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## Chinese double-entry bookkeeping before the nineteenth century

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## **CHINESE DOUBLE-ENTRY BOOKKEEPING BEFORE THE NINETEENTH CENTURY**

*Abstract:* This paper examines the origination and evolution of Chinese double-entry bookkeeping from the fifteenth century to eighteenth century. It demonstrates that Chinese merchants and bankers invented some types of double-entry spontaneously around the late fifteenth and early sixteenth centuries. Several different versions of Chinese double-entry existed and evolved throughout this period to the nineteenth century. Chinese versions of double-entry are similar to Italian-style bookkeeping, although Chinese experience was independent of the dissemination of the Western methods.

### **INTRODUCTION**

Double-entry bookkeeping, with "Debit" and "Credit" as entry direction labels, prevails throughout most of the world. It is widely believed that the invention of double-entry bookkeeping brought about the birth of modern accounting [Littleton, 1966; Ten Have, 1976; Robertson, 1978; Parker, 1984]. In fact, this bookkeeping method constitutes the foundation of modern accounting over the past six centuries. Even in today's high-tech, information-revolution era, double-entry bookkeeping remains the core of the EDP accounting system.<sup>1</sup> The significance and implications of double-entry bookkeeping have been recognized by much research and accounting literature [Kat, 1930; Littleton and Yamey, 1956; Thomson and Yamey, 1958; Winjum, 1971; Lee, 1973; Most, 1972, 1976; Kojima, 1975; Williams, 1978].

Although there is no clear answer about when and by whom double-entry bookkeeping was invented, most authorities

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<sup>1</sup> Professor Yuji Iriji has explored the potential of triple-entry bookkeeping. Although the idea of triple-entry bookkeeping is admirable, it is far from perfect in a practical sense. As well, the underlying principles of triple-entry are stemmed from that of double-entry. Thus, it could be regarded as an extended application of the double-entry bookkeeping system.

agree that it was initiated in some Italian city-states, such as Genoa, Venice, and Florence, etc., between the thirteenth and fifteenth centuries [Yamey, 1947; Chatfield, 1977, ch. 3, 4].<sup>2</sup> The Italian-style double-entry bookkeeping was first summarized by an Italian priest Luca Pacioli in 1494 and translated or introduced into other European countries between the sixteenth and seventeenth centuries. It was spread to the Far East and the rest of the world later [Nobes, 1984].

However, it is insufficient to assert that double-entry bookkeeping was solely invented in Italy, because there is much evidence to suggest that double-entry method was in use in China around the turn of the sixteenth century. This has not been addressed in the Western accounting literature. In fact, Chinese merchants and bankers developed various forms of Chinese-style double-entry methods since the late fifteenth century; these forms evolved independently of Western influences.

This paper presents an examination of Chinese-style double-entry bookkeeping before the nineteenth century.<sup>3</sup> Its purpose is to demonstrate how the double-entry methods were invented and what are the major characteristics of Chinese-style double-entry bookkeeping. The paper commences with a brief summation of ancient bookkeeping in China. It examines the transition of single-entry to double-entry bookkeeping around the sixteenth century and the later developments. The structure of two major forms of Chinese-style double-entry methods, *Longmen Zhang* and *TianDi He Zhang* are illustrated separately. Finally, a brief summary follows.

### ANCIENT BOOKKEEPING IN CHINA

In the five-thousand-year history of China, bookkeeping has evolved with remarkable achievements. China's ancient record keeping techniques reached a stage that could match the developments in other ancient civilizations in the world. Particularly significant was the development of the Ancient World's most sophisticated governmental accounting system during the *Shang*

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<sup>2</sup>Some accounting historians believe that the double-entry system has even been used by Romans much earlier. See Most (1986) *Accounting Theory*, p. 33.

<sup>3</sup>Most of the historical data on Chinese accounting are adapted from the books by Chinese accounting historian, Guo Daoyang, *History of Chinese Accounting* (Chinese version) Vol. I, 1982 and Vol. II, 1988 (Chinese Finance and Economics Publishing House, Beijing). Professor Guo's excellent work is appreciated and acknowledged.

