41e

THE INVENTION OF DOUBLE ENTRY BOOKKEEPING

Alan Sangster, Professor of Accounting History, University of Aberdeen U.K.

Thematic Area: History of Accounting

Keywords: bookkeeping, double entry, legal system, causal theory, pragmatic literacy

The invention of double entry bookkeeping[1]

Summary

Available evidence, causal analysis, and transaction cost theory are used to construct an explanation for the invention and diffusion of double entry in 12th and 13th century northern Italy. For the first time, the surviving entries from the ledger of Florentine bankers in 1211 are shown to be in double entry. It concludes that double entry was invented by bankers to address business risks arising from a lack of cash, debt default, and related disputes within a legal framework that required that all relevant information was kept in detailed business records supported by evidence signposted in those records.

1. INTRODUCTION: THE CONTEXT SURROUNDING THE INVENTION OF DOUBLE ENTRY

The focal points of trade in 11th century Northern Italy, were local fairs. There was a wide variety of coins in circulation, only some of which would be accepted by the merchants. There was often a shortage of coins, and their quality was variable. Moneychangers exchanged the foreign coins they were given with coins that could be used at the fair. But, that did not overcome the issue of quality, which meant merchants had to check the value of each coin received. Nor did it overcome the problem of insufficient coins to enable bargains to be struck. Moneychangers began exchanging coins, not with cash, but by recording their receipt as a deposit and paying sellers at the request of their depositors. When they had insufficient coins a seller would accept, they recorded him as a creditor for what remained.

Once this process gained acceptance, which these problems made inevitable, the moneychangers-turned-bankers began making loans. At first, they used coins. Soon, they started providing loans using “bank money”, recording each loan as debt due from the recipient, and paying whoever the borrower wished, using the system they had devised. As fairs became larger, they transformed into regional events lasting weeks rather than days. This brought merchants from across the country. The increased size made what had been a small problem worse. The expansion of trade made credit even more necessary. The obvious alternative of merchants offering credit to make sales for small amounts to people they knew, became less relevant. Trade was now between strangers, and the amounts were greater. The moneychangers began to specialise more on banking.

They began to travel, offering the same combined services at other regional fairs. But, doing so among strangers was problematic. Defaults by debtors were bound to increase. Disputes over debt too, as people with the weight of their own community behind them, relied on it to win disputes based on their local reputation.

Local economies benefited from these fairs. They could acquire goods unavailable locally. Rulers and towns gained rent and fees from attendees. Hospitality providers gained new customers and expanded their trade. However, without the moneychanger/bankers, there could be no fairs. Something needed to be done. The response was the appointment of magistrates from the senior members of merchant guilds. Two guild magistrates were appointed to the 2-week regional fair at Pisa in 1164. They began hearing cases involving default and disputes over debt. This protected the moneychanger/bankers. It also increased trust among merchants as disputes between them could be resolved. Fairs grew in size as numbers attending increased and trade expanded, attracting more merchants from further afield. This was the context that gave birth to double entry bookkeeping.

---

[1] Any feedback would be welcome on this work-in-progress.

Double entry bookkeeping

A double entry bookkeeping system omits nothing. It is its all-inclusive nature that led to its invention because, without it, none of the factors that motivated use of double entry were easily achievable, and some were not achievable at all. This paper demonstrates, for the first time in the accounting literature, that the earliest known example of double entry bookkeeping is from 1211, 85 years earlier than was previously thought. Using causal relationships, it identifies the ever-present shortage of cash in medieval Italy as the primary catalyst for the invention of double entry bookkeeping, with the need for defence against disputes dictating the content. And it demonstrates how use of transaction costs theory can explain why double entry was invented, developed, and diffused.

The accounting history literature recognises use of double entry in 1296 (De Roover 1963). However, the nature and context of 13th century international trade makes that too late to mark the beginning of its use. Although very few earlier accounting records exist, fragments have survived from a ledger belonging to Florentine bankers who were present at the May regional fair in Bologna in 1211. Accounting scholars who have studied them declared that they are not in double entry (e.g. Lee, 1972; Martinelli, 1974; Sangster, 2016). They were all incorrect.

There are more than 160 surviving entries contained in 44 accounts from that ledger. This paper presents critically translated entries from a random selection of seven accounts, all of which are shown to be in double entry. They include entries of loans; names of witnesses and guarantors; transfer entries between accounts of two different people; transfer entries between the debtor account and the creditor account of the same person; payments by 3rd parties; mention of a balance brought forward from a previous ledger; indication of whether the contra entry of an entry made into an existing account was to an account created with a debit entry or a credit entry – essential information when debtor (loan) accounts were maintained separately from creditor (deposit) accounts; an indication of the page on which the contra entry was made; the terms of loans; and the reason for the transaction.

This not the first time these fragments have been recognised as double entry. But, not by accountants. The German economic historian, Adolf Schaube, identified them as being in "fully developed" double entry in 1906 and the Italian historian of law and business, Mario Chiaudano (1930, 64), identified them as *"double entry… in a system that is already very perfect"*. Accounting historians failed to notice because they used inappropriate Whiggish definitions of double entry, which also prevented them from identifying diffusion of the method over the next 600 years. This paper seeks to correct misunderstandings and provide accounting historians with the means to do what they have not done: write the history of double-entry-based accounting. The next section defines the terms used in this study.

2. ESSENTIAL DEFINITIONS

It may be natural to assume that all accountants and accounting faculty agree about the meanings of the fundamental terminology used in our discipline, such as 'financial accounting' (hereafter, 'accounting'), 'bookkeeping', and 'double entry bookkeeping'. We believe we know what we mean when we use these terms – they are typically used in the accounting literature without definitions being provided. However, when definitions are included, they do not consistently adopt the same meanings for these three terms, and nor do dictionaries, textbooks, or studies of their origins and diffusion.

