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Accounting and the Great Divergence— Deconstructing the Dual Myths of Double Entry Bookkeeping in Europe and China

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Accounting and the Great Divergence

- Deconstructing the Dual Myths of Double Entry Bookkeeping in Europe and China¹

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Abstract

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Abstract

This paper examines two connected narratives: the European claim that double entry was indispensable to capitalist rationality and the Chinese counter-claim that an equivalent indigenous system developed before substantial Western influence. Drawing on accounting historiography, published archival studies and Chinese debates over accounting reform in the 1930s, we distinguish duality of entry and profit calculation from an integrated system organised around the debit–credit duality concept, the business entity concept, the accounting equation and accounting for capital. Credit transactions and book transfers encouraged comparable uses of dual entries in Europe and China, but these similarities do not establish conceptual identity or a shared developmental sequence. We show how twentieth-century reconstructions of traditional Chinese bookkeeping were subsequently recast as evidence of a parallel indigenous evolution, often through reconstructed chronologies and retrospective translations of accounting categories. We argue that functional comparison is more informative than measuring all systems against a single Western trajectory. This approach qualifies both myths and situates China’s adoption of modern double-entry bookkeeping within a history of institutional change rather than predetermined convergence.

1 Introduction

China’s rapid economic growth over nearly four decades has prompted major reassessments of global history. Joseph Needham, the comparative historian of Chinese and Western science and technology, argued that China led the world in medieval times. Kenneth Pomeranz’s *The Great Divergence* (2000) brought the debate forward to the eighteenth century by arguing that China, or at least parts of it, remained comparable to the most advanced parts of Europe. His reassessment extended across technology, institutions, property rights, contract enforcement, business organisation and social structures. *The Great Divergence* debate thus challenged a long-standing literature on Western exceptionalism (Brandt, Ma and Rawski 2014).

An accounting-related argument in this Rise of the West literature was the so-called Sombart–Weber thesis, which singled out Western scientific accounting methods, or what we now know as double-entry bookkeeping (hereafter DEB), as a key driver of rationality in modern capitalism. Sombart claimed that “capitalism without double-entry book-keeping is simply inconceivable” and ‘methodical accounting methods were basic attributes of the development of capitalism in the West, and in the West alone’ (cited in Gardella 1992, p. 317). More specifically, double-entry bookkeeping also facilitated the redefinition of the very idea of ‘capital’ itself, for it allowed the conceptual separation of a firm from its constituent individuals. Henceforth, profit became inseparable from the elastic abstraction ‘capital’, which was capable of quantification and translation into ever more complex institutional forms (i.e. the joint-stock company and its successor, the modern corporation) (Gardella 1992).

Turning to China, Weber (1947) argued that the absence of scientific accounting inhibited the rational calculation of capital and profitability. He claimed that ‘there was no genuine, technically valuable system of commercial correspondence, accounting, or bookkeeping’. Weber attributed this partly to alleged computational difficulties, including a purported lack of numerical place notation and limitations associated with the abacus. More fundamentally, he invoked sociological factors. In his account, the predominance of closed family firms reduced the need for accountability and prevented the separation of household and business activities, whereas Western trading companies depended on credit relationships and partnerships beyond the family (Gardella 1992). This early twentieth-century argument finds a recent echo in Avner Greif, Joel Mokyr and Guido Tabellini (2024), who emphasise the contrast between Europe’s corporate social structures and China’s family- and lineage-based structures.

It was through the Sombart–Weber thesis that double-entry bookkeeping had gained near-mythical status. Indeed, as Hoskin, Ma and Macve (2013, 2016) suggested, the myth had become so powerful that “there appears to be a need either to claim its invention for other countries (for whom it was supposedly imported to Italy) or to create a “counter-myth” that other countries developed an equivalent form of account of their own”. This counter-myth has led to a search for traces of indigenous double-entry bookkeeping in China developed independently of Western influence.² These searches culminated in the magnum opus of Guo Daoyang, China’s greatest accounting historian, which articulated a grand narrative delineating a three-stage Chinese accounting developmental sequence evolving from single-entry to double-entry bookkeeping (Guo 1988, 2023).

