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GENOA 1340, DOUBLE ENTRY, AND ‘GOLD COASTING’**Mikhail Kuter**

Kuban State University

E-mail: prof.kuter@mail.ru - ORCID iD: <https://orcid.org/0000-0002-8116-6680>**Marina Gurskaya**

Kuban State University

E-mail: marinagurskaya@mail.ru - ORCID iD: <https://orcid.org/0000-0002-6724-3854>**Albert Gurskii**

Kuban State University

E-mail: alicgurskii@gmail.com - ORCID iD: <https://orcid.org/0009-0008-0082-791X>**Received in the journal: November 19, 2023****Accepted for publication: April 11, 2025****Cómo citar este artículo/Citation:**

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Abstract. The objective of this study is to contribute to the existing literature on the history of accounting by expanding the knowledge of one of the most famous government account books from the medieval period kept using the double entry method. In doing so, particular attention is paid to the influence of political and religious factors on the organisation of accounting and the peculiarities of the accounting for merchandise trading. The result of a detailed study of the *Cartullarium Massariorum* ledger of the Commune of Genoa for 1340, carried out using logical-analytical modelling, is presented. That modelling method was developed for the study of medieval accounting systems. Peculiarities in the organisation of the accounting and taxation of the Commune are presented along with analyses the budget revenues and expenditures. Particular attention is paid to the accounting for goods and the apparently regular practice by the Commune of Genoa of the sale of goods at a loss.

Keywords: *Accounting history; medieval; bookkeeping; double entry; Genova; Massari*

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Introduction

Accounting information dating back to the birth of basic accounting techniques and practices, is invaluable for research in various fields of scholarship. Accounting records that accompany public finance and business are fragments of general and economic history. Government and commercial policies are fully integrated into the economic life of the region. The information contained in the ledgers makes it possible to reconstitute data on counterparties – contemporaries of the company, prices, exchange rates, the value of money and its equivalents, production processes and secrets, trade routes, business traditions, and much more, thus serving as historical artefacts. Accounting information is one of the main sources of historical reconstruction of economic events related to the activities of a company or the state as a whole for a certain period of time. At the same time, research on the history of accounting is conducted in a manner that considers the social and economic context pertinent to the period under investigation. Many studies seek to determine the influence of accounting and accounting changes on the evolution of society, and vice versa (Gomes et al., 2011: 391). It is beneficial to draw upon theoretical perspectives from other scientific disciplines, such as economics, sociology, and philosophy.

Despite the obvious importance of the study of historical accounting artefacts, the direct study of account books is not a popular activity among accounting historians. Yet, it is the archival method of research involving study of those books that makes it possible to study all the features of accounting practice, the methods used and the ways of accounting, to determine the moments of their origin and the stages of their development. In most cases, reluctance to carry out such research can be explained by the need for a thorough study of archival materials, which entails additional costs, both in terms of time and material. Archival research on account books is more often conducted by scholars of related fields.

Thus, while recognising the importance of historical accounting research, it is worth noting the relative lack of study of archival sources by accounting historians and the impact that has upon knowledge and understanding among accounting historians concerning the practices contained in those seldom studied sources, practices and procedures that have become the basis of modern accounting practice.

One of these sources is the *Cartullarium Massariorum*, the Ledger of the *Massari* of the Genoese Commune of 1340, which is rightly considered one of the most famous artefacts of accounting history. The information contained in the *Cartullarium Massariorum* is indispensable for those who want to know, for example, the peculiarities and evolution of the Genoese customs system, the tax system, the different types of special taxes levied on food and essential goods, and the peculiarities of trade in the Commune. This accounting source can also provide or assist in constructing information on the population, on diseases and holidays, on pious attitudes and religious sentiments, on the topography of the city, on the capital invested in debt, and much more, particularly when combined with other information concerning the period and place of its use.

Scholars who have mentioned the Genoese ledger include Lanfranchi (1891), Sieveking (1898), Brambilla (1901), and Bagliano (1911). And, of course, the founder of the history of accountancy, Fabio Besta. For over 30 years after Besta wrote about it in 1916 (Besta, 1922: 272), the ledger (*Cartullarium massariorum*) of the Genoese commune for 1340 was considered the earliest surviving double entry ledger, establishing Genoa as an important place in the

history of double entry accounting. A distinctive feature for nineteenth and twentieth century accounting historians was the identification of a specific date and place at which the advent of modern, i.e. double entry accounting, can be situated; and, identifying it enabled the trajectory of progress to be traced (Carmona et al., 2011: 36). In 1929, Penndorf (1929), referring to Besta's research, described the Genoese ledger in detail. Melis (1950), Zerbi (1952) and Yamey (2000) have also examined the book itself and the peculiarities of the accounting methods used. Raymond de Roover's (1956) study of medieval accounting also gives a special place to the Genoese ledger. Much attention is paid to the Genoese ledger in Martinelli's paper and thesis (1974, 1983).

More recent research has refuted Besta's view of the Genoese ledger as the earliest in which double entry was used. Following the lead of Federico Melis, who in 1950 (425, 429) stated that there was no need for accounts to be in bilateral format to be recognised as double entry, several Tuscan double entry ledgers not in bilateral format have been found from earlier periods (Lee, 1973a, 1973b, 1977; Sangster, 2016, 2024; Kuter et al., 2018; Orlandi, 2021). Despite this change in its status for accounting historians, the *Cartullarium Massariorum* of the Genoese government of 1340 remains of special interest in the history of double entry accounting.

Previous studies of the *Cartullarium Massariorum* noted that one of the economic activities of the commune was the sale of goods to various buyers and drew attention to the fact that the sales of goods were mostly at a loss (Zerbi, 1952: 191-3; Martinelli, 1983: 90-7; De Roover, 1956: 132-3; Melis, 1964: 376; Yamey, 2000: 8). Among them, De Roover (1956: 132-3) suggested that the Genoese commune bought goods on credit and resold them immediately at a loss in exchange for cash, which may have been a way for merchants to profit from their official position. Such a transaction, according to de Roover, also allowed the Church's laws against usury to be circumvented.

Yamey (2000: 8), recalled a type of transaction that in the twentieth century was known as 'Gold Coasting', where a merchant bought goods on credit for a long period of time and immediately sold them for cash, taking a loss. Provided that he used the proceeds in profitable activities in the interim before he had to pay off the lender, he could end up with a bigger profit than if he had instead borrowed money to finance these interim activities.

Melis (1964: 376) suggested that the Commune received goods in settlement of debts by counterparties and converted them to cash. But even here Yamey (2000: 12) notes that the dates of transactions involving the sale of goods in the examples published by many authors point more to 'Gold coasting' as an explanation.

Research objective and methodology

The objective of this study was to contribute to the existing literature on this topic, and to the history of accounting, by expanding the knowledge of one of the most famous governmental double entry account books from the medieval period. In doing so, particular attention is paid to the influence of political and religious factors on the organisation of accounting and the peculiarities of accounting for merchandise trading. To achieve this objective, a comprehensive study of the accounting system used in 1340 in the commune of Genoa was carried out. This analysis used the method of logical-analytical modelling (Kuter et al., 2024: 42) combined with a historical approach to contextualise the environment of the period under study.

The logical-analytical model of the accounting system of the Commune of Genoa confirmed that the accounting system had merchandise accounts and accounts for the accumulation of

losses from the sale of goods, but there were no accounts for the accumulation of profits from the sale of goods. A detailed analysis of all the facts related to the sale of goods in the special accounts confirmed that all consignments of goods were bought in instalments and soon sold at a loss. We have studied the opinions of scholars who have described similar situations in medieval practice and directly on the example of Genoa. By applying our research method, studying the historical context, the religious and theological influence on people's worldview, analysing the political and economic situation in the Commune during the period under study, we were able to offer and justify our own opinion on the reasons for selling goods at a loss. This question became the main subject of research. The main original and primary source used for this analysis is the archival document *Cartullarium Massariorum*. In the course of the investigation, three activities were prioritised:

1. Literary and documentary sources describing the history of the Genoese Commune were studied. Particular attention is paid to the study of the political situation in the Commune, as it had a direct influence on the organisational and administrative structure of the city. It examines the tax system and the organisation of fundraising in the Commune, the understanding of which enabled the analysis of the structure of the revenue generated. We studied the influence of various factors on the accounting procedure in the Commune of Genoa, including the socio-political contexts that gave rise to and favoured the development of the accounting practices applied.
2. A detailed analysis of the accounts and accounting system of the Genoa Commune for the year 1340 was carried out using the method of logical-analytical modelling and reconstruction of archival documents. The application of this method made it possible to link the entire accounting system into a single model of accounts, to analyse their structure and interrelationships, to identify the sources of revenue and directions of expenditure, and to understand the complex system of internal and external settlements without the use of the Cash account.
3. The literature describing the Genoese Commune Ledger under study was reviewed. The authors' hypotheses explaining the sale of goods at a loss have been analysed. We have tried to pay particular attention to the views expressed by de Roover (1956) and Yamey (2000). A particular focus was placed on the matter of selling merchandise at a loss in all commercial transactions conducted by the Commune. Furthermore, we have sought to provide our own rationale for that.

The following sections present a review of the historical context of the study, a concise historical overview of the ledger under study, and a description of its structure and contents. Subsequently, the findings of the reconstruction of revenue and expenditure accounts in the ledger through logic-analytical modelling are presented in detail, and the tax system in the commune and its impact on the structure of revenue and expenditure are discussed. Analysis focus on addressing the research question – the non-profitable nature of the sale of merchandise – is presented, along with assumptions made and their justification. The discussion section provides a comprehensive account of the interconnections between the preceding stages and outcomes of the study, offering a detailed explanation of the underlying reasons for the Commune's unprofitable trading operations. This is achieved through a meticulous examination of the Commune's governmental bookkeeping system and the historical context.

The primary contribution of this paper is to expand knowledge of one of the most famous governmental double entry ledger of the medieval period. A detailed study of the ledger, using the approach adopted and embracing the historical context, allowed explanations to be identified and justified for the unprofitable trading operations of the Commune, revealing the specific influence of various political, economic, religious, and theological factors on both the day-to-day activities of the Commune and on the organisation of the accounting and communal trading.

Historical background

The Republic of Genoa or the Republic of St. George – *Serenissima Repubblica di Genova* – was a state in Liguria on the northwestern coast of Italy, the beginning of which can be considered the independence of the city of Genoa in the 11th century, existed until 1797, until the invasion of Napoleon.

At the end of the 11th century, the municipality of Genoa adopted a constitution, in an assembly composed of the city's trade associations (*compagnie*) and the lords of the surrounding valleys and coasts. The new city-state was named *Compagna Communis*. From the 11th century to 1528 it was officially known as *Compagna Communis Ianuensis*, the *Compagnie Communis* Genoa (Hyde, 1973). Thus, the term Commune can be interpreted as an amalgamation of the institutions that constituted the Genoese state. These included the full assembly of those entitled to participate in politics; the local ecclesiastical structure; the public debt; the offices and political institutions that facilitated elite participation; and the pacts of concord that ensured the peaceful state of the city (Manke, 2019: 265).

