse rahasüsteemi kriisist üldine ülevaade, mis tugineb Riia rahapaja arhiivi esmastele allikatele. Kriisi alguse võib paigutada hiljemalt aastasse 1597, kui Seimis hakati nõudma mündihalvendust, kasvas standardse hõbemündi (taalri) populaarsus ja inflatsioon kerkis kõrgele. Ehkki erinevate mündisortide ebaseaduslikku halvendamist ei ole võimalik usaldusväärset tõendada, võis see tol ajal olla juba alanud. Hõbeda väärtuse langus põhjustas väärismetallide väljavoolu Poola-Leedu territooriumilt. Koos kahaneva väliskaubandusega põhjustas see kodumaise väärismetallivarude vähenemist ja suurendas nõudlust peenraha järele.

Teises peatükis „Riia rahasüsteemi ümberkujundamine (1581–1588)“ võetakse vaatluse alla Liivimaa hertsogkonna ja Riia kohalik rahaturg Stefan Batory valitsusajal ja Sigismund III pika valitsusaja algusaastatel, mida käsitatakse üleminekuajana. Rahasüsteemi muutusi vaadeldakse kahes valdkonnas: esiteks õigussfäär, kus uue rahasüsteemi alusdokumentideks on 1581. ja 1588. aasta privileegid, millega anti Riiale müntimisõigus, ning teiseks arheoloogilised mündileiud. 1581. aasta privileegi kinnitab Klaus-Dietrich Staemmleri varasemaid väiteid, et Riia magistraadile antud privileegid põhinesid Kuningliku Preisimaa linnade mudelil. Sigismund III antud müntimisprivileegi teksti ei ole leitud, ehkki 1592. aasta allika põhjal võib oletada väga suurt sarnasust varasema privileegi tekstiga. Müntimisõigused lubasid vermida kuld- ja hõbemünte, mille ühel küljel oli valitseja kujutis või sümbol ja teisel linna vapp. Mündialused ja vahetuskursid olid kõigis rahapajades siiski ühised. Privileegi tekst kirjeldas rahasüsteemi üsna skemaatiliselt. Järgnevatel aastatel seda täpsustati – näiteks portooriumimaksu kehtestamisel 1582. aastal. Portooriumimäärade ja rahapaja arhiividokumentide uurimine võimaldab teha üldise tähelepaneku, et kogu vaatlusaluse perioodi vältel olid nii arvepidamises kui ka igapäevastes rahaasjades kasutusel vana ja uus süsteem paralleelselt või isegi kombineeritult. Mündiaarete analüüs näitab, et Liivimaa killingid domineerisid peenrahaturul kuni 16. sajandi lõpuni, mida võib selgitada varasemate aastate suure müntimismahu ja Riia rahapaja tootlikkuse vähenemisega alates 1580. aastatest. Pärast Vene-Liivimaa sõja puhkemist (1558–1583) ja rahaturu tõkete kadumist sisenes Liivimaa rahaturule ka suuremal hulgal Poolas ja eriti Leedus vermitud münte.

Kolmandas peatükis „Tülide aeg“ esitatakse üksikasjalik ülevaade Liivimaa hertsogkonna rahaajaloost Riia rahapaja allikate põhjal. Kuna rahapaja varasemad allikad ei ole kuigi hästi säilinud, on aeg enne 1597. aastat kaetud

üsna lünklikult. Olemasolev materjal keskendub peamiselt mitmesugustele ülevaadetele nn Leedu krossidega seotud tülist, mis 1580. aastate lõpus oli pikka aega tuliselt päevakorral ja mida on mainitud ka 1592. ja 1597. aasta allikates. Riia raadi süüdistati korduvalt Leedu krossi vahetamises ettenähtust madalama vahetuskursiga. Edasise uurimise käigus selgub, et Leedu „krosside“ all peeti põhiliselt silmas poolekrossiseid (1501–1566) ja kolmekrossiseid, mis olid kas madalama kvaliteediga kui ametlikult väidetud või mida tõesti vahetati madalama kursiga. Probleem tundub päevakorrast kaduvat pärast 1597. aasta kohtuotsust, millega Riia vabastati kõigist süüdistustest: Riia müntide halb kvaliteet, taalrite ekspordikeeld ja Leedu krossi devalveerimine. Pisut enne Riia langemist 1621. aastal sai alguse järjekordne kohtuprotsess. Kohtumõistmiseni siiski ei jõutud, ehkki süüdistused olid potentsiaalselt tõsisemad, kuna käsitlesid killingite ja dreipõlkerite võltsimist. Kolmandas juhtumiuuringus vaadeldakse müntmeister Henrich Wulff I mõistatuslikku võlaküsimust. 1595. aastal andsid mündihärrad kõnealusele müntmeistrile tohutu suure laenu (10 000 taalrit), mille tagatisena meister pantis oma hõbeda- ja kullakollektsiooni. Järgnes tüli mündihärra Caspar zum Bergega, mis tegi Wulffi olukorra väga raskeks. Käesolevas uurimuses ei osutunud võimalikuks usaldusväärselt kindlaks teha selle laenu võtmise põhjusi, ehkki laialdane äri- ja pangandustegevus lubab veenvalt ette kujutada ülemääraseid finantskohustusi ja pingelist rahalist olukorda. Hilisemad, umbes 1597. aastast pärit allikad näitavad, et kui naabruses asuvad Tallinna ja Vilniuse rahapajad kannatasid rängalt väärismetallide puuduse ja inflatsiooni all, siis Riia rahapaja suutis säilitada kõrge tootlikkuse, eelkõige kolmekrossiste löömisel, millest saab järeldada, et Riia võis kindlustada oma juhtrolli Balti piirkonna rahaturul. Rahapaja tegevuse jätkumine kriisiolukorra kiuste ilmneb kõige hämmastavamalt selles, et müntide vermine ei katkenud ka 1601. aastal, kui Riia oli Rootsi sõjaväe piiramisrõngas. Edasisest arutelust, mis käsitleb selle perioodi tähtsamaid rahapoliitilisi foorumeid – 1604. ja 1616. aasta Varssavi rahakomisjone, millest teisel osales ka müntmeister Martin Wulff II –, selguvad rahakriisi haldamise peamised meetmed, millega kehtestati piirangud igasuguste hinnamuutuste ja müntide kvaliteedi suhtes. Mõlema komisjoni dokumentidest nähtuvad erinevused kirjalike allikate ja tegelike tulemuste vahel, mida saab selgitada probleemidega seaduste täitmisele pööramisel. Kõige olulisem on märkida, et Riia killingeid käibelt ei kõrvaldatud ja nende kvaliteet jäi mõningasele kriitikale vaatamata üsna kõrgeks. Samuti tuleb märkida, et kummagi rahakomisjoni tegevust ei ole kuigi põhjalikult uuritud ning nii mõnigi algallikas on jäänud peaaegu täielikult käsitlemata, mis võib samuti selgitada teatavaid lahknevusi. Järgmises alapeatükis käsitletakse 1616.–1617. aasta ja 1620. aasta dreipõlkerite – mida varem on peetud krossideks (v.a 1620. aasta mündid) – päritolu. Ehkki nende löömise ajalugu ei ole täiesti selge, vastavad mündialused ja enamik visuaalseid tunnuseid laialt tuntud Bydgoszczi ja Krakówi dreipõlkeritele. Kõige dramaatilisemad sündmused tabasid rahapaja viimasel Poola võimu aastal. Hõbeda nappuse ja aina kerkiva hinna tõttu andis raad korralduse viia killingite löömine üle Leedu kahepennise mündialusele. Selle omavolilise otsusega kaasnenud muutused