For the purposes of this paper, and to ensure clarity in the discussion it presents, it is important to establish from the beginning the definitions that it uses; and, from a historical perspective, to do so with an eye to the origins of these practices because it is how they were used from the beginning that enables us to answer the questions this paper addresses.

Definitions of relevant terms and of the research method adopted

As described by Sangster (2018), all transactions involve exchange of one item for another. These are the two *elements* of every transaction. They can be distinguished as the *item exchanged* and the *form of settlement*. For example, a table sold (the *item exchanged*) for €100 in cash (the *form of settlement*). Several bookkeeping methods have been used to record transactions, including a wide variety of simple methods usually grouped under the label, 'single entry'. Other methods include agency bookkeeping, charge and discharge, and double entry. Important for the purpose of this study, only in a double entry system is every relevant detail of every transaction consistently recorded which, as will be shown, was a feature included in response to the motivation for its invention.

Confusion concerning where bookkeeping ends and the rest of the accounting process begins has led to scholars conflating bookkeeping with accounting, drawing conclusions concerning the form of bookkeeping in use *based on how the **accounting** is being done* (Miller & Napier 1993). This paper defines bookkeeping based on Luca Pacioli's (1494) description of bookkeeping in the first manual to describe how to do double entry, which has been acknowledged as reflecting how bookkeeping was done in 15th century Venice (Antinori 2004). In this paper, **bookkeeping** is defined as:

> *"the skill or occupation of maintaining accurate records of business transactions"* (Collins English Dictionary Online 2021).

Pacioli's description did not include the accounting tasks of recording closing adjusting entries for accruals, prepayments, changes in the recognised value of assets, or the preparation of financial statements when a ledger is closed. Broadly speaking, this distinction between bookkeeping and accounting has persisted to the present day.[2] To ensure this distinction is maintained, **accounting** in this paper is defined as:

> The process of taking the information from the bookkeeping system and using it to produce financial reports.

A lack of definitions of double entry in the accounting literature, and inconsistency in those provided has created a confusing litter of inconsistency. Some have tried to resolve it. For example, in 1971 James Winjum (p.335) presented four definitions of double entry from the accounting history literature and used them to arrive at different conclusions concerning whether an example of bookkeeping was in double entry. In 1977, Geoffrey Lee (p.85) defined double entry by six features that endeavoured to capture all opinion to that point, some of which related to accounting, not bookkeeping.

Since then, a more pragmatic approach to its definition has been proposed, one that is based on actual bookkeeping practice in medieval Italy, where double entry originated. Lane (1977, 187) suggested that double entry could be recognised where duality can be seen. Sangster (2016) defined it as duality plus an indication of the location of the contra entry, which is what Lane was referring to when "seeing duality".

These definitions primarily recognise double entry bookkeeping in the existence of duality by which entries for the same amounts are made for each transaction twice, in one account as a debit, and in another as a credit. In this paper, **double entry** is defined as:

> The recording of the equal financial effect of transactions on the two *elements* of those transactions: the *item exchanged* and the *form of settlement*, one as a debit and the other as a credit, PLUS the inclusion in each entry of the location of the contra entry.

[2] See, for example, https://www.cashtrak.co.uk/blog/post/5328/What-is-the-difference-between-a-bookkeeper-and-an-accountant/

Pacioli also placed great emphasis on the importance of knowing what evidence is held about transactions, and in being swiftly able to locate that evidence, declaring that any merchant who was unable to do so did not know how to be a merchant (Sangster & Santini 2022). Consistent with what Pacioli wrote in 1494, a **double entry bookkeeping system** is defined in this paper as:

> A bookkeeping system in which all transactions recorded are entered in double entry.

These definitions are essential to an understanding of what is presented in the rest of this paper, as is an understanding of the historical method it adopts: speculative history.

Speculative history

> Speculations, conjectures, suppositions, opinions – we encounter them all in history (McWatters 2016, 1).

All historical studies are inherently speculative – we can never know everything about what happened in the past. Speculative history involves the use of well-supported speculations and imaginations to assist in *"initiating intriguing and significant explorations and readings of the past"* (Bolin 2009, 120). Historical research can be supported by appropriate theories from economics and economic history that guide the historian to discover what he wants to know (Lane 1966, 451, 457). The focus of this paper is a Florentine account book from 1211. To support the study of that record, the nature of trade in Northern Italy and its legal framework between 1100 and 1500 is considered. For much of that period, we have fragments of information: knowledge of events from original sources, writings about original sources now lost, and composite descriptions of events gathered from sources spanning four centuries. Choices must be made between alternatives until an explanation is selected that, in the words of Paul Bolin (2009, 110) *"would give us a high degree of understanding of the relevant phenomena were it to be true."* This is the research method used in this paper with guidance from the new institutional economics theory of transaction costs (Munro 2001).

3. SETTING THE BACKGROUND

Double entry represents the foundations of financial reporting. While some, perhaps many accountants may believe that no-one would use double entry unless it is to enable financial statements to be produced, most accountants can see other benefits it brings. Nevertheless, some scholars of accounting history have claimed that this is its only benefit, including the undisputed most influential English language historian of accounting of the past 70 years, the late Basil Yamey. He stated several times between 1949 and 2005 that there are no other benefits double entry can bring that are not equally served by simpler methods of bookkeeping. In his opinion, double entry was consequently seldom used in England other than by a few wholesale merchants before 1800, and that it was only adopted across firms of all sizes in England towards the end of the 19th century (Yamey 1956, 11; 1962, 25). Others subsequently expressed a similar view, but without any restriction to a single country. In the view of Hoskin & Macve (1986, 107), *"it is clear that [double entry] remains sporadically used [from the 13th century] until the nineteenth century*.

Yamey agreed, concluding elsewhere that for these reasons, the Sombart (1924) theory linking use of double entry to the rise of capitalism was unfounded (Yamey 1949, 1964, 2005). This extended his view about use of double entry from England to the known world.