The Commune developed actively from the 11th century onwards, thanks to its fortunate location on the shores of the Ligurian Sea, participation in the Crusades, and to the development of seafaring, which in turn favoured the flourishing of maritime trade and subsequently the expansion of many territories on the shores and islands of the Mediterranean, Marmara, and Azov seas, as well as the modern territory of Crimea (the northern Black Sea coast). The Genoese Republic and its overseas colonies were united into the Genoese Empire.

In the first half of the 14th century, during the period covered by the study, Genoa was the second largest city in Northern Italy. Its economic vitality is indicated by the scale of its commercial activities and organisational innovations. It is crucial to acknowledge the widespread influence of pioneering innovations, including double entry bookkeeping, insurance, nautical charts, winter sailing, and the use of gold coinage. Genoese also dominated direct trade between Europe and the Far East and were the first to cross the Atlantic to the Far East (Greif, 1994: 284).

As far as trade is concerned, it can be said that commercial activity flourished in the Commune. The large number of notarial deeds that have been preserved from the second half of the 12th century to the end of the 14th century allows us to conclude that everyone in Genoa was involved in trade, people of different professions and social status: consuls, aristocratic feudal lords of the *Contado*, entire merchant dynasties, shipowners, bankers, small craftsmen and merchants, theologians, monks, and finally, notaries themselves. Genoa can be considered an important centre of international trade in the period under consideration, where merchants from many Italian cities and some European countries gathered to buy goods from the East, industrial raw materials and to sell their industrial products.

Until approximately the middle of the 12th century (as evidenced by the early *notulary* of Giovanni Scriba), the focus of European merchants was almost exclusively on Levantine

products, including spices, luxury goods, and oriental exotics. However, from the second half of the 12th century, and especially in the 13th-14th centuries, European-made fabrics began to gain significant market share in Genoa. Initially, this was driven by the influx of cloth from Flanders, inexpensive woollen fabrics from Lombardy, German and Champagne cloth, as well as raw materials for the textile industry (alum, dyes, wool). Subsequently, imports of French and English cloth also became increasingly prominent (Chursina, 1977).

Despite relative independence, stability was undermined throughout its existence by regular struggles for commercial advantage with Pisa and the Republic of Venice, as well as by internal instability and political fragmentation. The structure of government, and consequently the organisation of internal and external trade, was influenced by the constant disagreements between the main political rivals, the *nobili* (noble families), and the *popolo* (the wealthy but not noble classes)¹. Historians count more than seventy coup attempts and three civil wars between 1257 and 1528. During this period, Genoa lost its independence several times, and more than once the republican system was replaced by a monarchical one. The struggle between the Guelphs and the Ghibellines², which affected almost all of Italy, was not unaffected (Epstein, 1996).

The activities of the Commune before 1339 can be conceptualised as a collection of institutions, each of which played an important role in its functioning (Manke, 2019: 65):

(1) the people entitled to participate in politics, whose competition in this arena periodically led to factional struggles, to a greater extent the *nobili*;

(2) the Ligurian Church, which served as a source of legitimacy for this group to participate in politics and governance;

(3) the public debt and the means to pay the interest on it;

(4) the offices and political institutions created to control the above factor;

(5) the settlement of disputes and political differences between factions and to ensure the continued existence of the entire communal system.

In 1339, a new system of government was established in Genoa by a coup d'état: the election of a doge, who was chosen by the people, *popolo*, to govern the republic and was an authoritative figure in the Genoese Republic. The Doge had a Council of Elders, which represented the *Alberghi*, the associations of the noblest and richest families of Genoa, controlled the affairs of internal trade and considerably limited the power of the Doge. The government structure also included an *Extraordinary Council*, made up of the heads of the districts and representatives of the shops, which solemnly approved the most important decisions (Tafur, 1874). The first Doge, elected in 1339, was Simone Boccanegra.

¹ As elsewhere, in Genoa there was a sharp contrast between the elite and everyone else. The term *nobili* (*nobiles*) was adopted to denote the elite group. The non-elite of medieval Italy is commonly referred to as *popolo*. This term encompasses the broad strata of society. In some sources the term *mercantes* is used to denote rich, politically active members of the *popolo*. It should be noted that *nobili*, as well as representatives of the *popolo*, were engaged in commercial activities and participated in the political life of the city.

² The period under study in modern Italy was characterised by constant confrontation between the imperial and papal authorities, which divided most of the local population into supporters of one side or the other. On the side of the Emperor were mainly the local feudal aristocracy, whose party was called the *Ghibellini*. The side of the Papacy was represented by the opposing party, the *Guelfi*, who were mostly merchants, traders and artisans. Although there were many nobles among the *Guelfi*, they supported the papacy and the orders that the *Guelfi* party sought, namely freedom from feudal dependence and economic autonomy, which favoured the development of private enterprise.

The new ruler sought to impose the greatest possible limitations on the political activity of the nobility and, most importantly, to achieve financial stability for the Commune. To understand the economic context of the Genoese Republic in 1340, it is necessary to consider its financial system.

The Genoese Republic obtained financial support from several different sources. The three main ones were the public debt, the sale of communal taxes and the taxes included in the cost of common products and necessities (salt, wine, bread, grain, meat and fish, chickens and pulses, cheese and candles, wood and hay, etc.). – indirect taxes on consumption. Less significant revenues can be recognised as the revenues of the colonies and subordinate cities, which go to the budget, court fees and other revenues. The most significant and important source of finance, backed by the political participation of creditors, must be recognised as public debt.

Public debt was a common financial instrument in the fiscal systems of many Italian states in the High and Late Middle Ages. The communes and republics of northern and central Italy were usually financed by raising long-term public loans from wealthy citizens, mostly *nobli*.

The need for such loans arises from the growing deficits in government budgets, largely caused by military spending. The money raised was intended to meet the short-term need for large amounts of cash. Interest on public debt was paid from the proceeds of indirect consumption taxes and customs duties, as well as direct duties on subject territories (Lizzul et al., 2022).

In Genoa, this method of borrowing, which determined a large part of the public finances of the Commune in the Late Middle Ages, was called *Compera*. A *Compera* could be named after the tax from which payments were to be made, the purpose of the revenue, the place where the loan contract was concluded, the name of a saint, etc. (Gioffrè, 1967: 19). The commune encouraged public debt by promising to pay *Compere* members a percentage of their contribution, usually 8 or 10 per cent, in four instalments each year. This payment (*paga* or *proventus*) was financed by one or more communal taxes. From at least 1300 onwards, *Compere* shares and their associated payments were hereditary and freely transferable to third parties (Miner, 2020). It is worth noting that Genoa's public debt reached a record 2,862,757 lire in 1340 (our period of study) (Giofre, 1967: 43; Epstein, 1996: 303). The *popolo* government was keen to reduce the amount of debt owed to the nobility. The creditors had a great influence on the political decisions made in the Commune. And more borrowing meant higher interest costs on those debts.

The system of selling the revenue from taxes was also widespread in medieval Europe. So-called tax auctions, where the right to collect a particular tax was bought in advance. For example, Genoa often sold some of the profits from the salt tax to fight overseas wars to support an ever-expanding trading empire. Control of this debt meant that an individual could gain access to political power in the city.

In 1340, auctions were legislated by the *Consilium Generale*. Only the revenue that could not be sold was retained by the Commune. The system of auctioning taxes was recommended to the government because it gave it a secure figure for each tax, and the auction, that is, the sale of the tax for the year, took place at the risk of the purchaser, who, even if his revenue was reduced because of the war, still had to pay the government the agreed amount (Sieviking, 1906: 110-12).

In addition to the political and economic factors that shaped life in the Genoese commune, it is imperative to consider the religious, moral, and ethical norms that accompanied the existence and activities of medieval man.

The entire existence was shaped by the tenets of religious canons. His understanding of the world was informed by the tenets of the Church, shaped by a fear of committing sin and a belief in the necessity of atoning for sins after death. Any activity connected with trade or the growth of capital was viewed with disapproval. The concept of money was not inherently viewed as either good or evil. The nature of the use of an object was the determining factor in its classification. If money incites greed or facilitates sinful actions, it may be considered malevolent. If money is spent in accordance with pious intentions, it is treated accordingly (Gurskaya, 2022: 69-70).

The concept of usury, defined as the prohibition of any excess beyond the initial cost of debt, represented a significant challenge for all western European states during the High and Late Middle Ages. The practice of incurring public debt, which involved the payment of interest as an incentive, contributed to the participation of the general population in the sin of usury (Munro, 2008: 506).

The Church's prohibition of usurious interest rates was based on the teachings of Christ in the Gospel of Luke (6:35), which states, "Loan money without expecting anything in return" Additionally, the concept of the contract of loan (*mutuum*) was classified as necessarily gratuitous under Roman law. Consequently, in 1179, Pope Alexander III threatened every usurer with excommunication, and in 1215, Innocent III censured the Jews for taking interest. Furthermore, in 1236, Gregory IX condemned Roman sea loans as usurious, and in 1311, Clement V declared any secular law allowing usury as void (Giario, 2021: 177).

The practice of lending money with the expectation of repayment after a specified period of time and the addition of interest was regarded as a form of selling time. Time belongs to God (and God alone), the sale of time was considered an unacceptable and sinful act (Walsh, 2024). The practice of usury was regarded as a grave moral transgression. In Dante Alighieri's *Divine Comedy*, usurers are depicted in the seventh circle of hell, with purses hanging from their necks (Dante: 63-65). The coats of arms displayed on the purses enabled the identification of notable individuals from the period who were engaged in usury. In their sermons, preachers frequently cautioned their congregations against pursuing activities that were deemed ungodly. Those engaged in usury were deprived of the right to a normal life, denied the rites of the Church, forbidden to leave sinfully acquired property as an inheritance, and finally excommunicated (Munro, 2008: 507). However, historical evidence demonstrates that the human desire for increased wealth is an enduring and unstoppable force. The practice of charging interest was often disguised as gratitude, presented as an agreement to default on a debt, explained as a loss of profits, or simply presented as a large sum to be repaid without any further explanation (Munro, 2008: 511).

Theologians came to the aid of states and citizens, and in their writings they tried to reconcile the laws of the Church and the real economic situation - to unite reason and faith (Januard, 2021). Theological treatises considered gratitude, cost recovery, and lost profit as justifications for charging interest. Investment in business ventures, rents from property leases (Munro, 2008: 509), and public debt were not subject to the prohibition. The latter was explained by the fact that the loan was not voluntary in the first place, but was taken out for the needs of the state, which was a common good.