Dynasty (1600-1100 B.C.).<sup>4</sup> Historical data reveals that the budgetary accounts, expenditure control, periodic reporting (with the interval of 10-days, each month or year, etc.) and government auditing, were in existence in Chinese governmental accounting since the *Zhou (Chou)* Dynasty (1100-300 B.C.) [Fu, 1977; Guo, 1982]. Even before the sixteenth century, many innovative accounting techniques, such as account classification, journals and ledgers, monetary unit (currency translation), posting and closing, trial balance, accounting reports, and account checking, were developed in various Dynasties [Guo, 1982]. For record keeping, although the single-entry remained dominant in practice, it evolved and gradually became standardized. Some basic characteristics of bookkeeping in ancient China emerged:

- 1) Account Classification — various books of account have been maintained to account for the major categories of government revenues and expenditures;
- 2) Entry Directions (Labels) — Chinese characters *Ru* (In) and *Chu* (Out) were applied as the labels to indicate the nature of transactions, i.e., *Ru* was used, in front of the description, in recording revenue transactions (receipts), *Chu* was recorded with the expenditure transactions (disbursement); Entries to the books usually included entry directions (labels), description, and amount (quantity) of the transaction;
- 3) Single-Entry — every transaction was recorded with one entry in the books, i.e., only the movement of the property of the state treasury [either *Ru* (In) or *Chu* (Out)] was recorded;
- 4) Journalization — transactions were recorded in the journals sequentially;<sup>5</sup> and
- 5) Account Closing and Trial Balance — books were closed regularly, while a trial balance was prepared using the *Sanzhu Jiesuan* (Three-pillars Balancing) equation;<sup>6</sup>  $Ru$  (In) -  $Chu$  (Out) =  $Yu$  (Balance)

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<sup>4</sup>See Guo, D. *History of Chinese Accounting* (1982) ch. 2. Also, M. Chatfield (1977) *History of Accounting Thought* (Revised version), ch. 2; and Skinner, R. M. (1987) *Evolution of Accounting Standards*, ch. 2.

<sup>5</sup>In Chinese, the journal recording is called *Liushui Zhang*, (Running water recording), it is an image of a stream flowing as transactions were maintained in the books sequentially.

<sup>6</sup>The name of the trial balancing method was after the fact that the equation contains three major components (i.e., *Three-pillars*).

All transactions were first recorded according to either *Ru* (In) or *Chu* (Out) direction. At the end of the accounting period, all entries were summarized and transferred into accounting reports in terms of the three major categories of transaction. The reports were balanced and checked before being submitted to the higher authorities. If the equation was not equal, errors or mistakes in the records surfaced and account checking would follow. Obviously, the *Three-pillars Balancing* method not only examined the recording accuracy, but also reflected the philosophy of a feudalist society: all properties belonged to the paramount ruler — Emperor or the State (Dynasty). The purpose of governmental accounting was to keep track of the flows of state's properties. *Ru* (In), *Chu* (Out), and *Yu* (Balance) were sufficient for this purpose and no profit calculation was necessary.

#### TRANSITION OF SINGLE-ENTRY TO DOUBLE-ENTRY

Compared to governmental accounting, the private accounting (commercial and industrial accounting) progressed slowly in China. The lack of private right and the poor state of commerce, owing to the nature of the feudalist economy, hindered the development of private-sector accounting in China. Although the concept of "profit" appeared in Chinese literature as early as the *Han* Dynasty (206 B.C.-220 A.D.), the method of profit determination did not exist until the fifteenth century [Guo, 1982, p. 232]. Record keeping in the private sector was very crude and simple, governmental accounting techniques were dominant in the early days.

However, historical data does indicate some progress of bookkeeping in the private sector since the late *Tang* Dynasty and early *Song* (*Sung*) Dynasty (960-1279) as the societal attitude changed gradually toward "Commercialism." During these eras, two significant innovations occurred: "Journals and Ledgers System" and "Four-pillars Balancing." As commercial and trading activities burgeoned in the *Tang* and *Song* Dynasties, individual wealth and private business grew remarkably. Pedlary and fairs, family workshops, pawn-broking and banking, trade associations, as well as the technologies in salt-making and iron-smelting were developed. Eventually, the paper

currency and credit system were introduced.<sup>7</sup> Credit sales and purchases became popular: merchants traded with each other in exchange for contracts and commercial notes, guaranteed by mediators, and collected money when the contract was due.

As commerce expanded and the volume of credit sales and purchases increased, the traditional ledgerless bookkeeping became unsatisfactory in handling the diverse transactions. A need developed for a better method of recording the various claims and the settlements between merchants and mediators. Hence, the "Journals and Ledgers System" was developed. Merchants and mediators established three levels of book to keep track of their transactions. When a transaction occurred, it was immediately recorded in the *Caoliu* (memorandum). The recordings were then entered in the *Riqing Bu* (i.e., general journal) at the end of each business day; some subsidiary journals were used if there was significant volume of transactions. Finally, journal entries were summarized and copied to a *Tenqing Bu* (similar to a summary general ledger) every 10 days or month [Guo, 1982, p. 429-430]. Such a structure of books is very similar to the then Italian-style account system, but it was very simple and remained in the form of single-entry bookkeeping. However, the invention of the "Journals and Ledgers System" provided the way for the development of double-entry bookkeeping.