killingite ja dreipõlkerite vermimisel ei erinenud eriti millegi poolest teistes rahapajades toimunud muutustest, kuid seda käsitati siiski müntimisõiguste rikkumisena. See juhtum on hea näide kohalike võimude mõtteviisist kriisi ajal ja mündiajaloo pööretest, mis tulevad ilmsiks üksnes kirjalike allikate uurimisel. Samuti on tõendatud, et killingeid vermiti ka 1608. aastal, ent selle aasta killingite puudumine arheoloogistes leidudes jääb mõistatuseks.

Neljandas peatükis „Riia killingi kvantitatiivsed näitajad“ kirjeldatakse killingi jõudsat levikut kvantitatiivses raamistikus. Kõige olulisemad näitajad on aastased müntimismahud, hõbeda- ja vasekulu ning *Schlagschatz* (müntimislõiv raele). Killingite leviku ruumilist mõõdet uuritakse mündiaarete statistilise analüüsiga, mille käigus vaadeldakse esmalt põhipiirkonda, st Läti ja Eesti ala, ja seejärel ülejäänud Poola-Leedu territooriumi (Poola, Leedu, Ukraina). Esimeses alapeatükis vaadeldakse peamisi allikaid ja hinnatakse materjaliuuringuid kui andmeallikat, kuna emissioonide rekonstrueerimist mõjutavad esmase allika liik ja arvestuse eripärad. Uurimuses antakse ettevaatlikud hinnangud 1598.–1621. aasta emissioonide kohta ning uuritakse mündilöömise põhinäitajate – killingi proov, hõbeda hind, *Schlagschatz* – muutusi. Lühi- ja pikaajaliste suundumuste põhjal tehakse kindlaks kolm keskmise pikkusega killingilöömise perioodi järgmiste aastakeskmiste emissioonimahtudega: 1598–1608 – 5,26 miljonit; 1609–1614 – 9,3 miljonit ja 1615–1621 – 26,44 miljonit. Selgema ettekujutuse saamiseks on hõbeda kogukuluks hinnatud 55,34 tonni ja vase kogukuluks 236,85 tonni. Kirjalike allikate puudumise tõttu ei ole neid allikaid võimalik võrrelda Leedu-Poola riigi muude rahapajade toodanguga. Peale selle on arvatud ka *Schlagschatz*'i määrad, et teha kindlaks perioodid, mil müntide löömine töötas tulu. Siit nähtub, et vaatlusalusest perioodist suurema osa jooksul oli killingite löömine väga vähetulus ettevõtmine, nii äärmiselt madala *Schlagschatz*'i kui ka killingi võrdlemisi stabiilse kvaliteedi tõttu. Ainus võimalus rohkem tulu teenida oli toodangut suurendada. Pärast uue määrase vastuvõtmist 1615. aastal sai *Schlagschatz*'ist rikastumisvahend. *Schlagschatz* tõusis sedamööda, kuidas hõbeda hind kasvas ja killingi kvaliteet aina halvenes. Killingite suhtelist levikut ja eripärasid Poola-Leedu aladel on kaardistatud mündiaardeandmete põhjal. Riikide aardeleidude statistikast ilmneb, et killingeid jõudis eri riikidesse erineval hulgal, ehkki 1582.–1601. aasta emissioonide kronoloogiline jaotus lubab eeldada müntide ühtlast ja sujuvat jaotumist. Riia rahapaja läheduse tõttu jäi vähemalt pool münditoodangust kohalikule turule. Esialgsete hinnangute järgi oli dokumenteerimata perioodi (1582–1597) võimalik müntimismahud võrdlemisi väike (umbes 1–2 miljonit aastas). 1593. aastast alates see veidi kasvas. Märkimisväärsed erinevused ilmnevad riikide statistikas vaadeldava ajavahemiku teisel poolel (1602–1621), mil leviku dünaamika järsult muutub. Muutused püsivad kuni uurimuses käsitletud perioodi lõpuni. Põhisuundumusi on selgitatud kauplemisvõrgustikele ja rahaturgudele suurt mõju avaldanud sündmustega: kuninglike rahapajade sulgemine 1601. aastal ja Poola-Rootsi sõjad. Pärast 1601. aastat münditoodang küll suurenes, kuid samas kasvas ka nõudlus Riia killingite järele. 1610.–1615. aasta münditoodang viidi peaaegu täielikult kohalikult turult välja ning see jõudis Poola