The common good, another feature of medieval life. The middle of the 12th century saw the so-called reception of the teachings of the ancient Greek philosopher Aristotle, which had a profound influence on the medieval approach to many of the sciences of the time and laid the foundations for modern science. Thanks to the medieval Roman Catholic scholar and theologian Thomas Aquinas (1265-1274: 1271), Aristotle's political philosophy was perceived as based on Christian faith. The works of St Thomas Aquinas, uniting reason and faith, became the basis of official Roman Catholic doctrine ('Thomism') (Januard, 2021).

St Thomas Aquinas' approach to the concepts of social life and governance is important for our study. Following Aristotle, he believed that it should be natural for human beings to be in society and that society should be governed for the common good (Dobie, 2016). Thomas Aquinas saw government (the governance of society) as working for the 'common good,' which benefits everyone. The 'common good' included things like protecting life, preserving the state, and promoting peace (Aquinas, 1271).

The social life of the medieval state was therefore significantly influenced by a wide range of different factors. These included political events that periodically changed the structure and approaches of government, the peculiarities of local economic life, and the influence of church doctrine and theological justifications of life.

The *Cartullarium Massariorum* (1340)

As already mentioned, the organisation of the state system of Genoa changed in 1339 and the first Doge was elected. This new political system sought, first and foremost, to serve the needs of the *popolo*. Simone Boccanegra tried to restructure public spending. Although he was unable to reduce the accumulated public debt, he created a new structure for future spending. During his reign, a number of administrative apparatuses were organised to pay for public expenditure with money from the Commune's budget. In an effort to win the support of the *popolo*, Boccanegra introduced the purchase of grain and essential goods at public expense. The first established office was the *Communis Ianuae massaria* (Manke, 2019: 4, 153).

It is to the activities of this office that the account book discovered in 1865 by the then director of the archives of the Bank of St George (*Casa di San Giorgio*)³, the historian and humanist Cornelio Desimoni (1889: 600), has aroused great interest among historians in general, as well as economic and accounting historians.

The ledger is currently in the State Archive of Genoa (*Archivio di Stato di Genova*). In fact, the State Archive of Genoa keeps two of the oldest Genoese double entry account books, the *cartulari* (paper, bound) of the Commune of Genoa: one is the already mentioned *Cartullarium Massariorum* (1340) and the other is the *Cartularium magistrorum racionalium*⁴. The second document is a compilation of about twenty fragments belonging to different account books belonging to different departments, for the period 1340-1357. The *Cartularium magistrorum racionalium* refers to a specific sector of the Genoese state budget, mainly related to the armament of the galleys and other military expenditures, which were provided for by special revenue items. In other words, it concerns the management of one of those autonomous state enterprises into which the administration of public affairs was so often divided in medieval states (Zerbi, 1952: 186). However, it is the main book of *Cartullarium Massariorum* that we are interested in.

³ The world's first commercial bank in the modern sense, established in 1407 in Genoa.

⁴ Archivio di Stato di Genova, 1340. *Antico Comune. Cartularium magistrorum racionalium*.

The ledgers for the previous period have not survived. It has been suggested that the account books of earlier periods were burnt in a fire that occurred in 1339 in Piazza San Lorenzo during the riots associated with the change of political regime in the commune (Desimoni, 1889: 600, Yamey 2012: 23). Unfortunately, the account books of later periods have not survived either. However, the presence of incoming and outgoing entries in the book of 1340 suggests their existence in the past and the application of the principle of closing and opening ledgers for each accounting period.

It is worth noting that the calendar in Medieval Europe did not coincide with the modern perception of it. New Year began at different periods in different cities and regions. In Genoa, for example, the calendar year began on March 1, while the fiscal period that we studied, for which the Ledger was opened, began on March 6, 1340, and ended on March 5, 1341. This has to do with the assumption of office by *Massari* and the timing of its termination.

The ledger under study is a voluminous paper account book, numbered in the top corner of each sheet up to carta 240. The accounts are arranged in 238 sheets. The book contains a total of 476 pages (*carta*). There are two pages, a front page (*recto*) and a back page (*verso*). The book is badly damaged by moisture, which has made it unreadable in some places, and our examination was accompanied by using a Wood lamp⁵.

A very important feature of the Ledger is that dual accounts with debits and credits symmetrically arranged on the same sheet are used here. Each account was controlled by a balance or by an equality of debit and credit totals. Transactions were recorded by double entry, indicating the location page of the correspondent account.

The *Cartullarium Massariorum* presents the *Massari* accounts. *Massari* were managers, who managed the central treasury services. It was an elected position for which officials were elected for a term of one year. At the end of their term, they had to hand over their powers, which included controlling the availability and movement of cash and other assets to their newly elected successors. This meant that the cash balances of the commune had to be determined at least once a year. Such political and accounting control contributed to the development of accounting procedures of the Genoese financial system (Mills, 1994: 87).

The *Massari* accounts functioned instead the Cash accounts: the cash in and cash out was recorded entirely in the personal accounts of the employees, without the use of a Cash account. *Massari* collected public money, made the corresponding payments, and had to account for all the money that passed through their hands. Consequently, their account books reflected the entire operating cash activities of the Genoese Commune. They could not make any payment unless they were presented with a document written by the Chancellor, signed by a notary *magistro rationale*, and affixed with the three seals: those of the doge, the elder, and the *magistri rationales* (Polonio 1977, Sieviking, 137).

As the logical-analytical analysis showed, several personal accounts were opened at the same time for each *massaro*, depending on the conditions of repayment of the debts. In this way, the accounting system did not keep records of money, but of the *Massari* cashiers' debts to the Commune and their transfer of money for the Commune's expenses.

Massari collected money from buyers and also received money from the distributors of budgetary revenues (areas of expenditure). It is likely that specific debtors and creditors were assigned to each *massaro*. Debt accounts were opened and sums were accumulated against

⁵ Ultraviolet Light Lamp - Named after its inventor, Robert Williams Wood. It is used in forensics, medicine, banknote authentication, restoration and restoration of historical documents.

specific debts, in order of maturity. At the same time, money was varied between individual debts (accounts). *Massari* were also able to transfer money to each other. It was not the creditors assigned to them that were more important, but the repayment of the total debt.

As indicated on the title page of the *Cartularium*, there were two *Massari* cashiers: *Christianus Lemellinus* and *Dominic de Garibaldo*. However, another *Massari* representative, *Paschilis de Furneto*, should also be mentioned. During the period under review (from 6 March 1340 to 5 March 1341), the largest number of personal accounts were opened in his name - twenty-four, compared with only nineteen for *Domenico de Garibaldo*, for example.

In addition to the *Massari* accounts, the Ledger contains the accounts of the magistrates, recipients of tax revenues and intended to service public loans, accounts of other departments of the municipality, the Doge account, accounts of settlements with the military, accounts of other expenses for the maintenance of the Commune, and salaries and allowances. The account book contains many merchandise accounts; for example, these are accounts of wax, pepper, silk, salt, sugar, grain, expense and loss accounts, revenue accounts, and the Commune of Genoa account, which forms a consecutive line by transferring balances from a fully filled page to a new one. The Commune Account, expense accounts, and revenue accounts transfer their indicators to the general *Conto riepilogativo del Communis Janua* or *Communis Janua*, where all revenue received and expenses incurred are compared and a budget deficit is identified, which is transferred to the accounting system of the following period (Desimoni, 1889: 601, Zerbi, 1952: 188–9, Martinelli, 1983: 85).

The entries in the accounts were kept in Latin. The first debit entry in each account always begins with *debet nobis pro*, and the first credit entry with another expression *recepimus in*. Subsequent entries for the debit and credit of an account begin with the word *item*, which means "the same", without repeating the opening word of the first entry. In each entry, before the amount debited or credited, there is a reference to the ledger sheet where the cross entry was made, with a sentence such as *unde nobis in isto in ...* or "as recorded in this ledger in sheet ...", *unde nobis in alio cartulario novo de 1341 carta* or "as recorded in another new ledger of 1341, carta" when the balance of the account has been transferred to the new ledger of the following year, and with the expression *unde nobis in a/io cartu/ario vetero de 1339, carta ...* or "as placed in another old ledger of 1339, carta ...", when the opening balance of the account has been transferred from the ledger of the previous financial period (Zerbi, 1952: 54; Martinelli, 1983: 86).

Some scholars (Sieviking, 1906: 65; Besta, 1922: 282; Reynolds 1951; Martinelli, 1983: 85–88; De Roover, 1956: 131, 133) conclude that the double entry method was used in the accounting system of the Commune of Genoa long before 1340. This is explained by the introduction of legislation preventing fraud that had already been committed in relation to the financial statements and revenues of the Commune of Genoa. Thus, to strengthen administrative controls and prevent fraud, double entry bookkeeping was ordered. The documents of 1327 state the obligation to keep books according to this method, calling it *ad modum cartularu banchi*, that is, the method of the bankers. (Martinelli, 1983, p. 85). It is important to note here that the Genoese Commune was the first state known to have adopted the double entry method in governmental bookkeeping. Until the middle of the 16th century, there is very little evidence of its use in government. Its use in governmental bookkeeping was documented in 1567 in Seville and in 1583 in Naples (Hernández Esteve, 1992: 663; Martínez Ruiz, 1988: 335), in 1628 in Venice (Zambon, 2000: 367) and in 1643 in Stockholm (Ten, Have, 1956: 245).

Finally, concerning the monetary system of the Genoese commune and its accounting manifestation. Genoa, like many other European cities of that time, used a monetary system introduced by Charlemagne's reform, which included a pound (*lira*) of silver divided into 20 shillings (*soldi*) or 240 (pence) *denari*. The *lira* and the *soldi* were money of account, not real money. In 1252, at the same time as Florence, the first gold coin was minted in Genoa – the *genovino*, which weighed 3.5g. In 1340, the legal and commercial exchange rate for the *genovino* was 1 to 1.5 *lire* (25 *soldi*). Silver coins in circulation were *denari* issued by the Mint of Genoa. The last silver genoa *denari* were minted by Doge Simon Boccanegra in our study period of 1339-1344. Later, a mixture of metals, mainly copper, was used to make *denarii*. Also, during the reign of the first Doge, the practice of indicating the name of the ruler of the period in which the coins were minted on the coin was introduced. In the Ledger under study, the accounts were kept in money of account (*moneta di conto*), which was the *lira di conto di genovino*. The use of money of account was a common practice in medieval trade, in making settlements, and for bookkeeping (Einaudi, 1953; Cipolla, 1956; Goldthwaite & Mandich, 1994). As can be seen in the study account book, Massari made full use of the advantages of this system, not even introducing the Cash account into bookkeeping, but conducting all settlements in personal accounts.