Throughout this line of research, Yamey defined double entry to embrace the preparation of financial statements that were useful for taking appropriate rational economic decisions, which he believed was only possible if they embraced the norms of financial reporting of the 20th century. In this respect, he followed a tradition established to varying degrees by, for example, Alberto Ceccherelli (1914a&b), Fabio Besta (1916), Tomasso Zerbi (1952), Raymond de Roover (1956), Geoffrey Lee (1972), Federico Melis (1972), and Alvaro Martinelli (1974). In adopting this perspective, it is doubtful these scholars could ever recognise use of double entry in earlier periods, though they all did. On Sombart, they were all bound to refute his claim.

Some might assert that the evidence supports Yamey's conclusion, pointing out that the further back in time you go, the less you find use of financial reporting, either in surviving books of account or in manuals or textbooks on bookkeeping, of which thousands in almost 800 editions were published before 1800 (Jeannin 1991). But, that does not mean that double entry was not being used. It just tells us that preparing financial reports was not deemed useful, which is a completely different point. As we shall demonstrate, Yamey's views on Sombart and on use of double entry were mistaken. Double entry was developed to meet other needs. And it served other purposes before the accounts it created came to be widely used in modern times to provide the data included in financial reports.

4. WHY DOUBLE ENTRY WAS USED BEFORE 1800

A double entry bookkeeping system omits nothing. It is its all-inclusive nature that led to its invention because, without it, none of the factors that motivated use of double entry were easily achievable, and some were not achievable at all. Those three motivating factors for adopting double entry were (Sangster 2022a):

1. To control debt.
2. To provide evidence in the event of a dispute that, along with supporting evidence, would be acceptable to a tribunal, court, or judge.
3. To maintain control over distant agents, factors, and partners.

These factors each became relevant when the nature, conditions, and organisation of trade meant that there were risks to be faced if they were not addressed by the way in which records were kept. If all transactions were settled instantly in cash or by barter, only the second factor may have been relevant but, throughout this period cash was in short supply (Cipolla 1956; Kosmetatos 2018). As soon as credit was used to settle transactions, the first factor became relevant to meet a need for a record, and the second became relevant for defence. These were the two factors that led to the invention of double entry. Once it was invented embracing all the relevant detail of all transactions, which was required under Factor 2, the power of the bookkeeping system was reinforced by its inherent veracity. It cannot be used to lie or mislead when the entries within it can be verified with appropriate evidence. That was a fundamentally important feature from its beginnings.

The third factor stimulated its adoption and became relevant as soon as agents, factors, or partners were used who could not be personally observed. That was the sequence in which these three factors became relevant. It was necessary to control debt because merchants had no choice but to use credit if they wished to trade on any significant scale and, more to the point in the context of this paper, so did banks. The obvious alternative of barter to replace cash, and cash itself, were incapable of supporting the ever-expanding volume of trade that developed during the commercial revolution that began in the 11th century.

The legal system

The legal system in the beginning of this period was Roman law, the law of Justinian[3] but, over time this was augmented and, with respect to trade in Italy, often replaced by commercial law. For example, in 1204, a statute was issued in Milan declaring that a creditor was authorised to instruct his debtor to make payment to whoever the creditor chose. Statutes on this theme

[3] For a description of Justinian law see https://www.britannica.com/topic/Roman-law/The-law-of-Justinian

were not unique to Milan (Schaube 1906, 119).[4] The 1245 statutes of the moneychangers/bankers guild in Bologna obliged them to make book transfers at the Bologna regional fair of any credit balance they held for another banker or a non-Bologna resident if instructed to do so by the creditor, or make payment in cash immediately. The shortage of cash meant that the latter could not be relied upon, which meant that the banks, which were both local and from elsewhere, were required to settle all outstanding debts between themselves. Furthermore, they had to so within two days of the end of each fair (ibid., 717). The backdrop of an inherent shortage of cash, and a desire to generate income from loans using funds held on deposit made that impossible. Clearing was invented as the fair bankers, faced with little choice, used book transfers through their account books to achieve settlement. And that occurred before legislation was created, because commercial legislation was derived from mercantile and banking practice, not the other way round. The practice of the bankers pre-empted the law.[5]

As fairs grew in size, it became customary at the close to, "*extend the period of credit [to debtors which, for example,] was the case at the Champagne fairs from the early 13th century"* (ibid., 119; also 376-377). Thus, the credit instrument of these fairs, the *lettre de foire*, a notarised (and therefore legally recognised) contract confirming the debt and its terms, emerged at the beginning of the 13th century. It was followed 50 years later by the invention of bills of exchange (Sangster 2022b). By the last quarter of the 13th century, the large international fairs of Champagne had transformed into financial markets in which these credit instruments circulated across Europe as credit was moved from place to place.

But, credit carried its own transaction costs, not least those that arose if a debt remained unpaid.

Transaction costs of credit

Transactions involving credit needed to be recorded, so that the debt could be efficiently controlled. And, in the event of a dispute, the records needed to be comprehensive and detailed. They also needed to be supported by physical evidence proving their accuracy. In the case of dispute, where physical evidence was lacking or considered insufficient, verbal testimonies from witnesses might be sought as well. This is one reason the names of witnesses appear in entries in early double entry records. These safeguards incurred costs. Nevertheless, when combined with the benefits and risks of its use, the transaction cost of using credit was less than the transaction cost of using coins, bullion, or barter, otherwise credit would never have been universally adopted as a means of settling transactions. The double entry system that emerged and diffused addressed the need for comprehensive detailed records with signposts to the supporting evidence. And it ensured that those records complied with the demands of the law, which is the second factor that led to use of double entry bookkeeping. Both it and the first factor (to control debt) are reflected in the entries in the first known ledger to be maintained in double entry, not from 1296 as claimed in the accounting literature but, 1211.