kuningriiki ja Leedu suurvürstiriiki, samas kui mitme muu emissiooni mündid kõrvaldati ringlusest massilise ümbermüntimise aastatel 1601–1603 ja 1620–1621. Tundub, et absoluutarvude järgi on killingeid kõige enam imporditud Leedu aladele. Poola mündiaaretest seevastu on killingeid leitud üsna väikesel arvul. Ehkki see ei vähenda Mikołajczyki tähelepanekute tähtsust, võib siit siiski järeldada, et Poola killingiturg oli suhteliselt väiksem kui tänapäeva Balti riikide Eesti, Läti ja Leedu territooriumid. Eesti ja Läti mündiaarete põhjalikum analüüs näitab erinevaid aardeleviku mustreid isegi ühe provintsi piires ning osutab laiemale kronoloogilisele käsitlemisele vajadusele leviku dünaamika uurimisel. Riia Ajaloo ja Laevandusmuuseumi killingikogu uuringust ilmneb Eesti ja Läti mündiaarete statistikaga väga sarnane kronoloogiline levikumuster. See näitab, et ehkki kogumaterjali kasutamise kaasnab üsna tõsiseid metodoloogilisi probleeme, võib hoolikalt kogutud ja suurel andmebaasil põhinev materjal siiski anda teaduslikult väärtuslikke tulemusi.

Viies peatükk „Riia killingi esiletõus Poola-Leedu riigis (1615–1621)“ vaatleb perioodi viimast kuut aastat, et näidata killingi levikut agentide ja võrgustike vastastike seoste kaudu. Lähtepunktina on siinses uurimuses kasutatud müntmeister Henrich Wulff I argumente tema 15. juuli 1614. aasta kirjast, kus ta valgustab Riia raehärrasid rahanduse kriitilisest seisust ja paneb ette võimalikke abinõusid. Poola-Leedu teistest rahapajadest pärit halvendatud müntide sissevoolu tõttu kutsus müntmeister üles ka Riia killingit halvendama, mis tema sõnul võinuks tuua tulu 18 000 zlotti aastas, mida saanuks kasutada linna kannatada saanud majanduse taastamiseks ning kahju heastamiseks, mida põhjustasid Euroopast sissevoolavate müntide kehv kvaliteet ja mõne Poola-Leedu rahapaja poolt võetud meetmed müntimisest maksimaalse tulu teenimiseks. Põhjalikum süvenemine sellesse debatti näitab, et Wulffi argumendid osutusid põhjendatuks, mis lubab oletada, et tema ettepanekud panidki aluse suurtele muutustele, mis leidsid aset pärast rahapaja taasavamist 2. veebruaril 1615. Suurim muutus seisnes lõdvemas rahapoliitikas, mis avaldus järgmistel aastatel regulaarsemas mündihalvenduses ja hõbeda hinna tõus. See omakorda põhjustas laialdast spekulatsioonide *Schlagschatz*'i määraga ja hiigelkasumite teenimist aastatel 1618–1620. Lähtudes analoogiast Vilniuse müntmeistriga, võib arvata, et Riia võis maksta vabamate müntimisreeglite eest teatavat dividendi. Killingite tootmismahtude võrdlemisel portooriumituluga ei ilmne peaaegu üldse korrelatsiooni Riia majandustegevuse ja rahapaja aktiivsuse vahel. Rahapaja oli majandus- ja rahašokkide suhtes vastupidavam kui linna majandus. Kõnealusel perioodil aitasid seda saavutada kehtinud müntimiskord, mis võimaldas hõbeda tarnijatel saada suurt kasumit, võimuinstiitutsioonide helled investeeringud ja müntmeistri teenistuses olev lai agentide võrk Poola-Leedu valuutaturgudel. Erilist tähelepanu väärib maismaad mööda kulgev hõbedavedu marsruudil Riia – Biržai – Vilnius, kuna see tasakaalustab varem valitsenud seisukohta, et hõbedat veeti laevadega läänepoolsetest riikidest. Teise tähelepanekuna saab märkida, et mündihalvenduse (ja seega ka müntide löömise) mustrid olid sõja ja rahu ajal erinevad. Sõja ajal sõltus rahapaja suuresti kohalikest varudest ja rahva usaldusest müntide kvaliteedi vastu, samas kui rahu ajal mängisid rahva huvid

vähem olulist rolli, kuna hõbedat oli siis laiemalt saada. Nii ei esine rahapaja arhiiviallikes peaaegu ühtki näidet mündihalvenduse kohta kõige kriitilismatematel aastatel. Riia rahapaja arveraamatust (1615–1622) ja muudest allikatest ilmneb, et rahapaja arvepidamises tuli ette palju spekulierimist, eelkõige hõbeda hinna kiire tõusu tõttu. Killingi halvendamist ei saanud lõputult kasutada, kuna see sõltus Vilniuse müntide kvaliteedi kõikumisest. Alternatiivina otsis Riia rahapaja väsimatult odavamaid hõbedaallikaid, mis ilmneb näiteks sellestki, et 1620.–1621. aastal löödi mõnedel perioodidel ümber vanu Riia killingeid ja Poola dreipõlkereid.