The use of modelling and computer reconstruction of archival documents in the study of High and Late Medieval ledgers and the Genoese *Cartullarium Massariorum* itself

The main special method employed for a comprehensive examination of the accounting system of the Commune of Genoa was the logical-analytical modelling and the reconstruction of medieval accounting systems. This method was invented by one of the authors over fifteen years ago, has been successfully applied ever since, and has been validated on the accounting systems of various companies in Tuscany, Venice and divisions of Tuscan companies in other countries and regions. We recognise the method presented as an innovation for the study of medieval accounting documents. By innovation in accounting history, Cordery et al. (2023) mean the possibility of introducing new objects and ideas into accounting history research or using new approaches to the study of accounting history.

The objective of the method is to establish a unified representation of all business transactions recorded in one or more account books included in the accounting system of a specific company. The accounting complex frequently comprises a specific set of ledgers, frequently interconnected, opened for each distinct accounting period. The application of this method allows for a comparison of the results of research by time, territory, and forms of ownership, as well as the identification and analysis of the distinctive features of early accounting systems.

For the purposes of this research, a detailed study of the accounting system of the Commune of Genoa was conducted, including the reflection of business transactions in the ledger (Appendix). The accounting system of the *Cartullarium Massariorum* ledger account book was modelled. All accounts were linked into a single computerised system. The system of revenue and expenses accounts of the Commune was divided into levels in relation to the main account of the system, *Communis Janua*, the summary account of revenue and expenses of the Commune of Genoa. The model was initially formed from revenue accounts (from recognised tax revenues to tax collectors and revenue sources whose accounts were at the following levels) and from recognised expenses and losses accounts to their origin (expenditure on the commune, Doge, castles, losses from the sale of goods and foreign exchange transactions, etc.). At certain

points, the personal accounts of the different levels of the system overlapped and were subsequently linked into a single system in which expenditure was met from the revenues generated.

The creation of a computer model of the medieval accounting system has greatly expanded and deepened the research. First, this has allowed the accounts to be subdivided into several levels on the model, which we will examine in more detail (Appendixes).

On the first level is the main account "*Communis Janua*", or Summary account of revenues and expenses of the Commune of Genoa, located on carta 119v.

At the second level, 8 accounts should be distinguished: 7 revenue source accounts and the identified deficit account of the 1340 estimate. This level can be called the revenue carrier level.

The third level contains the accounts of the distributors of budgetary revenues (areas of expenditure).

The first-, second-, and third-level accounts refer to the accounts of the header fragment of the model. The accounts on levels four and the following relate to specific parts of the model. The number of sub-items depends on the number of process lines, which are determined by the number of employees who are entitled to a salary.

The fourth level is usually the invoices of the suppliers of goods.

The fifth level is the accounts of buyers of goods who prepay for purchases at a price below their full value. They transfer the money for the goods to *Massari*.

The sixth level contains the accounts of *Massari*.

The seventh level contains the accounts of the employees of the Commune who are entitled to a salary. These accounts are normally located between the current expense accounts *El "Expensarum dicti communis"* and the accounts receivable of the *Massari*. The expenses accounts correspond to the credit of the personal accounts of the employees of the Commune. The expenses accounts are used to record salary expenses, and the personal accounts are used to record salary liabilities. If there are funds available in the respective *Massari* accounts, the arrears are settled, and this is reflected in the credit of the *Massari* account and the debit of the personal account of the employee.

The eighth level of accounts is the accumulated expenses accounts of the Commune by type of expenses. There are 17 expenses items in the estimate.

This approach allowed a complex system to be broken down into its constituent elements, analysing both the individual relationships between the elements and highlighting the accounting processes and procedures, thereby providing an insight into the system from the inside.

Communis Janua, or Summary account of revenues and expenses of the Genoa Commune, can be safely recognized as the most important account of the accounting system (Figure 1). It can probably be argued that this is the first surviving estimate in the double entry system. The governors had to see what revenues the Commune earned (credit of the account) and how much it spent and for what purposes (debit of the account). Figure 2 shows a reconstruction of the economic account – the municipality's estimate; its analysis is necessary for further research (Kuter at all, 2013).

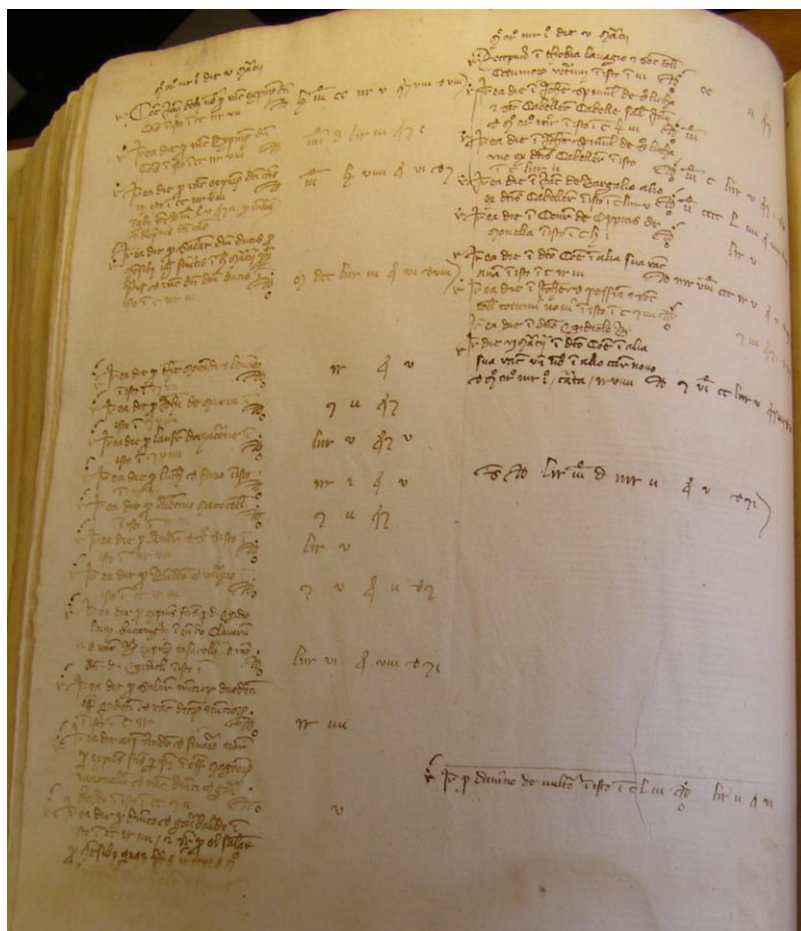


Figure 1. The *Communis Janua*, or Summary account of revenues and expenses of the Commune of Genoa 1340 r., carta 119v⁶

The account is entirely on page 119v, with debits and credits. The debit of the account shows the expenses of the Commune - 18 items of expenses, and the credit of the revenues received – seven items of revenues. The expense amounted to £73,542 s. 5 d. 11, each type of expenditure we were able to identify except for one figure of £127 s. 10 (it was determined by calculation). The revenue of the municipality amounted to £57,256 s.7 d.6. At the close of the account, a budget deficit was identified, which is recorded as a balancing figure to the credit of the account of £16,285 s. 18 d. 5 and at the same time this figure is moved to page 29 of the new Ledger for 1341, which is not known to have survived.

⁶ Archivio di Stato di Genova, 1340. *Antico Comune. Officium Massarii. Cartullarium Massariorum.*, c. 119v

<i>Communis Janua</i>				
	D		C	
c. 237v. Expensarum dicti communis	→	63,235.18.8	202.10.0	← carta 3v. Thobia Lavagio
carta 238r. Expensarum dicti communis	→	4,573.11.0		
carta 238v Expensarum dicti communis	→	3,069.6.10		carta 163v(1). Johan Spinola e Jacobus de Bargaglio
D carta 133r. Dominus Dux C			3,000.0.0	←
1,783.6.8	→	1,783.6.8		
D carta 17v. Thomas Morandi from Levanto C				carta 182v. Iohanne Spinula de Sancto Lucha C
20.5.0	→	20.5.	3,185.11.5	←
D carta 19r (3). Thome Iohanni de Murta C			3,185.11.5	
12.10.0	→	12.10.0		
D carta 19v. Lanfranco Drizacorne C				carta 185r Iacobo de Bargaglio C
85.15.0	→	85.15.0	2,454.9.3	←
D carta 26v (I). Lucha de Facio C			2,454.9.3	
31.5.0	→	31.5.0		
D carta 26v (4). Albertino Marocello C				carta 161r (5). Conrado de Oppicis de Monelia C
12.10.0	→	12.10.0	75.0.0	←
D carta 27r (3). Andree de Sancto Sisto C			75.0.0	
75.0.0	→	75.0.0		
D carta 224v (5). Benedicto de Varixio C				carta 123r (2) Communis Genua C
15.2.10	→	15.2.10	48,325.5.3	←
D carta ??? Egidolum C			48,325.5.3	
86.8.11	→	86.8.11		
D carta 120v (3) C				carta 114r (2). Iohanne de Pessina C
24.0.0	→	24.0.0	3.11.7	←
D carta Andrea de Finario C			3.11.7	
5.0.0	→	5.0.0		
D carta 224v (5) Dominico de Garibaldo C				
62.10.0	→	62.10.0		
D carta 225 Petrus Caparragie C				
250.0.0	→	250.0.0		
D carta XXX C				D carta 29, 1341 C
127.10.0	→	127.10.0	16,285.18.5	→
D carta 153 V (2) Danino de Vulturo C			16,285.18.5	
72.6.0	→	72.6.0		
		73,542.5.11	73,542.5.11	

Figure 2. The reconstruction of the *Communis Janua* account, carta 119v

Considering the revenue and expense account indicators in more detail, since it is the revenue part of the budget that ensures the viability of the city, it was possible to identify each type of revenue received by the city in 1340.

Analysis of the data presented in the *Commune Genoa (Communis Janua)* account

Commune's revenue structure

In the detailed analysis of the *Commune Genoa* account, an information model for the generation of revenue indicators has been constructed and is presented in the Appendix. This model allows each indicator of the linked accounts to be considered from the general (accumulated revenue indicators) to the particular (cause of occurrence and distribution). The generated model of the revenue side of the budget is placed in two charts. The first chart (Figure 1 in the Appendix) shows the first three revenue streams, the second chart (Figure 2 in the Appendix) shows the remaining four revenue streams as well as the so-called budget deficit, the difference between revenue received and expenses incurred, which has been transferred to the new commune account in the accounting system for the next year 1341. As a reminder, the first level is the *Comune Genoa* account itself.

At the second level, a section of revenue accounts and the account of the identified deficit of the estimate of 1340 can be identified. These accounts include the accounts we have identified as:

- R1 – 3r(5) *Thobia Lavagio*;
- R2 – 163v(1) *Johan Spinola e Jacobus de Bargaglio*;
- R3 – 182v *Johan Spinola*;
- R4 – 185r *Lacobo de Bargaglio*;
- R5 – 161v(4) *Comrado de Oppicis de Monelid*;
- R6 – 123r(2) *Comune di Genova*;
- R7 – 114r(2) *Iohanne de Pessina*.