5. THE FIRST KNOWN EXAMPLE OF A LEDGER MAINTAINED IN DOUBLE ENTRY

The accounting literature recognises the existence of records of bookkeeping by Florentine bankers who were present at the May regional fair in Bologna in 1211. Besta (1916) and de Roover (1956) describe them briefly and move on. Of accounting scholars who have published studies assessing whether they are in double entry, Lee (1972, 58, bold added) declared they are *"not [in] double entry****, for there is no reason to suppose that they kept a profit and loss account****"*; Martinelli (1974, 207) declared that they have *"little or nothing to do with double entry*

[4] An Italian translation of this 800-page study in German was published in 1915.

[5] Statutes would have been issued because commercial practice was good, or because it was deficient. In the case of the latter, it would be reasonable to assume that the resulting statute was based on good commercial practice elsewhere.

bookkeeping"; Sangster (2016) described them as *"dual entries"* (i.e. entries in debit and credit lacking an indication of the location of the contra entry). Both Martinelli and Lee were using definitions of double entry embracing capital accounts and profit calculations. Sangster was seeking page numbers. However, using the definition adopted in this study, page numbers are not required when the detail given is sufficient to know where to look for the contra entry, which the evidence of these entries demonstrate was all that that was needed in 1211.

In the more than 160 entries contained in the 44 accounts that could be read, there is sufficient detail to identify the accounts and the amounts to be debited and credited. Exhibit 1 presents entries from a random selection of seven accounts. They include entries of loans (#1,2,4,5,6), names of witnesses (#s1,3), names of guarantors (#1), transfer entries between accounts of two different people (#1,2,4,5,6), transfer entries between the debtor account and the creditor account of the same person (#1,5,7), payments by 3rd parties (#3), mention of a balance brought forward from a previous book (#4,7), the indication of whether the contra entry of an entry made into an existing account was to an account created with a debit entry or a credit entry, essential information when debtor (loan) accounts were maintained separately from creditor (deposit) accounts (#5,6,7), an indication of the page on which the contra entry was made (#6), the terms of loans (#1,3), and the reason for the transaction (#2). The names of the accounts to use are shown in bold.

Exhibit 1. Examples of double entries from the ledger of Florentine bankers in 1211[6,7,8]

1	**Orlandino the tanner from Santa Trinità** *no die dare* [**debit**] £26 by mid-May, for *buolongnini* [**cash**] {**credit**} which we gave him in Bolongna for the San Brocoli fair. If late, [the interest] is at 4 denari per *libra* per month and, if he does not pay, Angiolino Bolongnini the tanner promised to pay us. Witnesses: Compangnio Avanelle and Bellacalza. Item {**Orlandino**} *die avire* [**credit**] 43 soldi from Mikele, son of Galleti: we posted them {for Mikele} *levammo* [**debit**] the account of **the stutterer Maineti**.
2	**Appollonio Tribaldi** *no dei dare* [**debit**] 8 soldi that we loaned him {in **cash credit**}; he said that he wanted to give them to the son of Aldobrandini Fabro, for grain. Item {**Appollonio**} *die dare* [**debit**] 35 soldi 4 denari for a gypsy to whom *ne demmo* [**credit**] *tornesi* [**cash**]. He said that he wanted to give him it for linen cloths. Item {**Appollonio**} *die avire* [**credit**] 21 soldi less 1 denari *per* [**debit**] **Servodeo, guest of Maineti del Mediko**. Item {**Appollonio**} *die avire* [**credit**] 5 soldi which he gave to Arnolfino {in **cash debit** to give to us} Item **Appollonio** *ci diè* [**credit**] 17 soldi and 5 denari from his hand {**cash debit**}.
3	**Ristoro, son of Pieri the purse maker, and Iakopino, son of Sigolo**, *no dino dare* [**debit]**, each jointly liable, in total £8 and 10 soldi 8 denari for £8 which we gave them {in **cash credit**} 12 days before the first of June at [a charge of] 16 *denari* per *libra*, and are due to pay 12 days before the first of August; if late, [interest is] at 4 *denari* per *libra* per month, for as long as we permit. Witnesses: Alberto Baldovini and Konsiglio dei Kastagniaci. Item {**Ristoro and Iakopino**} *die dare* [**debit]** for **interest** {**credit**} 19 soldi and 4 denari. {Item} **Ristoro** {**and Iakopino**} *ci a dato* [**credit**] from his hand 40 soldi {**cash debit**}; received from Tegiaio on 3rd December. Item Tadellato son of Buono *die per noi* [**credit**] {for **Ristoro and Iakopino**} £7 10 soldi {**cash debit**} 12 days before the first of April.
4	**Gerardo son of Buonackorsi Monteloro**, *die dare* [**debit**] 20 soldi and 10 denari for **Buoglione son of Traversi** {**credit**}; Traverso was a debtor for this in the previous ledger.
5	To **Manetto Passarimpetto** we lent {**debit**} 20 soldi in his hand {**cash credit**}: {signed} Aldobrandino. Item {**Manetto Passarimpetto**} *ci diè* [**credit]** 20 soldi; we deducted from {**debit**} {**Manetto**'s} creditor account {created by an entry from the account of} Buonaquida Forestani.
6	**Alberto son of Ubertini** *no die dare* [**debit**] 22 soldi and 4 denari for two *massasmutini* [**cash**] {**credit**}. {Item} Ubertino {on behalf of **Alberto**} *ci à dato* [**credit**] 22 soldi and 4 denari posted to {**Ubertino**'s} creditor account {that} he had paid {**debit**} {the} above, three parchments after this.
7	**Kirispino Attiglianti** *no die dare* [**debit**] 100 soldi *per* [**credit**] {**Kirispino Attiglianti**'s} account in the previous ledger, in which we had paid the above {amount} to Attiglianti. {Item,} **Attigliante** *ci addato* [**credit**] £3 and 21 denari which was the value of *the English pennies and other coins* [**cash**] {**debit**} {he} exchanged. Item **Attigliante** *ci addato* [**credit**] 23 soldi and 3 denari: *levammo* [**debit**] from {**Attigliante**}'s creditor account.