"Four-pillars Balancing," called *Shizhu Jiesuan* in Chinese, is another significant innovation in Chinese bookkeeping during this period. It differed from the "Three-pillars Balancing" by dividing the "Balance" component into *Jiuguang* (Old trust) and *Shizai* (Real existence), while maintaining the other two components, i.e., *Ru* (In) and *Chu* (Out), as *Xinshou* (New receipt) and *Kaicu* (Disbursement) respectively. Thus, this bookkeeping emphasized the net increases in the current period and the separation of carrying forward balances at the beginning and ending dates of the period. This development certainly enhanced the accountability of business activities, since the brought forward balance (old trust) was also a factor in measuring current performance. Also, the separation of the beginning and ending balances of inventory would promote the concept of profit or loss measurement in business activities.

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<sup>7</sup>The government in Northern Song (Sung) Dynasty (960-1127) started to issue paper currency *Jiaozi* and coins [Rugoff, 1964, p. 104; Cotterell and Morgan, 1975, p. 46]. According to Guo's study, *Jiaozi* is the earliest paper currency in China and in the world [Guo, 1982, p. 367].

As the “Four-pillars Balancing” replaced the “Three-pillars Balancing,” the equation for trial balancing changed as follows:<sup>8</sup>

$$1) \textit{ Jiuguang} \text{ (Old trust)} + \textit{ Xinshou} \text{ (New receipt)} \\ = \textit{ Kaicu} \text{ (Disbursement)} + \textit{ Shizai} \text{ (Real existence)}$$

Or:

$$2) \textit{ Xinshou} \text{ (New receipt)} - \textit{ Kaicu} \text{ (Disbursement)} \\ = \textit{ Shizai} \text{ (Real existence)} - \textit{ Jiuguang} \text{ (Old trust)}$$

There have been some past debates in Chinese literature concerning when the “Four-pillars Balancing” was invented. According to the Chinese accounting historian Guo Daoyang, the above-mentioned two trial balancing equations based on the “Four-pillars Balancing” had been widely applied in governmental and private-sector accounting in Northern *Song* Dynasty around the eleventh century [Guo, 1982, p. 401-403]. He found evidence that the method was in use even earlier in late *Tang* Dynasty (900-950), since the books of the *Jingtu* (Clean Land) Temple in Central China in 925 displayed a complete records being segregated by the four-pillars components [Guo, 1982, p. 352-354]. Therefore, it is safe to assert that the method was originated in the late *Tang* Dynasty and early *Song* Dynasty (tenth to twelfth centuries) and it prevailed in business and governmental accounting since then.

Originally, both the innovations of the “Journals and Ledgers System” and “Four-pillars Balancing” remained within the framework of single-entry bookkeeping; however, they became one of the antecedents for the transition to double-entry bookkeeping in China.

As the commercial and trading activities grew, the economic structure of business changed significantly and some elements of capitalist production emerged after the *Ming* Dynasty (1363-1644).<sup>9</sup> As merchants became wealthier, they began to expand and establish handicraft workshops or family plants, small

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<sup>8</sup>There are four components (the four major categories of transactions) in the equation of trial balancing, that is why the method was called “Four-pillars Balancing.”

<sup>9</sup>According to many Chinese historians, even though there is no official capitalist society in Chinese history, the elements of capitalist production were in place in China since the *Ming* Dynasty [see Guo Moruo, *The History of China* (1976); Fang Wenlan, *Treaty of Chinese History* (1978); Ebrey P. B., *Chinese Civilization and Society* (1981); and Guo Daoyang, *History of Chinese Accounting* (1982)].

mining and manufacturing ventures in coal extraction, spinning, textile, and soap-making, etc. This, in turn increased the need for pooled capital, which then stimulated the demand for banking and pawn-broking. Varied banking entities emerged in the private sector around the fifteenth century. *Qianzhuang* (Credit unions), *Danpu* (Pawnshop), *Piaofen* (bank) emerged to participate in various kinds of banking business such as customer deposits, commercial notes, loans, mortgages, currency exchanges, discounts, inter-bank transfers, and pawn-broking, etc. The old-style single-entry bookkeeping became inadequate to keep track of the complicated and increased number of transactions among merchants and bankers. New bookkeeping techniques were required. As a result, *Sanjiao Zhang* (Tripod bookkeeping) or *Pojiao Zhang* (Lame bookkeeping) appeared around the mid fifteenth century [Guo, 1988, p. 110-111].