When modelling accounting systems we use special account coordinates, say 163v(1) "*Johan Spinola e Jacobus de Bargaglio*", set as follows: **163** is the *carta* (page) number in the Ledger, **v** is the *verso* (reverse) side of the carta, **1** is the fragment number on the *verso* sheet, as there are often cases where several accounts are open on the same page, "*Johan Spinola e Jacobus de Bargaglio*" representatives *compere di sale*, responsible for collecting the tax on salt; or 123r(2) "*Comune di Genova*" – **123** is the *carta* number in the Ledger, **r** is the *recto* (face) side of the carta, **2** is the fragment number on the *recto* sheet, "*Comune di Genova*" – the account is open for revenues and other revenue received directly without intermediary compere.

Accounts correlating with second-level accounts will have clarifying coordinates, e.g. **R2.1** to 141r(1) *Carlinus Fulzonus*, next fourth-level accounts **R.2.1.1** to 136v(3) *Francesco di Bologna* and so on. Such refinement helps in the modern reconstruction of medieval accounts and their modelling.

An analysis of the accounting system showed that the revenue part of the commune budget was formed mainly from tax revenues, but also from district revenues, court fees, and other revenues. The right to collect basic taxes was delegated to associations of interested persons (*compere*) and their representatives. The *Compere*, as described above, were formed from public debts received from wealthy citizens to replenish the working capital of the Commune at a certain rate of interest. All public debt received was secured by tax payments that were used to repay the interest. It is important to note that in most cases the loans were involuntary and may never have been repaid, nor was the interest paid regularly (Miner, 2020: 77-8). In the accounting system, the *Johan Spinola e Jacobus de Bargaglio* account (R2 – 163v(1)) is an example of such receipts from *Compere di sale* representatives.

The topic of taxation of the Genoese commune during the period under study is rather complex. The results of the research carried out are often contradictory. The fact is that the tax system changed regularly. The taxation process has never had a fixed, regular structure. The main terms for special purpose taxation were *dispendium* or *spendium*. In most cases, the

purpose for which the money collected is intended (forthcoming expenditure) gave the name to the tax itself. In addition, taxes could also be denoted by other terms such as *cotumumum*, *dacita*, *avaría*, and *mutuum* (Polonio, 1977: 69-70). The most detailed study of the taxation of the Genoese Republic during the High and Late Middle Ages was made by Sieveking in his book *Studio sulle finanze genovesi nel Medio Evo ed in particolare sulla Casa di S. Giorgio in Atti della Società Ligure di Storia patria* (1906).

In 1339 there was another political upheaval, triggered by popular discontent, which led to the overthrow of the noble government and the establishment of a new political regime – the accession to power of the first *Doge Simone Boccanegra* (Felloni, 1984: 163). The main goal of the Doge was to improve and elevate the position of the entire population of Genoa, to establish peace and tranquillity in the city and the surrounding lands, and the subsequent activities of this administration and its successors were to be directed towards achieving this goal (Manke, 2019: 149).

In order to achieve this goal, Doge had the important task of restoring the public finances. The Commune was in absolute dependence on creditors. Regular wars led to permanent loans that were repaid by raising new ones and required regular interest payments. Genoa's tax system was then undergoing another phase of reform.

An increase in consumer duties would have led to further discontent; hence, they could not be increased. Therefore, customs duties and indirect taxes were raised. As these measures were not sufficient, the national debt was restructured in 1340. During the reform of the financial system by the first Doge, the earlier *compere* system, which consisted of many separate units, was reorganised, and merged into 6 different groups. All taxes were consolidated into the three largest *compera salis*, *mutua vetera*, and *compera pacis*. Almost all state revenues were placed under the management of a special body of *protectores capituli* (Sieveking, 1906: 129).

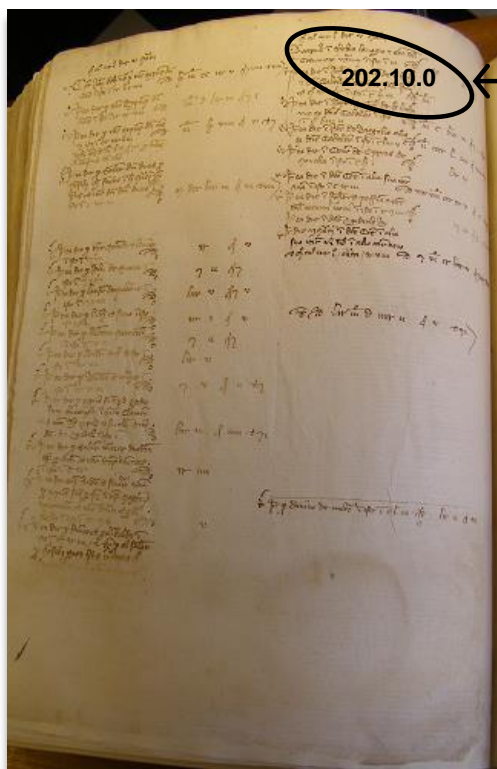
It is possible to examine in more detail the revenue structure of the *Comunis Janue* account (119v), using the results of a logical analytical flowchart modelling (reconstruction) method (Appendix).

The first revenue indicator was £202 s. 10. The account statement refers to page 3, the retained portion of which neither the recto nor the verso side contained the amount shown. In such cases it has been necessary to use a Wood lamp to find information on the water-damaged parts of the page. It was possible to find the unsaved figure in the debit of the third account on the reverse side of the page (3v). With the help of Wood's lamp and a mathematical calculation, it was possible to recover the account credits on page 3v.

This account belonged to Thobia Lavagio (R1 – 3v(3) 'Thobia Lavagio'). It was his responsibility to collect *cotumum vetus*, a direct tax. On the credit side of the account, the first entry shows the continuity of the current accounting system with that of the previous accounting period. The amount of £131 s. 5 links the system to the account on page 16 of the 1339 ledger. This suggests that personal account balances were transferred directly from the account in the old ledger to the account in the new ledger. *Thobia Lavagio* settled the accounts payable incurred in the previous accounting period. The fifth credit entry of £4 s.4, which corresponds to account 85r(3), is in contrast intended to be transferred to the debit of the account on page 19 of the 1341 accounting system, i.e., the next accounting period.

Figure 3 shows the transfer of the £202 s.10 revenue amount from page 3v to the invoice located on page 119v.

119v



3v

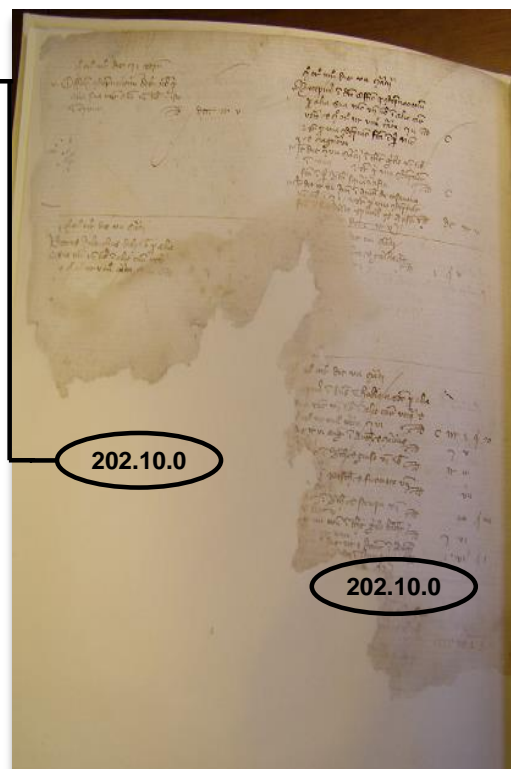


Figure 3. Reconstruction of accounts c. 3v(3) and c. 119v of the Ledger of the Commune of Genoa, confirming the transfer to the estimate of the amount recovered⁷

The second (£3,000), third (£3,185 s.11 d.5) and fourth (£2,454 s.9 d.3) revenue indicators in the Commune Account are receipts of *gabella salis* tax from two collectors Johan Spinola of Santa Luca and Jacobus de Bargaglio. It is worth remembering that the Commune of Genoa was the first city to establish a system *Compere* whereby the State could sell future revenues (such as, in this case, the profits from the *gabella salis*) to investors who provided the capital needed for public expenditure. Investing in the *gabella* made a person a full political participant in the Commune, that is, a person with a say in the governance of the state (Manke, 2019: 84).

The salt tax receipts from the said collectors in the sum of the three figures for 1340 amounted to £8,640 s.0. d.8.

The debit of the personal accounts of the collectors shows the receivables to the Commune and the credit shows the sources of the tax revenue. Further analysis of the expenditure accounts showed the subsequent transfer of tax revenues to the budget managers and their allocation to commune expenditure and interest payments on the public debt.

The fifth revenue figure in account 119v contra account to the account in carta 161r (5), which belonged to *Conrado de Oppicis de Monelia*. The page in question was badly damaged by water, for which reason a Wood lamp also had to be used to examine it. The figure of £75 was found to be a debt transferred from a previous period and recognised as revenue in 1340.

⁷ Archivio di Stato di Genova, 1340. *Antico Comune. Officium Massarii. Cartullarium Massariorum*, carte 3v, 119v

The following revenue item is a generated figure transferred from the savings account "*Comunis Janue*" ("Commune Genoa") from page 123r, where, in turn, recognised tax revenue, recorded in correspondence with the accounts of the collecting partners, as well as exchange gains and other revenue generated on carte 192r, 197r, have been transferred. The credit figure for revenue and gains received on carta 123r for the year 1340 was £57,265 s.11 d.10. The revenue and profits received were reduced by the previous year 1339 budget deficit figure shown in the debit of the account as an opening balance of £8,940 s.6 d.7. Hence, the amount of revenue and gains carried forward from carta 123r was £48,325 s.5 d.3.

Sieviking (1906: 149-50) presents the structure of the recognised revenues of the Commune of Genoa in 1340:

Taxes of *compere capitula* – £20,000

Taxes *gabella salis* (*contro i diritti delle compere*) by the *gabella salis* (against the rights of purchases) – £8,640 s.0 d.8

Government import duty of 8 soldi per minu of grain and provisions (*introitus soldi VIII pro mina grani et victualium regiminis*) – £7,851

total of direct taxes – £36,491 s.0 d.8.

Next:

mutuum novum (new loans) – £1,266.

cotuum vetus (*imposte dirette*) (old direct taxes) – £202 s.10.

cotuum novum (new taxes) – £20,209 s.13 d.1

also, from direct taxes – £21,677 s.13 d.11.

revenue from districts – £4,241 s.2

court fines – £1,455

other revenue – £2,331 s.18 d.4.

Total revenue – £66,196 s.14 d.11.