Viimane peatükk „Rahapaja“ käsitleb rahapaja institutsiooni ja juriidilist staatust, selle juhtimisstruktuuri ja töötajaid, hoonekompleksi, töövahendeid ja seadmeid. Kuna otseselt vaatlusaluse perioodi kohta leidub kasulikke andmeallikaid vähe, on mitme aspekti käsitlemisel lähtutud hilisematest Rootsi-aegsetest dokumentidest, mis üldpilti tõenäoliselt ei muuda. Poola võimu ajal oli Riia rahapaja üks suurimaid, tehnoloogiliselt eesrindlikumaid ja ressursitõhusamaid ettevõtteid varauusaegsel Liivimaal. Harilikult töötas rahapaja ilma puhkepäevadeta ning kui välja arvata eespool mainitud rahakriiside perioodid (1608–1609, 1614–1615 ja 1620–1621, võisid selle töö katkestada ainult materjalinappus ja tehnilised probleemid. Müntimisprotsessi professionaliseerumisele vaatamata on säilinud vaid üksikud käsitööliste nimed, küll aga on koostatud täielikud müntmeistrite ja rahapaja vardjate nimekirjad.

Kokkuvõttes võib öelda, et killingite ekspansiivne esiletõus ilmnis kahel viisil: killingite kasvava müntimismahu ja geograafilise levikuala laienemise kaudu. Mündinduse areng ja müntide levik ei kulgenud vaatlusalusel 40-aastaselt perioodil kaugeltki ühtlast rada pidi, mis selgitab ka suuri erinevusi riikide mündiaarete statistikas. Samuti olid paljud mündindust iseloomustavad näitajad kaasaegse poliitika ja tolelaegsete protsessidega läbi põimitud viisil, mida ei saa alati selgesti mõõta. Uurimisvaldkonna tõlgenduslikud ja metodoloogilised võimalused ei ole kindlasti veel ammenud, ja seda ei ole ka Riia rahapaja arhiivimaterjal, mida enne käesolevat projekti on teadustöodes käsitletud ainult mõnel üksikul korral.

Riia rahapaja oli linna üks mõjukamaid finantsinstitutsioone, kuid oli ka palju teisi töökodasid ja linnaasutusi, millega rahapaja iga päev suhtles. Suhtlusvõrgustike ning asutuste- ja agentidevaheliste võrgustike rekonstrueerimine kirjalike allikate põhjal on üks võimalus täiendada teadmisi Riia killingi ja kogu selle ajajärgu kohta. Ka mündihärrade ja vardjate ning muude agentide elulugudest võib ilmneda üht-teist huvitavat. Kindlasti väärivad edaspidi palju enam tähelepanu mündiaarete analüüsi metodoloogilised võimalused. Veel üks paljutöötav uurimisvaldkond on Liivimaa hertsogkonna varase industrialiseerimise ajalugu, mille uurimiseks käesolev uurimus võib olla heaks lähtepunktiks. Ja lõpetuseks: loodetavasti annab käesolev uurimus ainet uuteks aruteludeks ja äratav numismaatikutes värsket huvi Poola-Leedu varauusaegse mündinduse vastu, mis pärast Andrzej Mikołajczyki lahkumist enam kui 30 aasta eest on kahetsusväärset unarusse jäänud.

ABBREVIATIONS

AD – Anno Domini
av. – average
approx. – approximately
BC – before Christ
d – pfennig (account unit and denomination)
d. – death
BY – Belarus
EE – Estonia
est. – established
fl – florin = złoty
fol. – folio (leaf)
fr. – French
g – gram
GDL – Grand Duchy of Lithuania
ger. – German
gr – groschen
lat. – Latin
lot – 1/16 weight mark
LT – Lithuania
LV – Latvia
LVVA – Latvijas Valsts Vēstures arhīvs (Latvian State Historical Archive)
M – mark (weight mark and account mark)
mill. – million
PL – Poland
q – quentin
r – recto (right side of folio)
r. – reign
Rthl/Rd – reichsthaler
β – schilling
Th – thaler
T / t – tonne
UA – Ukraine
v – verso (left side of folio)

APPENDICES

Appendix 1. Schilling emission years in the largest Commonwealth mints*

Years	Riga	Gdańsk	Toruń	Vilnius	Jelgava	Poznań	Malbork	Olkusz	Wschowa	Lublin	Cracow	Bydgoszcz
1581		x						x				
1582	x	x						x				
1583		x		x		X		x				
1584	x	x				X	x	x				
1585	x					X	x	x				
1586	x					X		x				
1587												
1588	x					X		x				
1589	x			x		X		x				
1590	x			x				x				
1591	x			x		X		x				
1592	x		x	x		X	x	x				
1593	x		x			X		x				
1594	x		x			X	x	x		x		x
1595	x		x			X		x	x			x
1596	x		x		x	X	x	x	x			x
1597	x					X		x	x			x
1598	x								x			
1599	x					X			x			x
1600	x				x	X			x			x
1601	x						x		x		x	x
1602	x											
1603	x											
1604	x				x							