*Sanjiao Zhang* became a significant innovation from traditional Chinese single-entry bookkeeping. It maintained the same structure of the three primary books (i.e., memorandum, general journal, and general ledger), with an emphasis on journalization. Usually, merchants or bankers would establish three major general journals, i.e., *Huoqing Bu* (Sales and Purchase Journal), *Yinqing Bu* (Cash Journal) and *Wanlai Bu* (Transfer/Personal Account Journal) to record the business transactions, respectively.

Transactions were entered in those journals daily from *Caoliu Bu* (memorandum). The folios of the journal were divided into upper and lower sections on each page. All *Shou* ("Receipt" or "From") entries were recorded on the upper section, while all *Fu* ("Pay" or "To") entries on the lower section.<sup>10</sup> The posting to the Book of General Ledger and the Summary of Trial Balances followed the "Four-pillars Balancing" method.

The fundamental difference between the *Sanjiao Zhang* and the traditional single-entry bookkeeping is the separate recording treatment of different transactions or events: "Transactions involved with claims or transfers must be recorded in *Shou* (Receipt) and *Fu* (Pay) entries in two related journals or ledgers simultaneously; other transactions be only recorded in one direction." In other words, for the claims or transfers, the recording rule is "One entry in *Shou* (Receipt), another in *Fu* (Pay);

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<sup>10</sup>*Shou* (Receipt) and *Fu* (Pay) were designated entry labels in record keeping in the private sector. Correspondingly, *Ru* (In) and *Chu* (Out) were applied in governmental accounting in ancient China.



the amount in two directions should be equal.” For cash sales and purchases, however, the cash dimension was omitted while only its corresponding dimensions were recorded in the Sales and Purchases Journal. The journals were summarized every five days, using the “Four-pillars Balancing” method to determine the ending balance of cash in the period.

Apparently, the recording of transfer and claim transactions were double-entry (recording two dimensions), which is similar to the Italian-style bookkeeping. However, the recording of cash transactions remained single-entry (recording one dimension). That is why the method was called “Tripod (Three legs) or Lame Bookkeeping” in Chinese literature.

Although *Sanjiao Zhang* was a mixture of double-entry and single-entry in nature, its invention was a significant step forward in the evolution of Chinese bookkeeping.

- 1) Its dual recording of the transfer and claim transactions could enhance the control of all claims and transfers;
- 2) The adoption of dual entry directions — *Shou* (Receipt) and *Fu* (Pay) helped the understanding of the substance of business transactions and facilitated account summarization, posting, and trial balancing;
- 3) The method promoted the understanding of the relationships among assets, liabilities, and capitals, and provided an insight into the logic of the trial balancing method: Total of *Shou* (Receipt) should be equal to Total of *Fu* (Pay); and
- 4) It provided an important basis for the later development of other double-entry bookkeeping.

However, *Sanjiao Zhang* did not overcome the disadvantages of the traditional single-entry method. In particular, no integrated account system was utilized. The significance of earning (profit or loss) and its calculations were either ignored or calculated by very crude method of “Total of receipts (inflow) compared against total of disbursements (outflow).” Thus, at best, profit could not be determined with any accuracy. In addition, the mixture of double-entry with single-entry could lead to recording errors; such mistakes were difficult to detect and correct.

Gradually, these potential problems became recognized in practice and led to a more advanced bookkeeping method —

*Longmen Zhang* (“Embankment Bookkeeping”) which was invented by merchants and bankers to replace the *Sanjiao Zhang* in the late *Ming* Dynasty (1570-1640). This innovation kept accounting apace with the business developments that were occurring in China during this period.<sup>11</sup>

### LONGMEN ZHANG

*Longmen Zhang* is a form of double-entry bookkeeping and was originated by bankers but spread into commercial and industrial businesses later.

#### *Book System*

*Longmen Zhang* utilized the basic book system of the *Sanjiao Zhang*, but it incorporated more secondary classifications in journals and ledgers. In addition to subsidiary general journals such as Purchases Journal, Sales Journal, Cash Journal, and Transfer/Personal Account Journal, some subsidiary ledgers were used with the *Tenqing Bu* (Book of General Ledgers). Usually four special general ledgers (i.e., Purchases Ledger, Sales Ledger, Inventory Ledger, and Miscellaneous Ledger) were used. In addition, the *Longmen Zhang* emphasized the use of the general ledgers: to conduct account classification and summarization for various types of business transactions; to perform *Helong* (Closure of Embankment) in trial balancing; and to close accounts and prepare periodic reports.