It is worth highlighting the most significant figure of the revenue part of the *Comunis Janue* account £20,000, which we can also see in the account credit on page 197r. This is the receipt of compensation from the *Compere capituli* under the agreement of 30 March 1340, which created an obligation to pay £20,000 for three years each year for the running expenses of the Commune. As compensation, the Doge imposed three new taxes under the control of the *Compere capituli* and promised not to oppress the compere henceforth, but rather to protect them and not to impose taxes that might harm them (Sieviking, 1906: 128). These three comperes were *Oficium Assignacionum Mutuorum* or Office of Assignment Loans, *Consullatus Compere Pacis* or Council of Syndicated Loans for Peace, and *Consullatus Comperarum Salis* or Council of Syndicated Loans for Salt.

The last revenue figure of £13 s.11 d.7 corresponds to personal account 114r (2) *Iohanne de Pessina* and will subsequently be allocated to the expenditure side of the estimate.

Thus, the total revenue to the city budget for the analysed period was £66,196 s. 14 d.11 (£202 s.10 + £8,640 s.0. d.8 + £57,265 s.11 d.10 + £75 + £13 s.11. d7). A detailed analysis of the indicators forming the revenue side of the *Conto del Comune di Genova* and their comparison with the indicators in the list of tax revenues to the budget for the analysed period presented by Sieviking showed their identity. The indicators are presented either directly or as part of the generalised revenues.

Completing the credit side is the transfer of the deficit figure of £16,285 s.18 d.5 reported 1340 to the Genoa Commune account 1341 on carta 29 as a debit balance.

Thus, a detailed analysis of the revenue section of the budget of the Commune of Genoa for the year 1340 leads to the conclusion that all revenues are related to the receipt of various types

of taxes and fees. Moreover, the receipt of money is not directly recorded in the accounting system, but all tax revenues are reflected in Massari's personal accounts. And what is important for our study, the accounting system does not reveal any profitable operations related to the sale of goods.

Expense and loss structure of the Commune

The expenditure side of the city budget contains a greater number of indicators. Some authors mention the lack of logic in the revenue and expenses structure of the accounting system (Martenelli, 1983: 90; Zerbi, 1952: 187). A distinction was made between ordinary expenses, which had to be covered by ordinary revenues, and extraordinary expenses, which could not be incurred without the approval of the *officium monete* and for which special laws (with compulsory loans, etc.) were passed (at the invitation of the council). The *Cartullarium Massariorum* did not reflect interest paid to creditors on debts incurred before 1340. Instead, there are accounts of the management of debts incurred after 1340 (Sieveking, 1905: 143).

The first three debit figures of the *Comunis Janue* account are formed as balances transferred from the accounts for commune expenses and losses on sale of goods and exchange rate differences (*proventus cambij et dapnum de rauba sale*), which are performed in consecutive lines (one account is spread over several pages, the total of the indicators on a page is transferred to the next page as a balance).

The first *Expensarum Communis Janue* account 119v – £63,235 s.18 d.8 (for modelling and reconstruction purposes, the indicator has coordinates E1 (Expenses)) is accumulated in the *Expensarum Communis Janue* account, which occupied seventeen pages from 229r to 237v. This also included figures from other savings accounts, for example on page 237r one figure of £7,330 s.0 d.7 totals on pages 217r and 226r, the so-called *avaria* accounts - damage or loss⁸. All accounts of a serial line are monophasic: all entries characterising costs and losses are recorded in the debit side of the account. There is only one entry in the credit side of the account, which contains the total accumulated in the previous accounts of the chain, which is entered into the subsequent line account.

The second and third debits in account 119v, generated also in the *proventus cambij et dapnum de rauba sale* accounts and carrying forward the accumulated totals of sales and exchange losses, we designate E2 – £4,573 s.11 and E3 – £3,069 s.6 d.10.

A detailed analysis of indicators E1-3 allowed us to examine in detail the cost and loss structure of the Commune presented in the accounts of this consecutive line. These accounts included losses from the sale of goods which had been pre-purchased on a deferred payment basis and resold at a significantly lower price soon. Merchandise was purchased by the Commune both from local merchants who brought it from other countries and regions and from foreigners. They were intended to be sold to local merchants for onward transfer or sale to citizens of the Commune who needed them. The largest number of such commodity accounts accounted for batches of wax, pepper, salt, sugar, and grain,

⁸ This meaning is ambiguous. The term *avaria* was understood to refer both to the damages or losses of the Commune and to a separate type of tax, *avaria capitum*. The semantic development of the word shifts from meaning, “damage arising from *jactus levandae navis gratia*” (damage that applied to the whole cargo) to mean, “expenses arising from damage”, then to mean, “contribution in damages”, and then, “contribution in damages distributed among several subjects, a tax or duty” (Aprosio, 2001: 115).

We analysed successive lines of expense and loss accounts and concluded that during the financial year there were approximately 120 loss-making transactions and no profit-making transactions. The formation of logical-analytical links between the accounts permitted the order of settlements between the Commune's counterparties and the Massari responsible for the receipt of revenues and the allocation of these funds between the items of expenditure that they accounted for in personal accounts (see Appendices) to be traced.

Returning to the structure of the debit side of the account on the carta 119v, we note that the fourth figure is carried over from the account of Doge Simone Boccanegra, which says that it is his owned salary for the previous 4 months before the start of the year. The amount accrued and expensed was £1,783 s.6 d.8.

All other expenses are different payments in correspondence with the personal accounts. These include the payment of the 12 clerks' salaries, the maintenance of the castle, and payments to various suppliers for goods and services.

The total expenses of the Commune for the period 6 March 1340 to 5 March 1341 amounted to £73,542 s.5 d.11.

So, the Commune is in debt and at a loss. Our research allows us to understand why this was so.

Then, we conducted research of the chronological order of accounting transactions, using the generated accounting system model. Initially, the model formed for the main account of the accounting system of the Commune Genoa account and its components did not include an analysis of the dates of business transactions. However, a detailed examination of the links within the model further allowed attention to the temporal links, allowing certain conclusions to be drawn about their significance. The model of the 119v account and all revenues and expenses of the Commune for the year 1340 has been modified, focussing on the actual correspondence of the business transactions to the date of realisation.

In Figures 1, 2 and 3 in the Appendix at the top of the figure we can see the numbering. Each number from 1 to 8 corresponds to a stage number in the Commune's expenses and revenues system, also shown at the top of Table 1. As the structure of expenses and the number of transactions associated with them are quite numerous, we present as an example one of the lines of expenses and revenues that cover them (Appendix Figure 3). By linking the business transactions to their dates, we can see in which order the expenses were accrued and paid, and from which sources.

We can examine the business transactions of the Commune in the order in which they are made and recorded in the Ledger (Table 1):

Table 1. Stages of recognition of expenses and revenues in the time-based accounting system of the Genoa Commune

1	2	3	4	5	6	7	8
27.04.1340 – 1.05.1340	1.05.1340 – 19.05.1340	1.05.1340 – 19.05.1340	25.10.1340– until the end of the accounting period	8.11.1340 – 15.11.1340	16.11.1340 – 3.01.1341	8.11.1340 – 15.11.1340	28.02.1340 – 5.03.1341
Employee salaries accrued and expensed	Receipt of advances from buyers of goods	Payment of wages from money received from customers	Recognition of losses on goods sold	Receipt of goods and their transfer to customers	Receipt of taxes by collectors and transfer of money to managers	Repayment of payables to suppliers	Revenue recognition for taxes received

1. **27.04.1340 - 1.05.1340.** – At this stage, we have identified transactions relating to the salaries of employees and service personnel of the Commune, recorded on the debit side of the cost accumulation accounts, with a further inclusion of their accumulated total in the total expenditure figure *El "Expensarum dicti communis"* on card 119v. Payables on wages and salaries are shown as a credit to the personal accounts of employees.
2. **1.05.1340 z. –19.05.1340 z.** – during this period, the Massari collect advances from purchasers of goods to be transferred at a later date. In figure 3 of the Appendix we see the receipts debited to the Massari Paschilis de Furneto account.
3. **1.05.1340. –19.05.1340.** – at this stage, previously accrued wages are settled on account of advances received;
4. **from 25.10.1340. – until the end of the accounting period,** a loss on the sale of goods is recognised;
5. **8.11.1340 z. – 15.11.1340.** – goods are received from suppliers and handed over to customers;
6. **16.11.1340 z. –3.01.1341 z.** – the taxes collected are transferred by the collectors and handed over to the *Massari*;
7. **8.11.1340 z. –15.11.1340 z.** – payables to suppliers for goods previously received are settled;
8. **28.02.1340 z. – 5.03.1341.** – the recognition of revenue from taxes received.

Consequently, a temporal analysis of the Commune's business transactions revealed a number of patterns, namely:

- The accrual and recognition of employees' salaries as current expenses and their timely payment against advances received from customers;
- The contractual relationship with buyers included advance payments on the condition that they received a discount on the value of the goods;
- Contractual agreements with suppliers provided instalment payments for goods received, and payments were made only after receipts from tax collectors.

Reasons for selling goods at a loss; and the Commune's budget deficit

Previous researchers of the Genoa Commune ledger showed that one of the economic activities of the Commune was the sale of goods (Zerbi, 1952: 191-3; Martinelli, 1983: 90-7; De Roover, 1956: 132-3; Melis, 1964: 376; Yamey, 2000: 8). Analysis of the literature allowed us to identify the main areas of causes of unprofitable sales according to the authors.

De Roover (1956: 132-3) suggests that the Genoese commune bought goods on credit at high prices and resold them for cheaper cash to get money immediately. The transaction was thus a way for shrewd merchants to profit from their official position. Such a transaction, according to de Roover, also allowed the Church's law against usury to be circumvented.

Yamey (2000: 8), also looked at the situation of losses in the sale of merchandise in the Commune of Genoa, recalling a type of transaction that in the twentieth century was known as Gold Coasting, where a merchant bought goods on credit for a long period of time. He would almost immediately sell them for cash, taking a loss. Provided that he used the proceeds in profitable activities in the interim before he had to pay off the lender, he could end up with a bigger profit than if he had instead borrowed money to finance these interim activities.

Melis (1964: 376) suggested that the Commune received goods in settlement of debts by counterparties and resold them. But even here Yamey (2000: 12) notes that the dates of transactions involving the sale of goods in the examples published by many authors point more to 'Gold coasting' operations.

In order to form our own opinion on the subject matter and answer the question, 'Why did this happen?', based on the opinions of authoritative authors, we conducted our own research using the accounting system model we had previously created. To guarantee the reliability of our findings, we ensured that our research was conducted according to the principles of historical context, which is a crucial element in any study of accounting history.

The model thus corroborated the existence of the merchandise accounts within the accounting system and confirmed the veracity of the assertion that all merchandise was sold at a loss. All losses are accumulated in the accounts designated for losses and expenses and are included in the debit of the *Communis Janua* account as *Expensarum dicti communis*. A chronological analysis of the transactions showed that all merchandise was purchased by instalments, and the prepayments received from the buyers to whom the goods were subsequently sold were used to repay accounts payable and pay the commune's expenses. Furthermore, it was established that the revenue section of the *Communis Janua* account was diminished by the deficit carried over from the preceding fiscal year (1339).