Appendix 2. Reichsthaler value in the Riga mint, 1581–1621

Year	Reichsthaler value, in Polish groschen
1581–1597	35
1598–1600	36
1601–1606	38
1607	39
1608–1609	40
1610	41
1611–1615	42
1616	43
1617	45
1618	47
1619	49*
1620	63*
1621	75

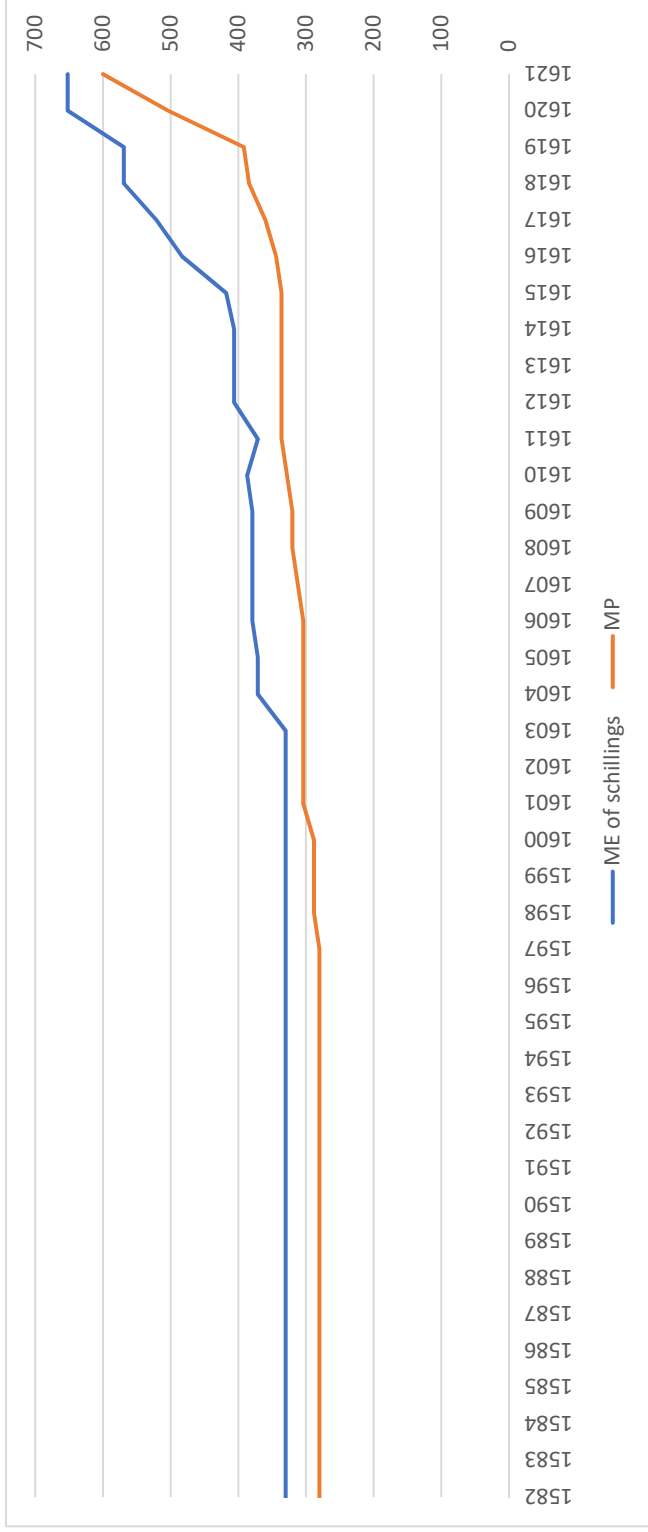
* In case two or more price changes or differences in accounts are observed within a year, an average price is given.

Appendix 3. The minting standard of Riga schillings (1582–1621)

Year	Minting standard	Fineness, %
1582	2 lot 3 q 2 d, 178 pieces	17.98
1584	2 lot 3 q 2 d, 178 pieces	17.98
1585	2 lot 3 q 2 d, 178 pieces	17.98
1586	2 lot 3 q 2 d, 178 pieces	17.98
1588	2 lot 3 q 2 d, 178 pieces	17.98
1589	2 lot 3 q 2 d, 178 pieces	17.98
1590	2 lot 3 q 2 d, 178 pieces	17.98
1591	2 lot 3 q 2 d, 178 pieces	17.98
1592	2 lot 3 q 2 d, 178 pieces	17.98
1593	2 lot 3 q 2 d, 178 pieces	17.98
1594	2 lot 3 q 2 d, 178 pieces	17.98
1595	2 lot 3 q 2 d, 178 pieces	17.98
1596	2 lot 3 q 2 d, 178 pieces	17.98
1597	2 lot 3 q 2 d, 178 pieces	17.98
1598	2 lot 3 q 2 d, 178 pieces	17.98
1599	2 lot 3 q 2 d, 178 pieces	17.98
1600	2 lot 3 q 2 d, 178 pieces	17.98
1601	2 lot 3 q 2 d, 178 pieces	17.98
1602	2 lot 3 q 2 d, 178 pieces	17.98
1603	2 lot 3 q 2 d, 178 pieces	17.98
1604	2 lot 3 q 2 d, 200 pieces	17.97
1605	2 lot 3 q 2 d, 200 pieces	17.97
1606	2 lot 3 q 1 d, 200 pieces	17.58
1607	2 lot 3 q 1 d, 200 pieces	17.58
1608	2 lot 3 q 1 d, 200 pieces	17.58
1609	2 lot 3 q 1 d, 200 pieces	17.58
1610	2 lot 3 q, 200 pieces	17.19
1611	2 lot 3 q 2 d, 200 pieces	17.97
1612	2 lot 2 q 2 d, 200 pieces	16.41
1613	2 lot 2 q 2 d, 200 pieces	16.41
1614	2 lot 2 q 2 d, 200 pieces	16.41
1615	2 lot 2 q 2 d, 206 pieces*	16.24*
1616	2 lot 1 q 2 d, 220 pieces*	14.29*
1617	2 lot 1 q, 220 pieces*	14.07*
1618	2 lot 2 d, 220 pieces*	13.29*
1619	2 lot 1 d, 220 pieces	12.89
1620	2 lot 2 d, 255 pieces*	13.29*
1621	2 lot 2 d, 260 pieces	13.28