As demonstrated in Exhibit 1 the accounts of the Florentine bankers are in double entry,

[6] "{}" indicates the text inserted was implied. "[]" indicates what the italicised term means.
[7] The 4 in the second entry in account 2 is represented by a horizontal line touching a vertical bar on its left. As presented by Santini, in his transcript (1887, 169) it is one-third of the way down, which would signify one-third of a *soldi* = 4 *denari*. On the previous page, he drew it with the horizontal line at the mid-point of the vertical bar and interpreted that as meaning half.

albeit not to the rigid formats of later periods embracing use of consistent terminology for 'debit' and 'credit', sequencing conventions, and page numbers. Illustrating the clarity brought by approaching this subject with a clear awareness of what double entry is, what it is not, and of the context surrounding its emergence, this is not the first time that they have been recognised as double entry. But, not by accountants.

How others view these accounts

In 1906, almost a decade before accounting scholars began to adopt a conflated definition of double entry that embraced accounting in pursuit of discovering present-day perfection in the distant past, the German medieval economic historian, Adolf Schaube wrote (p. 119, bold added):

> Of the greatest importance … was the use of a means [other than cash], which alone makes it possible to explain that, given the total inadequacy of the existing means of [monetary] circulation, highly developed trade could have existed. That was the general diffusion that bookkeeping had acquired among businessmen of the time. **The fragments of the Florentine account book of 1211, show us the system fully developed**…; there is no doubt that this adjustment through use of credit to the greatest possible extent was intended to [address] the scarcity and inadequacy of cash.

In 1930, the Italian historian of law and business, Mario Chiaudano (p. 64, bold added) wrote that these records show:

> the first germs of double entry records that will develop and improve over the course of the 13th and 14th centuries … with references from one account to another and the double entries of credit and debit, **they present a system that is already very perfect**.

Neither of these conclusions has been found in the accounting literature. Schaube's linking of the shortage and lack of reliable cash to the widespread adoption of credit in trade, and the resulting need for a bookkeeping system capable of permitting this to develop, should have influenced the trajectory of accounting history scholarship thereafter. Chiaudano's observations should, at the very least, have been investigated to assess their validity. Neither occurred. Had they, it may have been discovered that there was yet more to these Florentine bank accounts than their being recognisably in double entry. For this, it was historians of law, including Mario Chiaudano, who provide the connection.

6. THE LEGAL FRAMEWORK

In 1884, based on a study of an extensive list of surviving civil and mercantile statutes from Italian towns in the 13th, 14th, and 15th century, historian of commercial law and medieval Lombard statutes, Alessandro Lattes, observed many that related to the legal status of account books:

> The books must be endorsed and stamped by the judicial authority, indicating the number of sheets they contain, and must show the title on the first page, that is the name of the owner, of the associates and of the clerk, to whom the material estate is entrusted. **Some statutes give minute accounting rules, prescribe the indication of the cause of payments, in addition to all other circumstances (date, sum, name of creditor and debtor, etc.)**, and prohibit the use of numerical digits in the interior of entries, allowing them only in an external column in order to

[8] The last entry in account 1 appears to have been the result of Mikele holding a promissory note from Maineti.

> be able to easily make the necessary additions. Nor is there any lack of rules and penalties for the alteration and falsification of the registers. **The books can be used as evidence in court,** both in the commercial courts and in the civil *curiae*, **provided that they are kept regularly according to custom**, without any suspicion of fraud, and such regularity has been **recognized by the magistrates of the mercantile bodies**, which are entrusted with the care of examining and approving them. (p.283, bold added)

He continued:

> **Commercial books make full proof against the owner, but in an inseparable way, so that the party who requests their presentation must accept their content in its entirety** … moreover, **in order to confirm the contents of the books, other ancillary proofs are required, such as oaths and witness proof** … The judicial and extrajudicial confession also retains in the statutes of merchants the great importance attributed to it in Roman and canon law, so that the general rule is found in all that after the debtor's confession, immediate execution is carried out against him; also **the great effectiveness attributed to private documents is based precisely on the presumption that they contain the tacit confession of the debt by the writer**. (pp. 284-285, bold added)

Writing three years later about the Florentine bank book of 1211, Pietro Santini, the philologist and historian who first transcribed it in 1887, wrote (pp. 177-178, bold added):

> It should be noted that the book has a certain public character. In fact, **since the laws determined the rules to be followed in the compilation and maintenance of commercial books**, it is clear that the **jurists** from 1211 considered valid, for the judicial effects in commercial matters, a document written in [the spoken language]. And since these fragments have a very developed form, which cannot be believed to have been formed there and then, it is natural to hypothesise that the bank book written in [that language], as we have it in 1211, already existed in the twelfth century.

The historian of medieval law and statutes, Mario Chiaudano (1930, 61), concluded that **the use of offsetting entries between accounts**, which can be seen in these bank book entries, **demonstrates the probative value of these records** and, most relevant to this paper, indicates that transfers between personal accounts were used in this way **because the account books had this status**. But, how did they have that status? The answer lies in one of the words used by Pietro Santini: jurists – experts on the law.