This paper reassesses that question by examining the relationship between historical practices and the categories later used to describe them. We bring together accounting historiography, published evidence from Chinese account books and the debates over accounting reform in Shanghai during the 1930s. Our analysis makes two distinctions. First, dual entries recording the two sides of a transaction should be separated from an entity-wide system that integrates accounts and periodically closes profit or loss to capital. Second, functional similarity should be separated from conceptual identity. The Chinese categories *shōu* and *fū*, conventionally translated as inflows and outflows, cannot simply be equated with debit and credit. Nor does a balancing relationship between Receipts, Payments, Keeping and Owing necessarily perform the same role as the modern accounting equation. The history of Western accounting also requires caution: concepts now used to explain double entry were not all explicitly formulated when its earliest procedures emerged.

² which inhibited the sprouts of capitalism. Ma (2004) briefly describes the search for sprouts of capitalism in China in the 1950s and 1960s. For a more in-depth discussion, see Faure (2006, Chapter 2).

There are clear similarities in the use of dual entries to manage credit transactions and book transfers in Europe and China. Beyond these similarities, however, differences in the treatment of the business entity, capital and profit complicate any account of parallel evolution. The chronology of an indigenous Chinese system also rests partly on retrospective reconstructions whose evidential links require scrutiny. This does not diminish the sophistication of traditional Chinese bookkeeping. It changes the comparative question from whether Chinese practices anticipated a predetermined Western destination to how particular methods met commercial needs and how their meanings changed over time.

Our contribution is therefore to connect the critique of the European double-entry myth with a reassessment of its Chinese counter-myth. We argue that accounting history must examine how knowledge was preserved, taught, codified sometimes in a social and power relationships, as well as how transactions were recorded. Seen in this way, China's encounter with modern Western accounting involved professional institutions and bodies of theory developed over centuries, rather than the simple transfer of a fifteenth-century technique. Section 2 reviews critiques of the European narrative. Section 3 traces the reconstruction of indigenous Chinese double entry through modern reform debates. Section 4 compares concepts, archival practices and developmental schemes. Section 5 draws out the implications for comparative accounting history and the Great Divergence debate.

2 Deconstructing the European Myth of Double Entry Bookkeeping

Long before the Great Divergence debate, Basil Yamey challenged the Sombart–Weber thesis in a series of influential studies (Yamey 1949, 1964, 2004, 2005). Although DEB developed in Italy in response to the needs of nascent capitalism in the fourteenth and fifteenth centuries (de Roover 1956, p. 174), Yamey (1949) questioned how widely it was practised elsewhere in Europe before the nineteenth century. Yamey (2004) also observed that Pacioli's original publication was a mathematical treatise of more than 600 pages, weighing about two kilograms, and hardly a convenient reference manual for an ordinary merchant. Its bookkeeping section may therefore have remained relatively inaccessible for centuries. De Roover likewise characterised the fourteenth and fifteenth centuries as a particularly innovative period in accounting, followed by prolonged stagnation until the nineteenth century (quoted in Hoskin, Ma and Macve 2017, p. 19). Yamey (1949) examined accounting manuals published between 1494, when Pacioli's treatise appeared, and the 1840s, when joint-stock companies began to reshape accounting. He found little evidence of careful profit analysis, a clear separation of business and domestic affairs, or sustained attention to how accounting procedures affected reported profit (Yamey 1949, p. 109).

Yamey acknowledged DEB's comprehensiveness and capacity to organise information for routine administration and asset control, but argued that its superiority should not be exaggerated (1964, pp. 133–134). Single-entry systems containing personal accounts for debtors and creditors and

a cash account could provide much of the information needed for routine administration (Yamey 1964, p. 134). This critique raises doubts about treating DEB as a dominant cause of modern capitalism, a question subsequently explored from different perspectives by Winjum (1971), Most (1971), Bryer (2000a, 2000b), and Robertson and Funnell (2012).

To a certain degree, the most powerful critique of the origin of the myth of DEB came from Keith Hoskin and Richard Macve – both disciples of Basil Yamey – who argued that the origin of DEB may have been embedded as much in economic needs as in the rise of a new power–knowledge relationship in the sense of Michel Foucault (Hoskin and Macve 1986). The creation of DEB, particularly its specific format, may have more to do with the focus on new ways of writing and interpreting texts in the newly established teaching institutions – the ‘universities’ – as Europe emerged out of the ‘Dark Ages’. In particular, one may see that new patterns of ‘doubling’ and new techniques such as alphabetical ordering, cross-referencing, subject indexing and marginal indexing symbols in the layout of pages of texts were endemic in the academic world by the twelfth and thirteenth centuries (Hoskin and Macve 1986, p. 108). Specifically, the so-called ‘alphanumeric’ system, with the alphabet used for indexation, different letter sizes used to stratify text, and Arabic numerals replacing Roman numerals and letters in page numbering (foliation) and line numbering, took shape in the few hundred years before Pacioli’s publication (Hoskin and Macve 1986, p. 111).