It is worthy of mention that the formation of revenue and expenditure budgets in the Genoese Commune was a well-established practice preceding the period under discussion. The budget of 1303 is known to have envisaged a reduction in expenditure with the objective of paying off the public debt incurred for military expenditure at the end of the previous century as soon as possible⁹ (Salonia, 2015: 61).

There may have been additional such documents, but the documents pertaining to the Commune budget, approved between 1303 and 1339, have not survived. As stated previously, all financial documentation was destroyed during the 1339 rebellion. It is noteworthy that the *Massari Cartularius* accounts include a carry-over of balances from the preceding period's accounting. It is challenging to hypothesise how they were restored, even with the pages of the preceding *Cartularius*. Furthermore, the discrepancy between the revenue and expenditure of the previous period, as reflected in the account on map 123r derived from map 125 of the *Cartularius* for 1339, manifested as a deficit of £8,940 s.6 d.7d.

Dominico Giofre gives the structure of the Commune's revenues and expenditures for 1377 (Giofre, 1967: 16-17). The revenues amounted to £94,106 s.10. d.8 and the expenditures £108,247 s.15 d.11. Thus, also in this period, there is a budget deficit of £14,141 s.5 d.3. The Commune account books which have been preserved and studied clearly show the existence of a deficit budget, which suggests this may have been the norm.

Manke's doctoral dissertation studied grain distribution and the emergence of popular institutions in medieval Genoa examines by examining the *Officium victualium*, an account book that was also kept by double entry. The *Officium victualium* entries provide a record of the public expenditure of funds allocated by the *Massari* for grain. This study offers valuable insights into the complex interrelationship between grain, its distribution, and the evolution of public debt and expenditure in the context of political power during the period following the ascendance of Simone Boccanegra and extending up to the conclusion of the 14th century.

⁹ Archivio di Stato di Genova, *Antico Commune*, ms. IV *Regule Comperarum Capituli*, cc.CLXXXVII r. – CLXXXVIII v.

In examining the accounts of the *Officium Victualium*, Manke observes that settlements with grain suppliers were conducted directly with the involvement of the Commune's *Massari*, as evidenced in the account book of their personal accounts. The purchase of bread for the Commune's population was directly linked to the public debt, the receipt and distribution of which was controlled by the *Massari*. From the *Massari* accounts, funds were disbursed to buy grain, which was predominantly imported from abroad. Subsequently, the grain was sold to bread merchants at a cost price, frequently resulting in a loss (Manke, 2019: 244-245). It is interesting to note that the Commune bought goods from its own citizens more expensively than from foreigners. This is mentioned by Francesco Balducci Pegolotti in his *La Pratica Della Mercatura* when he describes the peculiarities of trade and duties in Genoa (Pegolotti & Evans, 1936: 216).

It is important to remember the conditions under which the Genoese lived and the government of the Commune operated. The doctrine of the medieval church and its theological underpinnings influenced the state to prioritise the common good. This encompassed the protection of life, the maintenance of the state, and the advancement of peace. However, ensuring the well-being of the state's subjects was also a crucial aspect of this. The state was interested in purchasing goods for the population and transferring goods to the population, but was not interested in making a profit from such sales. The chronological sequence of settlements within the commune and with its counterparties, identified by us as a result of our detailed analysis of the accounting system, ensured the timeliness of all settlements, the system of mutual settlements in case of shortage of minted coinage, and timely satisfaction of the population's needs in goods.

The legislation regulated the prices of essential goods and monitored compliance with the law (Manke, 2019: 243). From at least 1383¹⁰, there was a separate administrative body, the *Conservatores officii minis*, which was responsible for controlling the retail food trade. They were to check the quality of goods and the measures used in their sale, as well as to set retail prices in relation to wholesale prices (Polonio, 1977: 67, Sieviking, 1905: 183). This institution was legislated to periodically assess all the grain, wine, and timber that belonged to the Commune and put half of it up for compulsory sale (Manke, 2019: 244).

Furthermore, another significant issue merited attention. The commune existed under persistent public borrowing and was managed by creditors. All loans were raised on the condition that interest would be paid out of forthcoming tax revenues. The Commune exercised meticulous control over its expenditure, with budgets being drawn up and special commissions established to monitor and reduce expenditure. Any extraordinary expenditure (other than that previously foreseen) was subject to approval by a special council. In such circumstances, it was not feasible to meet the expenditure of the Commune from the limited budgetary revenues. Consequently, budgets consistently exhibited a deficit, which was also confirmed by our detailed study of the accounting system.

To strengthen administrative control and prevent financial fraud, the Commune government in 1339-1340 established a number of supervisory institutions, including the *Communis Ianuae massaria*, and legislated compulsory double entry bookkeeping, the use of which is clearly illustrated in the *Cartullarium Massariorum* under study. The reputation and credibility of this method in the business community generally favoured its adoption in the public sector.

¹⁰ There are documents of this office dating from 1383-1385 which gives the impression of a work long in progress.

Furthermore, it is important to note that only a limited number of financial documents from the period under study have survived. Given the total number of artefacts preserved in the State Archive of Genoa (Polonio, 1977), it is possible that the *Cartullarium Massariorum* was one of the account books of the general financial and accounting system and contained only a portion of the accounting information. As Manke (2019: 223) correctly asserts:

I would suggest that it is not in the nature or capacity of medieval governments or the documents they produced to be a full and complete reckoning of anything they purport to cover. medieval documents of practice were created to suit the needs of their contemporaries. They are based in a logic of the past, and we have no idea about the care or accuracy paid to the data they record. Indeed, it is difficult to assume that medieval administrators had the same notions of accuracy that we have today.

Summarising this discussion of the reasons for selling goods at a loss and the Commune's budget deficit, a number of points can be highlighted. The financial system of Genoa in the period under study was based on the constant raising of resources to cover all possible costs associated with the existence of the Commune, the so-called public debt. The Commune exists in debt and depends on creditors who actively participate in its political life. The taxation system aims at paying the interest on the public debt of the Commune. The budget of Genoa as presented in the account book of the *Cartullarium Massariorum* for 1340 shows a deficit for both the accounting period and the previous period. This is justified by the political and economic situation.

The medieval city lives under the influence of religious belief in the illegitimacy of trading profits, and the Government's concern for the common good comes first. An elaborate system of settlement transactions, using only money of account and taking into account the chronology of settlements, makes it possible to ensure timely repayment of debt obligations before tax payments are received. Merchandise is not purchased with the aim of making money from its sale but with the aim of providing it uninterruptedly to the needy citizens of the Commune. This explains the absence of profitable trade transactions in the accounting system.

Conclusion

This investigation has contributed to the existing literature on the history of accounting. It has expanded current knowledge and understanding of perhaps the most renowned account books of medieval governmental bookkeeping, which was maintained in accordance with the principle of double entry. The contribution of this paper is to enhance understanding of one arguably the most famous medieval ledger of governmental double entry accounting, the Government of Genoa's *Cartullarium Massariorum* for 1340; and to reveal the influence of political, economic, religious and theological factors that had a significant impact on the organisation of the activities of the Commune, the stages of which allow us to trace the research conducted, as well as on the organisation of accounting in the Commune and especially its accounting for merchandise.

In the accounting literature, when describing the *Cartullarium Massariorum* of the Commune of Genoa for 1340, many authors have looked at the characteristics of the merchandise accounting and paid attention to the fact that the goods were sold at a loss. Our research findings demonstrated that all batches of goods were purchased in instalments and subsequently sold at a loss. To gain a deeper understanding of the underlying reasons for this phenomenon, the investigation was extended by conducting extensive additional research

drawing on a range of literary and documentary sources. These include historical texts that elucidate the history of the Genoese Commune, the political and economic context of the time, the influence of the Church on the daily lives of medieval people, theological teachings on the common good, the taxation and financing system, and, of course, the descriptions of the ledger under study by scholars from the nineteenth and twentieth centuries.

The logical-analytical model of the accounting system of the *Cartullarium Massariorum* developed during this investigation was used to carry out a detailed analysis of all the accounts. In particular the revenues and expenses of the Commune. This process established several key features of the organisation of the municipal economy, reflected in the results of its activities recorded in the accounting records. It was apparent that there was a chronology to the facts of economic life, contributing to the periodic implementation of calculations concerning the maintenance of the city-community.

Having considered the socio-economic and political environment in which the Commune of Genoa operated during the period under study, having examined the religious component of everyday and state life, and having studied the structure of budgetary revenues and expenditures, it can be concluded that the Commune's accounting system developed under the influence of these very conditions and was adapted to them.

The primary reason for the Commune's lack of profitability in its sales operations was the government's lack of initial interest in the financial viability of such operations, which were conducted with the intention of providing for the immediate wellbeing of its citizens and in accordance with a broader concern for the common good. For this reason, legislative control was exercised to ensure the affordability of essential goods.

The accounting system reflected in the *Cartullarium Massariorum* was created on the basis of the peculiarities of the financial and fiscal system of the Commune and was orientated towards the need to meet the obligations and social needs of the Commune. The complex system of accounts for mutual settlements between *massari* allowed for the timely settlement of transactions in the absence of the Cash account in the accounting system.