#### *Account Classification*

In *Longmen Zhang*, four categories of account were designed:

*Jin* (inflow) — to record all revenues and receipts, such as sales, commissions, and other gains;

*Jiao* (outflow) — to record all expenses and losses, such as operating expenses, cost of goods sold, depletion and losses, tax expenses, etc.;

*Cun* (stocks) — to record all inventories (assets) of the entity; and

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<sup>11</sup> There is no definitive evidence about when *Longmen Zhang* was invented in Chinese literature. However, the majority of historians agree the method appeared in the late *Ming* Dynasty and the early *Qing* (*Ch'ing*) Dynasty around 1570-1680 [Guo, 1988, p. 114-116].

*Gai* (claims) — to record all capital and liabilities, which represent the claims against the inventories (assets) in *Cun* category.

Thus, all entries in the journals were posted to general ledgers and then transferred to a Summary of Trial Balances, based on the four categories of account. Accordingly, the four categories of entries occupied different sections of the books, as *Jin* (inflow) and *Cun* (stocks) were recorded in the upper section while *Jiao* (outflow) and *Gai* (claims) were recorded on the lower section.

### *Recording Method*

In *Longmen Zhang*, the record keeping was based on double-entry. In other words, the entry directions for each transaction were *Shou* (Receipt) and *Fu* (Pay): by making an entry in *Shou* and another in *Fu*, the amount in the two sides should be equal. Every transaction was usually recorded twice on the corresponding journal books. *Shou* (Receipt) entry was recorded on the upper section while *Fu* (Pay) entry on the lower section. For example:

- 1) if a transaction resulted in 500 (money units) from sales, the receipt was recorded on the upper section of the folio on Sales Journal and the same amount was recorded as Cash in Deposit or Cash on Hand on the lower section of the same page;
- 2) if the entity incurred expenses of 200 (money units) for operations, one entry was recorded on the upper section of the Miscellaneous Journal and the same amount was shown as cash payment (disbursement) on the lower section of the page; and
- 3) if the transaction was a purchase on credit terms, two entries were recorded as purchase and payable respectively in the Purchases Journal. The records are illustrated in Exhibit 1.

All entries in the journal books were summarized and posted, following the same entry directions, to the general ledgers periodically. From the general ledger, the account report (Summary of Trial Balances) was prepared at the end of each accounting period.

**EXHIBIT 1**

**Illustration of Journal Recording\***

Sales Journal	Miscellaneous Journal	Purchase Journal
(year) (month) (date) <i>Shou</i> Sales to A 500  <i>Fu</i> Cash on Hand 500 (or: <i>Fu</i> Cash in Deposit 500)	(year) (month) (date) <i>Shou</i> Cash on hand 200  <i>Fu</i> Shop maintenance 200	(year) (month) (date) <i>Shou</i> Due to Mr. B 300  <i>Fu</i> Purchase 300

\*In traditional Chinese writing, the order is from top to bottom and from right to left. As well, lunar calendar was used on the books and the year was usually following the title of individual emperor's reign.

*Determination of Earning (Profit or Loss)*

Merchants calculated the cost of goods sold before closing the books at the end of each period. Two kinds of inventory practices prevailed around the sixteenth century:

- 1) Appraisal of inventory — the cost of goods sold in current period was determined by an appraisal of inventory at the ending date, based on the formula as below:

$$\text{Cost of Goods Sold} = \text{Total Purchases} + \text{Ending Balances} - \text{Beginning Balances}$$

- 2) Highest price method — the cost of goods sold was determined by using the highest price of merchandises purchased in the period:

$$\text{Cost of Goods Sold} = \text{Highest purchase price} \times \text{units of goods sold}$$

In practice, the highest price method was more popular because the method would understate periodic earning and the capital amount of the entity. This is certainly an early example of the conservatism convention being applied that apparently benefited merchants.

The earning determination was proceeded in the Summary of Trial Balances through comparison of two pairs of major general ledger categories: *Jin* (inflow) vs. *Jiao* (outflow) and *Cun* (stocks) v. *Gai* (claims). Hence;

$$1) \text{ Sum of } Jin - \text{ Sum of } Jiao = \text{ Earning (profit or loss).}$$

If the balance was positive, it represented a profit; a negative balance indicated a loss.

$$2) \text{ Sum of } Cun - \text{ Sum of } Gai = \text{ Earning (profit or loss).}$$

Again, a positive balance represented a profit and a negative balance indicated a loss.