*Av. figure is reckoned due to fluctuations in the minting standard.

Appendix 4. Relation of silver price and mint equivalent of Riga schillings (in Polish groschen)



Appendix 5. Złoty reduction in terms of the Riga schilling and Polish groschen

Emission Year	Silver in 1 schilling, g	Złoty reduction in terms of Riga schillings, g	Złoty reduction in schillings, %	Złoty reduction pattern in terms of Polish groschen, g	Złoty reduction pattern in groschen, %
1582–1603	0.204	18.36	100.00	20.52*	100.00
1604–1605	0.181	16.29	88.73	17.13**	83.47
1606–1609	0.177	15.93	86.76	17.13	83.47
1610	0.173	15.57	84.80	17.13	83.47
1611	0.181	16.29	88.73	17.13	83.47
1612	0.166	14.94	81.37	17.13	83.47
1613	0.166	14.94	81.37	17.13	83.47
1614	0.166	14.94	81.37	17.13	83.47
1615	0.159	14.31	77.94	17.13	83.47
1616	0.131	11.79	64.22	15.61***	76.09
1617	0.129	11.61	63.24	15.61	76.09
1618	0.122	10.98	59.80	15.61	76.09
1619	0.104	9.36	50.98	15.61	76.09
1620	0.105	9.45	51.47	15.61	76.09
1621	0.103	9.27	50.49	15.61	76.09

*Source: Mikołajczyk, *Einführung*, 41.

**Source: Mikołajczyk, *Einführung*, 63.; Kopicki, *Monety Zygmunta III Wazy*, 64.

*** 1616–1617 groschen are extremely rare, regular coinage did not resume until 1623. Groschen value is borrowed from Ortstaler, 6-groschen, and 3-groschen metal content, which measures 0.520 g for each of these denominations. Source: Mikołajczyk, *Einführung*, 64.

Appendix 6. King Sigismund III ordinance to the Riga City Council, August 29, 1588: LVVA 673-1-1283, fol. 4r. (Transcribed and translated by Kai Tafenau)

Sigismundus iij. Dei gratia Rex Poloniae, magnus Dux Lithuaniae, Russiae, Prussiae, Masoviae, Samogitiae, Livoniaeque etc. nec non eadem gratia designatus Rex Sueciae, Magni Ducatus Finlandiae, Princeps.

Spectabilibus, et Famatis Proconsuli, cum Consulibus, totique Magistratui Civili Rigensi, gratiam nostram Regiam. Questi sunt apud nos graviter, totius Nobilitatis Livonicae nomine Internuncii illius huc ad nos missi de vobis, quod auctoritate vestra privata, proque commodis vestris privatis, gravi autem caeterorum provincialium omnium detrimento monetae communis pondus atque valorem, prout ex usu, reque vestra est, modo extollitis, modo imminuitis. Et quoniam universorum subditorum nostrorum commodis studendum nobis est, neque videmus qua id auctoritate a vobis fieri possit, serio vobis mandamus, ut in posterum desinat is nummorum precia arbitrato vestro instituire, sed iuxta pristinam, ac in provincia usitatam estimationem eos in civitate Rigensi valere permittatis. Pro gratia nostra. Datum Cracoviae, die xxjx mensis Augusti Anno M. D. Lxxxviiij Regni nostri Primo.

Sigismundus Rex

Translation:

Sigismund III., durch Gottes Gnaden König von Polen, Großfürst von Litauen, Rus, Preußen, Masowien, Samogitien und Livland, durch dieselbe Gnade ebenso designierter König von Schweden, Herr des Großfürstentums Finnland.

Dem ansehnlichen und berühmten Bürgermeister mit den Ratsherrn und dem ganzen Zivilverwaltung von Riga unsere königliche Gnade. Der livländische Adel hat seine Boten zu uns geschickt, die sich im Namen des ganzen livländischen Adels bei uns heftig über euch beschwert haben, dass ihr mit eurer eigenen Autorität und zu eurem eigenen Nutzen, aber zum Schaden aller anderen Einwohner der Provinz, das Gewicht und den Wert der gemeinen Münze bald erheben, bald vermindern, je nachdem es euch nützlich ist. Und weil wir uns um das Wohl aller unserer Untertanen bemühen müssen und wir nicht sehen, mit welcher Autorität ihr es tut, befehlen wir mit Ernst, dass ihr es künftig unterlassen solltet, nach eurem Gutdünken den Wert des Geldes festzusetzen. Vielmehr solltet ihr erlauben, dass das Geld in der Stadt Riga nach seiner alten und im Provinz gewöhnlichen Schätzung gelten soll. Um unsere Gnade zu verdienen. Gegeben in Krakau am 29. August 1588, im ersten Jahr unserer Herrschaft.
König Sigismund

Appendix 7. King Sigismund III appeal to the Riga City Council, January 28, 1604:
LVVA 673-1-1283, fol. 19r. (Transcribed and translated by Kai Tafenau)

Sigismundus iij Dei gratia Rex Poloniae Magnus Dux Lituaniae Russiae Prussiae Prussiae Mazoviae Samogitiae Livoniaeque etc. nec non Suecorum Gottorum Vandalorumque haereditarius Rex.