Jurists and commercial law

Lattes (1884, 251) believed that the surviving commercial statutes reflect a period *after* that in which they were first introduced, that these we have belong to a later generation. Commercial statutes were issued by guilds. The surviving statutes typically concern disputes involving bankers or merchants *with anyone else*. Earlier, commercial statutes were issued by guilds to be followed in disputes *between their members*. The first phase began with the founding of the guilds who created the statutes. The guilds in Italy originate from 825 when the Holy Roman Emperor granted Florence, Bologna, Cremona, Ivrea, Milan, Padua, Turin, and Venice the right to reinstate the Roman institution of guilds. Florence was slow to respond, only doing so at the end of the 11th century. Its banker's guild is more recent, having been created by the three largest merchant guilds towards the end of the 12th century. Its first surviving statutes are from 1299, which were derived from statutes issued in 1280 that have not survived (Staley 1906, 35-36, 173-174). However, there must have been statutes in place when it was first formed governing its activities and practices, and those of its members.

While a scarcity of surviving 13th century legislation means that the legal status of account books in much of Italy during that century can only be inferred, the 1204 Milan statute and, in particular, the 1245 Bologna statute implicitly show that account books of bankers, and merchants, were at least part of the evidence that might be presented in the event of a dispute; and, as these statutes embrace non-members of the guilds, they were preceded by similar statutes there and elsewhere. As, indicated by Lattes, they include elements of Roman law, which implies that the first such statutes were built upon aspects of Roman law considered relevant to commercial practice at that time. One aspect of Roman law that is particularly relevant to this topic is that the jurists (i.e. experts on Roman law) of that period recognised the account books of bankers as having probative status but, they could not agree about the status of merchant account books (Lattes 1884, 283). That hesitation could only have been due to a difference in the way merchants kept their account books compared to the bankers. When statutes began to be issued that formed the beginning of commercial law, they needed to embrace the rights relating to account books under Roman law (see Martinelli 1974, 169-184) Thereafter, commercial law concerning account books as evidence began to develop beyond those embedded in Roman law.

However, before commercial law caught-up with practice, the business practice of the Florentine fair bankers[9] of 1211, and any others before them who developed similar bookkeeping systems, would already have led many, if not most fair bankers in Northern Italy to adopt a similar bookkeeping system. But, what of the merchants who used the services of the fair bankers – why do they appear to have taken longer to adopt double entry?

The enigma of the invention of double entry, the law, bankers and merchants

Lattes, Santini, and Chiaudano believed that double entry developed in the form it adopted to satisfy the legal requirements if a banker's account book was to be accepted as legal evidence in the event of a dispute. To do so, when first invented, the double entry system **complied with the demands of Roman law** and **also met the business demand, driven by a shortage of cash**, for credit and book transfer between accounts in bank ledgers. As stated by Schaube (1906), this explains how the expansion of trade in the 12th century was possible when it should have stagnated due to lack of cash.

Because it recorded credit and included book transfers, the way double entry was used required that supporting evidence was held that had to unambiguously relate to specific entries in the account book, and that this evidence was obvious in the account entries. This is why entries include signposts to and descriptions of evidence including the identity of witnesses, witness statements, documents prepared under oath, receipts, promissory notes, or anything else that confirmed the validity or circumstances of the entries made in the account books.

Amendments to the bookkeeping system *had to be viewed as good practice* if they were not to threaten the validity of the account books. This is the point being made above by Pietro Santini about the use of the spoken language rather than Latin. It would have taken some time for jurists to have accepted that this was valid practice under Roman law, which is why Santini hypothesises that double entry in this form was in use by bankers over a decade earlier.

Given the views of those legal scholars, these Florentine bankers were not the first to use double entry. Furthermore, bankers were operating in Florence in 1194 (Staley 1906, 173) and bankers would have been providing credit and facilitating payment through book transfer rather than cash at the regional 2-week fair at the neighbour of Florence, Pisa, in 1164. A fair justice system was established there that year under a guild statute. It was overseen by two guild magistrates and two judges of common practice (Schaube 1906, 723). The Florentine bankers

[9] Fair bankers were merchant bankers who acted as both moneychangers and exchange bankers, as well as engaging in trade.

of 1211 were using a bookkeeping system that had evolved for at least 47 years.

Finally, analysis of the statutes and of the text of the 1211 bank ledger indicates that double entry was not invented by merchants. Medieval jurists were unconvinced that the account books of merchants complied with Roman law whereas they recognised the account books of the bankers, despite the changes they had made to the record typical of Roman times. This conclusion is supported by the surrounding context which emphasises the greater motivation for bankers to adopt sophisticated methods of bookkeeping. Far more merchants attended trade fairs than bankers, yet the bankers served the needs of all the merchants. On average, a banker had to record far more entries in far more accounts than a merchant, and had far more evidence to collect and organise. Bankers, for example, invested funds deposited with them in the loans they made and in any goods they bought for resale elsewhere. Because they were engaged in far more financial transactions, their risks of default and disputes over debt were far higher than those of the merchants.

Compounding that situation, merchants used barter as well as credit to trade. Bankers did not, and they did not have sufficient cash to pay back all their deposits, because some of the deposits they had received had been turned into loans. The bankers, much more than the merchants, needed a bookkeeping system that provided them with the maximum support in the event of a dispute. Overall, irrespective of the status of their account books under Roman law, the onus was on bankers to be far more organised than merchants in the records they kept.

It can be argued that transaction costs reduced for bankers using double entry whereas, for merchants, they would have increased because the bankers would always have had primacy in the event of a dispute. It was less costly to merchants, who were much less exposed to risk of default on debt, to focus on keeping evidence and a simple record of their transactions, which is essentially the argument put forward by Basil Yamey when he wrote that double entry was not used in England by anyone but ("by no means… all") wholesale merchants before 1800 (1956, 11). However, as the bankers moved from fair to fair, other bankers adopted the same bookkeeping, which spread the method across northern Italy (Sangster 2022b). Merchants attending the fairs must also have begun to adopt the method. Otherwise, the statutes would only refer to the account books of bankers. As evidenced by the widespread use of double entry in 14th century Florence (Goldthwaite, 1980; 1991; 2018) double entry also spread into local banking and from there to local trade and domestic bookkeeping.