### *Trial Balancing*

A crucial component of the *Longmen Zhang* was its procedure of trial balancing which was called *He Longmen* (closure of embankment). Its purpose was to examine the accuracy of record keeping and earning determination. Thus, a special book called *Longmen Bu* (Trial Balance of Totals) was set up (or using separate folios on the Summary of Trial Balances) at the end of the period (usually every month). All entries in the books of general ledger were transferred into the *Longmen Bu*, with all *Shou* (Receipt) entries shown on the upper section and all *Fu* (Pay) entries shown on the lower section, in terms of the four major categories of account, i.e., *Jin* (inflow), *Jiao* (outflow), *Cun* (stocks), and *Gai* (claims). Thus the total of *Shou* should have equaled the total of *Fu*. *He Longmen* (closure of embankment) was achieved through the equation of:

$$Jin \text{ (inflow)} - Jiao \text{ (outflow)} = Cun \text{ (stocks)} - Gai \text{ (claims).}$$

The idea of *He Longmen* was to match the two sides of the equation, which would indicate the accuracy of record keeping and earning determination.<sup>12</sup> If there was a difference (a “mar-

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<sup>12</sup>It is clear that the *He Longmen* was named by means of image. The *Longmen* (embankment) was constructed from the two ends separately, and completed when the embankment was closed. Analogically, transactions were

gin”) in the two sides (the two sides of the equation did not match), the difference was called *Longmen Buhe* (failure of closing embankment), which indicated a clerical error or a calculation mistake and thus finding the error in the books was required.

The *Longmen Zhang* has made significant contributions to the advance of Chinese bookkeeping since the sixteenth century:

- 1) The double recording for all transactions represented a better reflection of the economic substance and account articulations among the four major categories of transaction (i.e., the course and results of the operation);
- 2) It advanced the concept and the use of profit and earning determination, since the profit (loss) could be derived from the margin of either revenue and expense accounts (nominal accounts) or stocks and claims (real account), which further assisted an understanding of the relationships among assets, liabilities, capitals and earnings; and
- 3) It developed a built-in mechanics of record checking based on the variance balancing method that could detect the clerical errors or mistakes more effectively.

However, the *Longmen Zhang* remained a primitive form of double-entry bookkeeping. Its main problem stemmed from the lack of an integrated account system. Particularly, the links between nominal and real accounts were indistinct and the use of nominal accounts was not fully understood. Also the limited number of general ledgers in use seemed insufficient for a comprehensive accounting of financial positions and operating results. Hence, in addition to the relatively low level of production in economy, these weaknesses may also be attributed to the slow popularization of the *Longmen Zhang* in the later years. This method became surpassed by another form of Chinese double-entry bookkeeping, *TianDi He Zhang*, in the eighteenth century.

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initially recorded in *Jin* (inflow) and *Jiao* (outflow) as well as in *Cun* (stock) and *Gai* (claims) respectively. Only when the margins of the two sides were matched, the bookkeeping was completed.

*TIANDI HE ZHANG*

*TianDi He Zhang* is also called *Shijiao Zhang* (Quadruped Bookkeeping) in Chinese literature. It is a modified version of the *Longmen Zhang* and emerged in commercial and industrial businesses in the mid *Qing* (*Ch'ing*) Dynasty around early eighteenth century [Guo, 1988, p. 298-299].