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Mikhail Kuter is Professor, Chair of Department of Accounting and Audit, Kuban State University, Krasnodar, Russia. ORCID ID 0000-0002-8116-6680. Email: prof.kuter@mail.ru

Marina Gurskaya, is Professor of Department of Accounting and Audit, Kuban State University, Krasnodar, Russia. ORCID ID 0000-0002-6724-3854. Email: marinagurskaya@mail.ru

Albert Gurskii, is PhD Student of Department of Accounting and Audit, Kuban State University, Krasnodar, Russia. ORCID ID 0009-0008-0082-791X. Email: alicgurskii@gmail.com

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Appendix

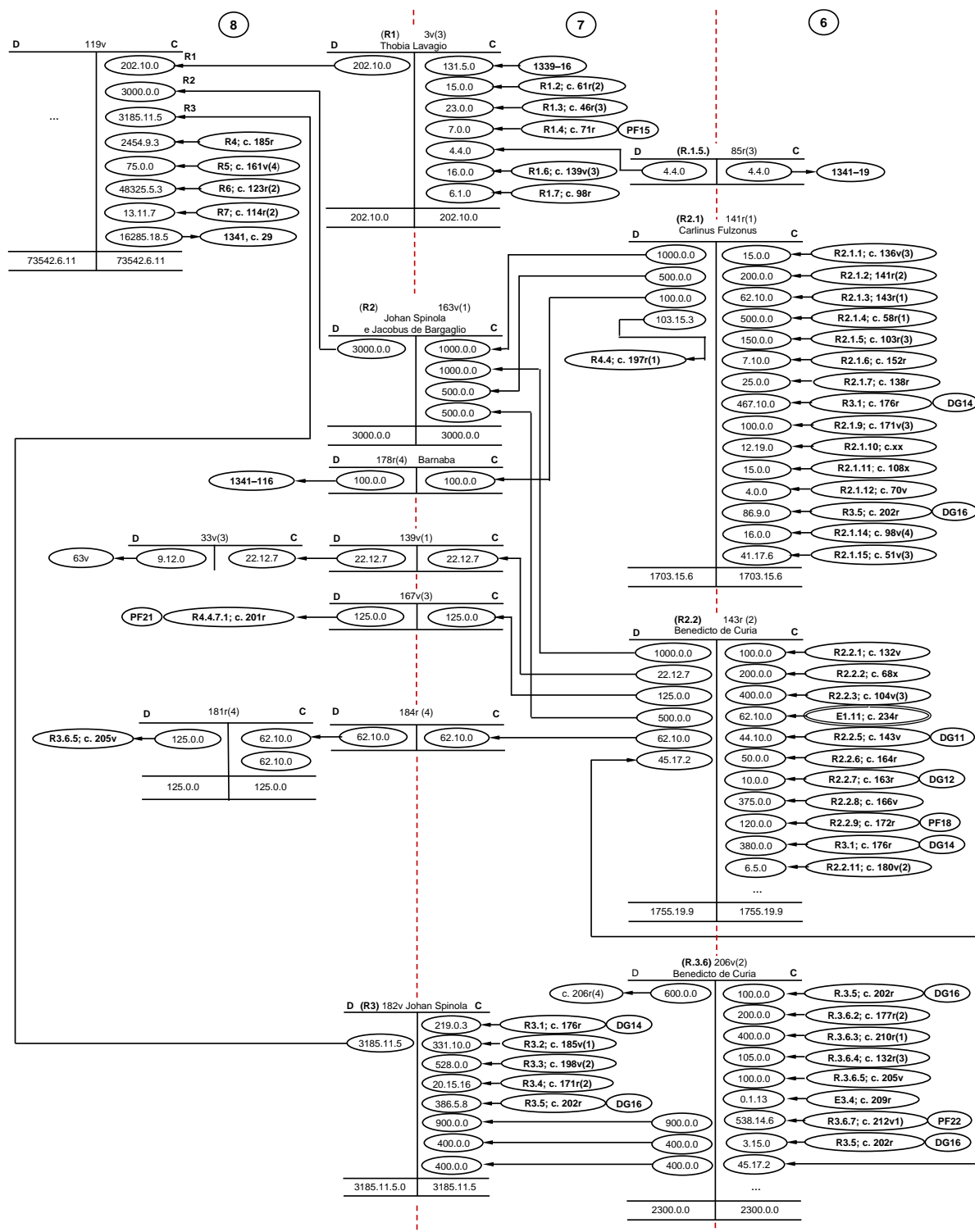


Figure 1. Revenue distribution in the Genoa Commune, items R1, R2, R3

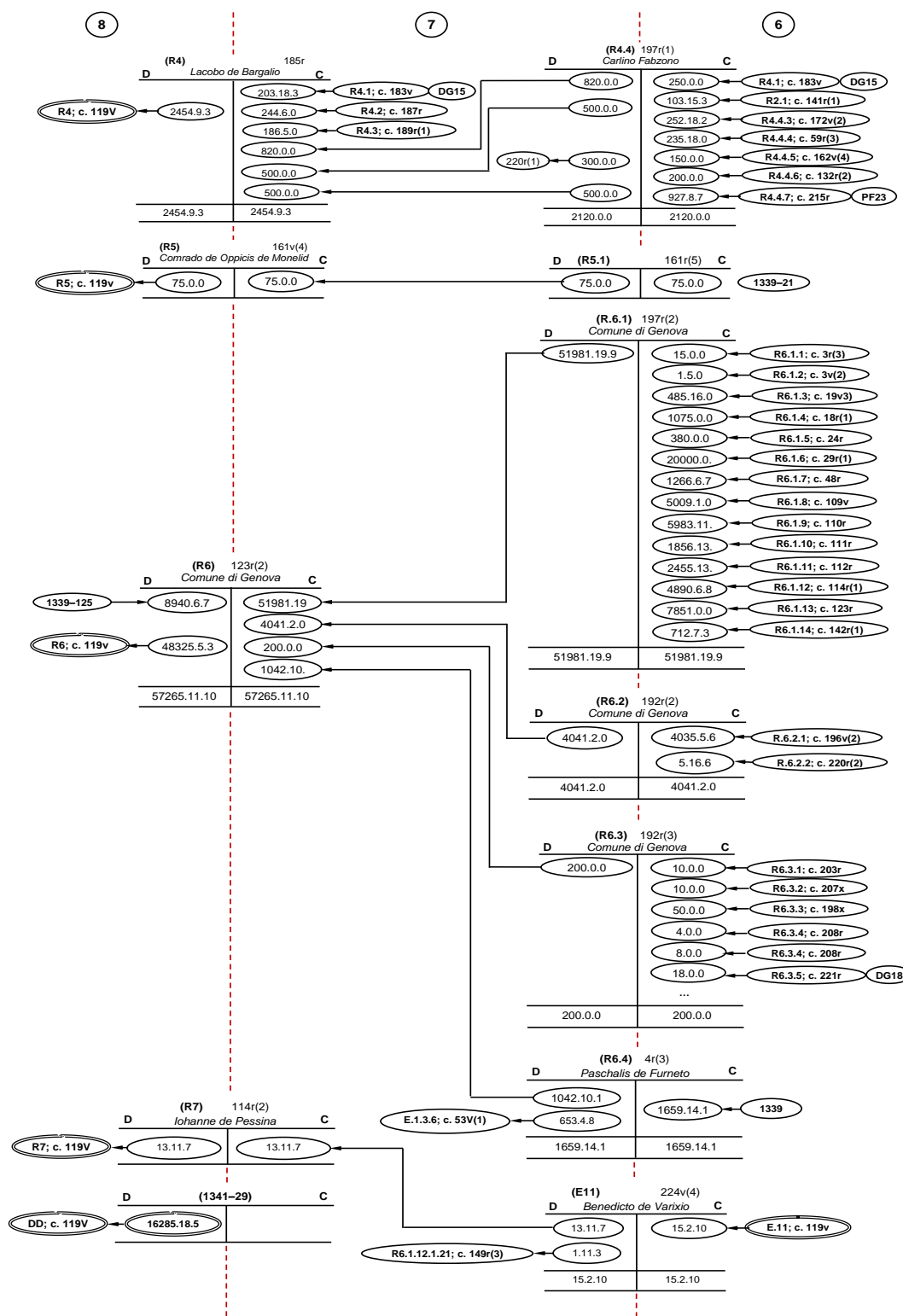


Figure 2. Revenue distribution in the Genoa Commune, items R4, R5, R6, R7, R8 and Deficit

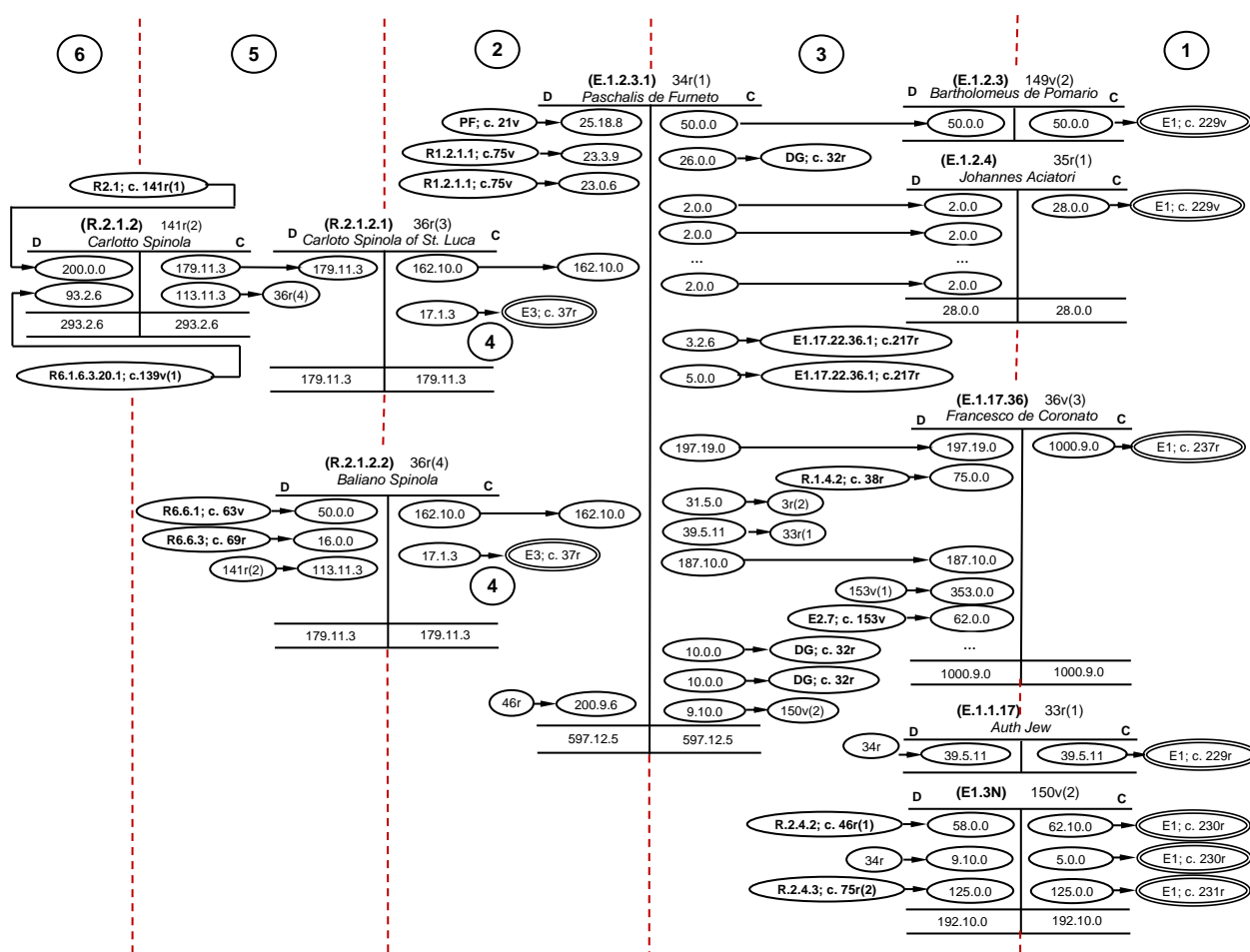


Figure 3. One fragment of the expenses distribution in the accounting system of the Commune of Genoa (E1)