Spectabilibus ac Famatis Burgrabis Proconsuli et Consulibus Civitatis nostrae Rigensis fid[elibus] nobis dil[ectis] gratiam nostram Regiam. Spectabiles ac Famati fid[eles] nobis dil[ecti]. Jam saepius in gravi rei monetariae perturbatione, et in Regnum nostrum improbam quamvis externam monetam importandi licentia agitata fuerunt consilia, variaeque rationes in ita de avertendo publico isto malo, et a Regno nostro gravissima calamitate, qua fortunae ipsius atteruntur in posterum prohibenda. Nullum tamen adhuc ea res successum habuit, quin in dies longius serpit ac invalescit id malum. Cui avertendo, ut consilio virorum eo in genere peritorum modus et ratio cum Regni nostri fructu inveniri et constitui possit: delegimus aliquos e Senatu nostro et Equestri ordine, iisque una cum Mag[nifi]co Regni nostri Thesaurario eius negotij constituendi provinciam demandavimus. Percommodum autem nobis visum est, ut e maritimis quoque Regni nostri Civitatibus, ijs potissimum ubi Emporia habentur delegati eam ad rem adhibeantur. Quare Fid[elibus] etiam Vestris mandamus, ut eiusdem negotij constituendi communem curam ac cogitationem suscipiant, virosque aliquos in eo genere versatos Civitatis illius nomine ad locum et tempus Commissioni illi peragenda praestitutum, de quo a Mag[nifi]co Regni Thesaurario significabitur, mittant, qui communi deliberatione ac consilio, una cum Commissarijs nostris, caeterisque eam ad rem delegatis, de nummaria ac monetaria ista ratione recte constituenda, de admittendis item aut excludendis nummis peregrinis alijsque ad negotium illud spectantibus rationibus agant et statuunt. Facturae idipsum Fid[elitates] Vestrae pro gratia nostra officiorumque suorum debito. Datum Cracoviae die xxvij Mensis Januarij. Anno Domini M^o DC^o IIII

Regnorum nostrorum Poloniae xvj Sueciae vero anno X.

Sigismundus Rex

Sim: Rudniczkj m[anu] p[ropria]

Translation

Sigismund III., durch Gottes Gnaden König von Polen, Großfürst von Litauen, Rus, Preußen, Masowien, Samogitien und Livland, ebenso Erbkönig der Schweden, Goten und Vandalen.

Den ansehnlichen und berühmten Burggrafen, dem Bürgermeister und den Ratsherren der Stadt Riga, unseren lieben Getreuen, unsere königliche Gnade. Unsere lieben, ansehnlichen und berühmten Getreuen. Bei der schweren Unordnung des Münzwesens und Freiheit, schlechte ausländische Münzen in unsern Königreich einzuführen, hat man sich schon öfters beraten und verschiedene Hilfsmittel eingesetzt, um dieses öffentliche Übel zu entfernen und das größte Unheil, wodurch das Vermögen des Reiches erschöpft wird, von unserm Königreich künftig fernzuhalten. Jedoch bis jetzt hat man damit noch keinen Erfolg gehabt, vielmehr breitet sich das Übel mit jeden Tag weiter aus und wird mächtiger. Um mit Rat der in solchen Sachen erfahrenen Männer Wege und Hilfsmittel zur Entfernung dieses Übels zum Nutzen unseres Königreichs zu finden und einzusetzen, haben wir einige aus unserm Senat und aus dem Adel ausgewählt und ihnen sowie dem großartigen Schatzmeister unseres Königreichs die Ausführung dieser Angelegenheit in Auftrag gegeben. Es scheint uns aber ganz zweckmäßig zu sein, dass aus den Seestädten unseres Königreichs, vor allem aus jenen, die Stapelplätze haben,

ebenfalls Deputierte hierzu herangezogen werden. Deshalb geben wir auch euch den Befehl, an der Ausführung dieser Angelegenheit teilzunehmen und mitzudenken sowie einige in solchen Sachen geübte Männer im Namen dieser Stadt an einen Ort und zu einer Zeit, die für diese Kommission festgesetzt werden und worüber der großartige Schatzmeister des Königreichs Bescheid geben wird, zu senden. Diese Männer sollen zusammen mit unseren Kommissaren sowie anderen dazu Deputierten gemeinsam überlegen und entscheiden, wie das Geld- und Münzwesen richtig zu ordnen sei, ob die ausländischen Münzen zuzulassen oder abzuweisen sind und wie mit den anderen mit dieser Sache verbundenen Angelegenheiten zu verfahren sei. Ihr Getreuen werden es tun, um unsere Gnade zu verdienen und ihren Pflichten nachzukommen. Gegeben in Krakow am 28. Januar 1604.

Im 16. Jahr unserer Herrschaft in Polen, aber im 10. Jahr der Herrschaft in Schweden.