7. CONCLUSIONS

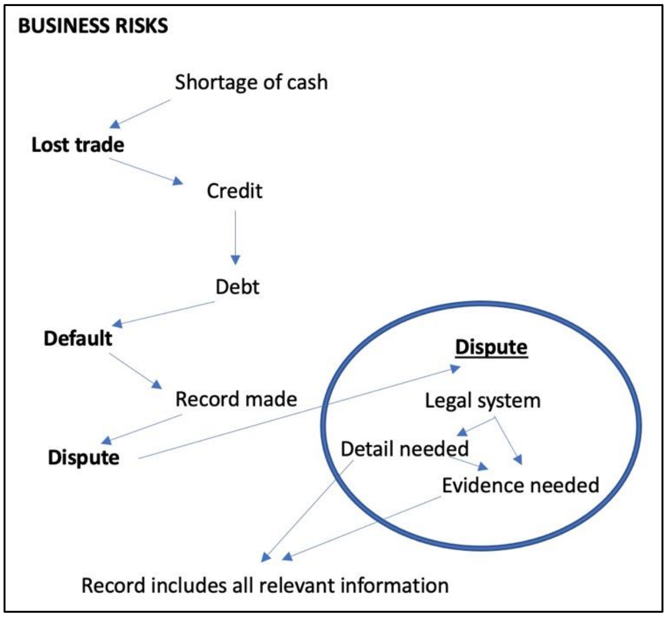
In 13th century Northern Italy, if you traded significantly on credit or traded significantly in debt, you kept a record, which told you where you stood, and why, and you ensured you had evidence, signposted in the record, that proved the truth of what had been recorded should legal process be required to settle a dispute. That is what the Florentine bankers did in 1211. Their bookkeeping system expanded from the basic one defined earlier, to embrace the need for full details and signposting to supporting evidence (enhancement highlighted in italics):

> A bookkeeping system in which all transactions recorded are entered in double entry *and the records of the transactions include all relevant information relating to each transaction, including signposts to supporting evidence*.

To ensure they could tell as full a story as possible in the event of a dispute, the bankers recorded what had occurred, what came in, and what went out. If they converted some coins into the money used in business, they wrote a record that described what had occurred. If, instead of handing over coins in exchange they kept them, they made a record that they owed the customer. If they lent money, they included the terms of the loan in the record. In all cases, they recorded the names of any witnesses. Whenever they had supporting evidence, they noted that this evidence existed in their records.

Double entry and the bookkeeping system based upon it addressed business risks. Figure 1 presents a causal diagram that summarises how the risks impacted this developmental process.

Figure 1. Factors that influenced content of entries in a double entry bookkeeping system



It was the closed nature of the double entry system resulting from recording every transaction twice that ensured its validity. A single entry bookkeeping method does not record the impact of transactions on the element not recorded – whether it is the *item exchanged* or the *form of settlement*. This made single entry, and other methods of bookkeeping unsuitable once it was recognised that entries needed to include all relevant information. Once the double entry method and system was established, the record kept responded to factors including changes in legislation and changes in business needs. For example, a column for transaction amounts was introduced so that account balances were easy to calculate. In 1211, that column was not present. In 1296, it was (Sangster 2022b). The record kept was also influenced by any regulations concerning what it should contain, how it should be prepared, and how the records kept should be organised.

Whether or not double entry was adopted depended on the implicit costs of not addressing those business risks compared to the transaction costs of using double entry. Double entry adoption was akin to taking out insurance: once the risks outweighed the transaction costs, it was adopted. Bankers did so first. Others followed as they recognised the benefits of doing so, its use spreading in Italy to governments, charities, and even households before 1500.

This paper has used the available evidence, causal analysis, and transaction cost theory to construct an explanation for the invention and diffusion of double entry that, in the words of Paul Bolin (2009, 110) *"would give us a high degree of understanding of the relevant phenomena were it to be true."* The overall contribution of this study is the clarity it beings to the factors surrounding the invention, adoption, and diffusion of double entry. These can be applied beyond the period and location of this study, so shedding light on the subsequent adoption and diffusion of double entry across Europe before 1800.

8. REFERENCES

Antinori, C. 2004. La contabilità pratica prima di Luca Pacioli: Origine della Partita Doppia. *De Computis*, Number 1: 4-23.