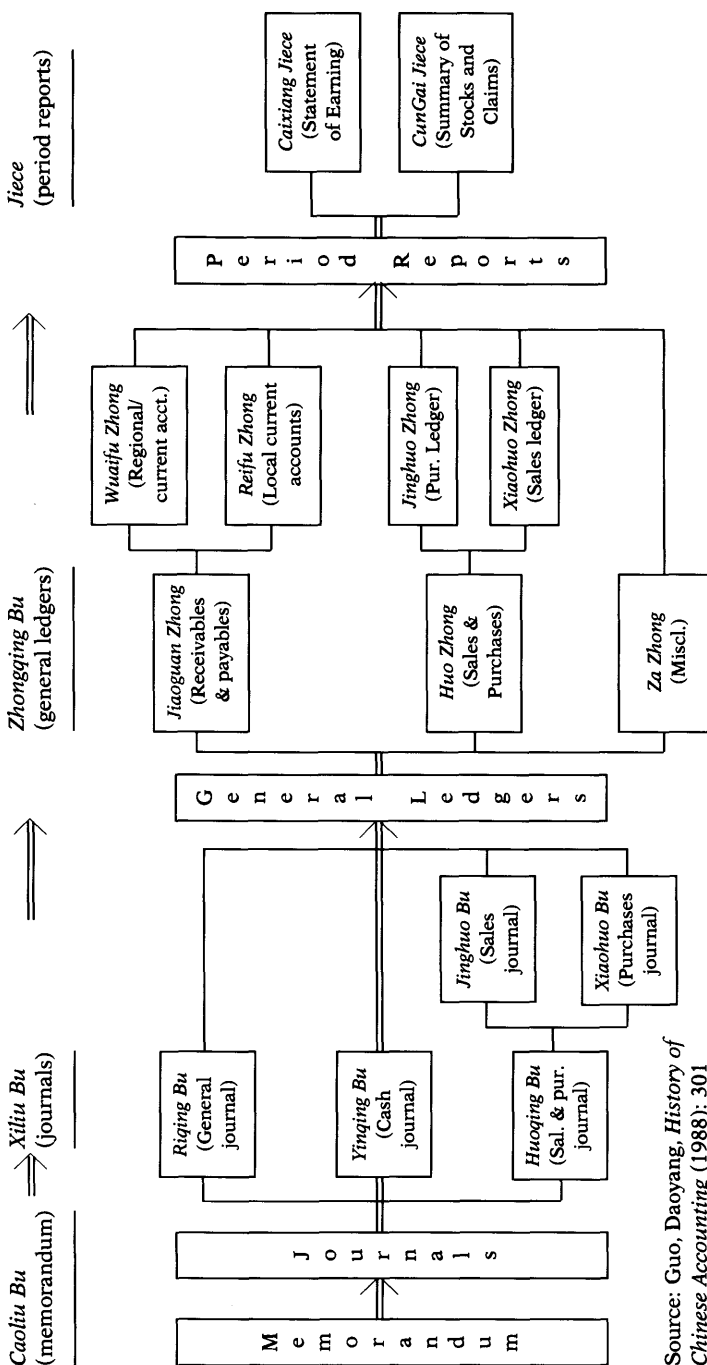
A major improvement of *TianDi He Zhang* is the application of a broader account classification along with the integration of increased general ledgers and subsidiary general ledgers in order to record more complicated commercial and industrial transactions. As summarized by some Chinese accounting historians, the book system of *TianDi He Zhang* can be diagrammed as Exhibit 2.

General ledgers became the most significant component of the record keeping system from which a larger number of subsidiary ledgers could be incorporated. For the small businesses, only one Book of General Ledger and a few subsidiary ledgers were maintained to record the various transactions separately. For those large entities with greater volume and complexity of business transaction, several books of general ledger (i.e., Current/Personal Accounts, Sales and Purchases, Cash Account, and Miscellaneous Accounts, etc.) and a varied level of subsidiary ledgers were utilized. There is no doubt that this innovation of the ledger keeping not only improved the calculation of cost of goods sold and earning determination, but also provided a necessary basis for the preparation of two major accounting reports, i.e., *Caixiang Jiece* (Statement of Earnings) and *CunGai Jiece* (Summary of Stocks and Claims) at the end of each period.

It is interesting to note that the general ledger of Miscellaneous Accounts should be interpreted in a broad sense because it contained all general ledger accounts other than the Current (Personal) accounts, Sales and Purchases, and Cash. Thus, various operating expenses, losses, taxes, properties or fixed assets, retained earnings, capitals and owner transactions, and reserves, were all recorded in the ledger of Miscellaneous Account. Various secondary or subsidiary ledgers were maintained for the purpose of costs (expenses) control and earning calculation. Apparently, the ledger served as a controlling general ledger used to accumulate the operating expenses or expenditure, to record the capital transactions and the distribution of profit or loss [Guo, 1988, p. 303].

The techniques of record keeping under the *TianDi He*

**EXHIBIT 2**  
**Books System of TianDi He Zhang**



Source: Guo, Daoyang, *History of Chinese Accounting* (1988): 301



*Zhang*, fairly similar to that of the *Longmen Zhang*, were double-entry bookkeeping. All transactions must be simultaneously recorded in two corresponding accounts in the journals or ledgers with opposite directions, i.e., *Shou* (Receipt) and *Fu* (Pay).<sup>13</sup>

The major difference between the *Longmen Zhang* and *TianDi He Zhang* is in the aspect of trial balancing. The latter focused on the *Cunchu Jiece* (Summary of Stocks and Claims) to prepare the trial balance. Hence, the balances of *Cun* (stocks) accounts and *Gai* (claims) accounts were summarized at the end of the period. The two sides were balanced by the earning of current period:

$$\text{Cun (stocks)} = \text{Gai (claims)} + \text{Earning (profit or loss)}$$

Apparently, profit or loss was used as a weight to balance the two sides of the Summary of Stocks and Claims. If the record keeping was correct, the total amount in the two sides must be equal with the addition of profit or loss, which was called *TianDi He* (matching of Heaven and Earth) [Guo, 1988, p. 299]. The significance of the procedure is that, by applying *TianDi He Zhang*, merchants and bankers recognized that the earning accounts were only temporary and that they must be closed and transferred into the Summary of Stocks and Claims (real accounts) to reflect the net changes of stocks (assets) of the period.