König Sigismund

Sim. Rudniczkj mit eigener Hand

Appendix 8. Average measures of the Riga schillings*

Issue year	Average diameter (mm)	Average weight (g)	Number of measured coins
1582	18.89	1.056	11
1584	17.00	0.945	2
1585	17.44	0.923	5
1586	18.31	1.025	11
1588	18.60	0.915	5
1589	18.96	1.007	12
1590	18.83	0.992	10
1591	18.33	1.137	9
1592	18.40	0.988	4
1593	18.08	1.021	15
1594	18.11	1.021	17
1595	18.41	1.081	24
1596	17.96	1.011	37
1597	17.77	1.035	22
1598	17.86	1.060	97
1599	17.79	1.028	113
1600	17.91	0.996	38
1601	18.03	1.073	16
1602	17.76	1.005	5
1603	17.71	1.004	9
1604	18.00	0.924	5
1605	18.59	0.981	9
1606	18.93	1.147	3
1607	18.47	1.009	7
1608			
1609	17.69	0.925	19
1610	17.47	0.878	9
1611	17.47	0.941	6
1612	17.34	0.964	8
1613	17.23	1.033	4
1614	17.74	0.974	8
1615	17.77	0.921	7
1616	17.15	0.888	17
1617	16.59	0.925	19
1618	16.76	0.875	18
1619	16.40	0.888	16
1620	15.75	0.807	55
1621	15.39	0.727	46

* Based on the schilling collection of the Museum of the History of Riga and Navigation

Appendix 9. Catalogue of the Riga schillings (1582–1621) and list of coins*



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Catalogue no	Issuer, year	Inventory No
1	Stephen Báthory, 1582	VRVM 17239
2	Stephen Báthory, 1582	VRVM 18898
3	Stephen Báthory, 1584	VRVM 18900
4	Stephen Báthory, 1585	VRVM17242
5	Stephen Báthory, 1586	VRVM 17249
6	Stephen Báthory, 1586	VRVM 17254
7	Sigismund III Vasa, 1588	VRVM 17255
8	Sigismund III Vasa, 1589	VRVM 17258
9	Sigismund III Vasa, 1589	VRVM 17262
10	Sigismund III Vasa, 1590	VRVM 17270
11	Sigismund III Vasa, 1591	VRVM 17275
12	Sigismund III Vasa, 1591	VRVM 77146
13	Sigismund III Vasa, 1592	VRVM 17277
14	Sigismund III Vasa, 1592	VRVM 17278
15	Sigismund III Vasa, 1593	VRVM 17281
16	Sigismund III Vasa, 1594	VRVM 1407
17	Sigismund III Vasa, 1594	VRVM 17292
18	Sigismund III Vasa, 1595	VRVM 11256
19	Sigismund III Vasa, 1595	VRVM 4344
20	Sigismund III Vasa, 1596	VRVM 9223
21	Sigismund III Vasa, 1597	VRVM 17316
22	Sigismund III Vasa, 1597	VRVM 13637
23	Sigismund III Vasa, 1597	VRVM 17318
24	Sigismund III Vasa, 1598	VRVM 17330
25	Sigismund III Vasa, 1598	VRVM 17291
26	Sigismund III Vasa, 1599	VRVM 17342
27	Sigismund III Vasa, 1599	VRVM 17345
28	Sigismund III Vasa, 1600	VRVM 4343
29	Sigismund III Vasa, 1600	VRVM 83320
30	Sigismund III Vasa, 1601	VRVM 4372
31	Sigismund III Vasa, 1601	VRVM 11269
32	Sigismund III Vasa, 1602	VRVM 17363
33	Sigismund III Vasa, 1603	VRVM 17369
34	Sigismund III Vasa, 1604	VRVM 11270
35	Sigismund III Vasa, 1604	VRVM 17371
36	Sigismund III Vasa, 1605	VRVM 17374
37	Sigismund III Vasa, 1606	VRVM 17381
38	Sigismund III Vasa, 1607	VRVM 178459
39	Sigismund III Vasa, 1609	VRVM 17389
40	Sigismund III Vasa, 1609	VRVM 17400
41	Sigismund III Vasa, 1610	VRVM 17405
42	Sigismund III Vasa, 1610	VRVM 17408
43	Sigismund III Vasa, 1610	VRVM 178437
44	Sigismund III Vasa, 1611	VRVM 17410
45	Sigismund III Vasa, 1612	VRVM 17414
46	Sigismund III Vasa, 1612	VRVM 17418

Catalogue no	Issuer, year	Inventory No
47	Sigismund III Vasa, 1612	VRVM 17419
48	Sigismund III Vasa, 1612	VRVM 17421
49	Sigismund III Vasa, 1613	VRVM 17423
50	Sigismund III Vasa, 1614	VRVM 17428
51	Sigismund III Vasa, 1615	VRVM 17436
52	Sigismund III Vasa, 1615	VRVM 17437
53	Sigismund III Vasa, 1616	VRVM 18908
54	Sigismund III Vasa, 1616	VRVM 18910
55	Sigismund III Vasa, 1616	VRVM 77158
56	Sigismund III Vasa, 1617	VRVM 17446
57	Sigismund III Vasa, 1617	VRVM 77157
58	Sigismund III Vasa, 1618	VRVM 4382
59	Sigismund III Vasa, 1618	VRVM 12876
60	Sigismund III Vasa, 1618	VRVM 17451
61	Sigismund III Vasa, 1619	VRVM 11287
62	Sigismund III Vasa, 1619	VRVM 17808
63	Sigismund III Vasa, 1620	VRVM 11298
64	Sigismund III Vasa, 1620	VRVM 11307
65	Sigismund III Vasa, 1620	VRVM 11308
66	Sigismund III Vasa, 1621	VRVM 17477
67	Sigismund III Vasa, 1621	VRVM 6293

*From the collection of the Museum of the History of Riga and Navigation; photos by: Astrīda Meirāne.

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