Besta, F. 1916. *La Ragioneria, Volume 3, 2nd edition*, Facsimile Reprint, 2007, Rome: Rirea.
Bolin, P. E. 2009. Imagination and speculation as historical impulse: Engaging uncertainties within art education history and historiography. *Studies in Art Education*, 50(2), 110-123.
Ceccherelli, A. 1914a. Le funzioni contabili e giuridiche del bilancio nelle Societa Medievali. *Rivista Italiana di Ragioneria*, 14(8): 371–378.
Ceccherelli, A. 1914b. Le funzioni contabili e giuridiche del bilancio delle società medievali (Continuazione e fine). *Rivista Italiana di Ragioneria*, 14(10): 436-444.
Chiaudano M. 1930. *Studi e documenti per la storia del diritto commerciale italiano nel sec. XIII*. Torino: l'Istituto Giuridico della R. Università.
Cipolla, C. M. 1956. *Money, prices and civilization in the Mediterranean world, fifth to seventeenth century*. Princeton: Princeton University Press.
De Roover, R. 1956. "The Development of Accounting prior to Luca Pacioli according to the Account Books of Medieval Merchants." In Littleton, A. C. & Yamey, B. S. (Eds.). *Studies in the History of Accounting*. London: Sweet & Maxwell Ltd: 114-174.
De Roover, R. 1963. "The Organization of Trade". In M. M. Postan, E. E. Rich, & E. Miller (Eds.). *The Cambridge Economic History of Europe from the Decline of the Roman Empire Volume 3: Economic Organisation and Policies in the Middle Ages*. Cambridge: Cambridge University Press, 42-118.
Goldthwaite, R.A. 1980. *The Building of Renaissance Florence: An Economic and Social History* Baltimore: The Johns Hopkins University Press.
Goldthwaite, R.A. 1991. "Dibattito". In Cavaciocchi, S. (Ed.), *L'impressa industria commercio banca secc. XIII-XVIII*, Atti della "Ventiduesima Settimana di Studi" 30 aprile - 4 maggio 1990. Florence: Le Monnier, 262-265.
Goldthwaite, R.A. 2018. Florentine household accounts, fourteenth to seventeenth centuries. *Renaissance Studies*, 32(2), 219-235.
Hoskin, K.W., & Macve, R.H. 1986. Accounting and the Examination: a genealogy of disciplinary power. *Accounting, Organizations and Society*, 11(2): 105-136.
Jeannin, P. 1991. "Les manuels de comptabilité". In Cavaciocchi, S (Ed.), *L'impresa. Industria, commercio, banca secc. XIII-XVIII*. Atti della « ventiduesima settimana di studi » 30 aprile-4 maggio 1990, Florence. Istituto internazionale di storia economica « F. Datini » Prato, Serie II, 22: 243-259.
Kosmetatos, P. 2018. *The 1772–73 British Credit Crisis*. Springer Nature: Cham, Switzerland.
Lane, F. C. 1966. "Theoretical and Historical Interests". In *Venice and History, the collected papers of Frederic C. Lane*. Baltimore, MA: Johns Hopkins University Press: 449-461.
Lane, F. C. 1977. Doubles entry bookkeeping and resident merchants. *Journal of European Economic History*, 6(1): 177-191.
Lattes, A. 1884. *Il Diritto commerciale nella legislazione statutaria delle città italiane, studii di Alessandro Lattes*. Milan: Ulrico Hoepli.
Lee, G. A. 1972. The oldest European account book: A Florentine bank ledger of 1211. *Nottingham Mediaeval Studies* 16: 28–60.
Lee, G. A. 1977. The coming of age of double entry—The Giovanni Farolfi ledger of 1299–1300. *The Accounting Historians* Journal, 4 (2): 79–95.
Martinelli, A. 1974. *The Origination and Evolution of Double Entry Bookkeeping to 1440*. Ph.D. Dissertation, North Texas State University.
Martinelli, A. 1977. Notes on the origin of double entry bookkeeping. *Abacus*, 13(1), 3-27.
McWatters, C. S. 2016. Speculation, history, speculative history. *Accounting History Review*, 26(1), 1-4
Melis, F. 1972. *Documenti per la storia economica dei secoli xiii-xvi*. Istituto Internazionale di Storia Economica "F. Datini", Prato. Firenze: Olschki.
Miller, P., & Napier, C. 1993. Genealogies of calculation. *Accounting, Organizations and Society*, 18(7-8), 631-647.

Munro, J. H. 2001. The “New Institutional Economics” and the Changing Fortunes of Fairs in Medieval and Early Modern Europe: the Textile Trades, Warfare, and Transaction Costs. *VSWG: Vierteljahrschrift Für Sozial- Und Wirtschaftsgeschichte*, 88(1), 1–47.
Pacioli, L. 1994. *Summa de Arithmetica geometria proportioni: et proportionalita*. Venice: Paganino de paganini.
Sangster, A. 2016. The genesis of double entry bookkeeping. *The Accounting Review*, 91(1): 299-315.
Sangster, A. 2018. Pacioli's lens: God, humanism, Euclid, and the rhetoric of double entry. *The Accounting Review*, 93(2), 299-314.
Sangster, A. 2022a. The business needs that drove the emergence of double entry: In defense of Pacioli, again… it is time to remove those dark glasses. *Accounting Historians Journal*. 49(1). In press.
Sangster, A. 2022b. “The diffusion of double entry before 1800”. Paper to be presented at the 15th World Congress of Accounting Historians. St Petersburg, Russia.
Sangster, A. & Santini, F. 2022. Lost in translation: Pacioli’s *de computis et scripturis*. *Accounting History*. in press.
Santini, P. 1887, Frammenti di un libro di banchieri fiorentini scritto in volgare nel 1211, *Giornale storico della letteratura italiana*, Vol. 10: 161-177.
Schaube, A. 1906. *Handelsgeschichte der romanischen Völker des Mittelmeergebiets bis zum Ende der Kreuzzüge*. München/Berlin: R. Oldenbourg.
Schaube, A. 1915. *Storia del commercio dei popoli latini del Mediterraneo sino alla fine delle Crociate*. Torino: Unione Tipografico-Editrice Torinese
Sombart, W. 1924. *Der Moderne Kapitalismus, 6th edition*. Munich and Leipzig: Von Duncker & Humblot.
Staley, E. 1906. *The Guilds of Florence*. London, UK: Methuen and Co.
Winjum, J.O. 1971. Accounting and the rise of capitalism: an accountant's view. *Journal of Accounting Research*: 333-350.
Yamey, B. S. 1949. Scientific bookkeeping and the rise of capitalism. *The Economic History Review*, 1 (2-3): 99-113.
Yamey, B.S. 1956. “Introduction” In Littleton, A.C. & Yamey, B.S. (Eds.). *Studies in the History of Accounting*. London: Sweet & Maxwell, 1-13.
Yamey, B. S. 1964. Accounting and the rise of capitalism: further notes on a theme by Sombart. *Journal of Accounting Research*, 2(2): 117-136.
Yamey, B. S. 2005. The historical significance of double-entry bookkeeping: some non-Sombartian claims, *Accounting, Business and Financial History*, 15(1): 77-88.
Zerbi, T. 1952. *Le Origini della partita doppia: gestioni aziendali e situazioni di marcato nei secoli XIV e XV*. Milan: Marzorati.