Nevertheless, the *TianDi He Zhang* is very similar to the Italian-style double-entry bookkeeping. It was a relatively advanced Chinese version of double-entry method utilized before the nineteenth century. However, the method was imperfect. Some of the weaknesses were: insufficient classification of journal and ledger accounts; lack of distinctive separation between capitals vs. liabilities, and capitals vs. earning, as well as relatively overelaborate and imprecise techniques in journal entries and posting. These problems may explain why the *TianDi He Zhang* was unable to compete with the imported Italian-style

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<sup>13</sup>In practice, some merchants separated cash and non-cash transactions in record keeping. For cash transactions, only the corresponding side of cash receipt and disbursement was initially recorded on Cash Journal, while the record of cash side was omitted. However, at regular interval, the total cash receipts, payments, and balance in the period were summarized and posted to the book of general ledger periodically [Guo, 1988, p. 306]. In fact, such a procedure of "Simplification of cash journal entries and periodical sum-transfer to general ledger" remains a form of double-entry.

double-entry bookkeeping and failed to survive after the mid nineteenth century.

### SUMMARY

This paper has examined the evolution of Chinese bookkeeping before the nineteenth century, with an emphasis on the development of double-entry bookkeeping in China. This historical review demonstrates that Chinese bankers and merchants invented double-entry bookkeeping spontaneously around the late fifteenth and early sixteenth centuries. Although there were several versions and recording techniques, the underlying principles of Chinese double-entry bookkeeping were similar to the Italian-style bookkeeping developed in Europe at about the same time. It should be mentioned that the origination of Chinese versions of double-entry bookkeeping, unlike the development in to other European countries originated from Italian practices, occurred independently of the Italian version and other Western disseminations.<sup>14</sup>

Chinese versions of double-entry bookkeeping should be a subject of interest to the accounting community throughout the world. As evidenced by Chinese experience, the emergence of double-entry was a process of evolution rather than revolution. A relative advanced level of single-entry techniques was a precondition (although not a sufficient condition) for the invention of double-entry bookkeeping. The transition from single- to double-entry was evolutionary and took a fairly long period. A hybrid form of single-entry and double-entry was an important step in the transition process.

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<sup>14</sup> Although historical data demonstrate China has long been involved in some kinds of cultural and commercial exchange with other countries (South-east Asia and Middle East in particular) in history [Li, 1971; Garraty and Gay, 1972; Cotterell and Morgan, 1975; and Kublin, 1988], there is no sufficient evidence at present to indicate the existence of the influence from Europe or Middle East on the origination of Chinese-style Double-entry. Actually, according to Chinese accounting historians, the Italian-style double-entry bookkeeping was first adopted by a Chinese commercial bank, China Communication Bank, in 1897 when the bank hired Britons to design and implement a new accounting system [Guo, 1988, p. 333]. The first Chinese book introducing the Italian-style bookkeeping was written by Cai Xiyong, a Chinese scholar who has studied in Japan for several years, and published in China in 1905 [p. 314-315]. However, whether there was a link between the earlier Chinese-style Double-entry and that in the central Europe or elsewhere is still unknown, which may be worthy of further historical study in future.

The invention of double-entry bookkeeping in China is a result of the societal and economic progress, especially it was relating to the levels of development in business, productivity, and technology. The need for new recording methods stemmed from the increased credit-debt relationships. This, along with the need to determine periodic earning (profit or loss), seemed to be the motivating force for the transition of single-entry to double-entry. As the volume and complexity of the commercial and industrial activities grew, double-entry bookkeeping became a necessary device to keep track of the expanded business transactions and to produce more complete and accurate information about the operations.

Although double-entry bookkeeping underwent notable improvement in China after the late fifteenth century, the Chinese-style double-entry techniques remained in a primitive state. Both the *Longmen Zhang* and *TianDi He Zhang* were far from perfect by modern standards. This was determined by the relatively low level, comparing to the West, of productivity and technology in the Chinese economy. The lack of large-scale commercial and industrial productions before the nineteenth century might have hampered the further progress of Chinese double-entry bookkeeping.

The significance of Chinese experience, however, is substantial as it provides interesting insights into the invention of double-entry bookkeeping. Hence, this study promotes the advance of accounting knowledge since today's existing literature contains insufficient coverage of the antecedents and the evolution of the double-entry bookkeeping in the world.

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