The rise of the new universities was important not just in relation to knowledge but also in the creation of powerful new elites – the ‘magistri’ or Masters. Pacioli would count as one who had ‘passed’ the formal examinations first introduced in Paris and Bologna in the twelfth century. The new ‘graduates’ used techniques such as archiving, cross-referencing and examination in the service of the Court or the Church (Hoskin and Macve 1986). Extending from the traditional arenas of power of Court and Church, this new power–knowledge relation reached into the new European arena of power – banking and commerce – in which Italy was leading the way through men such as Pacioli. This expressed itself in the rewriting of money into new forms, in particular the development of the ‘bill of exchange’, involving, in its early form, the ‘doubled’ writing of two bills to create bilateral written exchanges, from which the ‘double writing’ of endorsement, and then discounting, on one bill was later to develop (Hoskin and Macve 1986, pp. 116–20). In parallel was the new writing of debit and credit entries in account books, which was to lead to DEB.

The new textuality was to be given a vital impetus by the invention of printing (i.e. in Europe) in the middle of the fifteenth century, which brought both a further visual ordering of layout and a new approach to books as a depersonalised and, through the cheapness of paper, more widely

accessible source of knowledge. Hence, as Hoskin, Ma and Macve (2013) argued, a genealogical interrelationship of power and knowledge emerges whereby new knowledge and skills learned in educational institutions both create new potential for achievement and become the means of access to power, while those who thereby have become newly powerful promote and privilege the use of the knowledge and skills they have learned (pp. 18–20).

Following Yamey's line of reasoning, Hoskin and Macve (2012) attribute the near-mythical status of double-entry bookkeeping as scientific and rational by the start of the twentieth century to the commercial interests and the intellectual credibility of authors of double-entry bookkeeping manuals (starting with Pacioli in 1494), as well as to the nascent accounting profession's need for a respectable knowledge base on both sides of the Atlantic from around 1880.

3 Reconstructing a Counter Myth in Modern China

In the long history of accounting writing in China, two innovations in single-entry bookkeeping developed during the late Táng dynasty (618–907 CE) and the early Sòng dynasty (960–1279 CE). Firstly, merchants started to use journals and ledgers as well as memorandum books. Secondly, merchants increasingly used the Four-Pillars method, which is equivalent to $\text{Opening balance} + \text{inflows} - \text{outflows} = \text{closing balance}$, to determine the balance on an account.³ Nonetheless, however developed Chinese accounting may have been, Guo Daoyang, the great accounting historian responsible for the grand reconstruction of Chinese accounting history, prominently acknowledged at the outset that until the early twentieth century, China had no equivalent of Luca Pacioli's treatise on commercial bookkeeping, no systematic theory of bookkeeping, and no integrated system of accounts in a standardised format. As accounting techniques were often taught through a personalised apprentice-based system of teaching, there was heterogeneity in record keeping depending on which regions or guilds merchants or record keepers belonged to (see Guo 1988).

Indeed, much of the narrative and reconstruction of the myth of China's indigenous DEB appears to have been largely based on sources from the first quarter of the twentieth century, when modern China began to come to grips with Western accounting theory and methods. Of course, what twentieth-century China encountered was no longer the simple double-entry bookkeeping of Pacioli's 1494 treatise but a set of concepts and theories, pedagogical materials, and an accounting profession that had come into being from the eighteenth and nineteenth centuries. Below, we

³ Three-Pillars closing method: $\text{Inflows} - \text{outflows} = \text{closing balance}$. Lin (1992, pp. 106–108).

show that the Hoskin–Macve power–knowledge relationship thesis on the rise of DEB in the West is highly relevant for understanding the counter-myth in Chinese DEB.

3.1 Western Bookkeeping in Twentieth Century China

Although China had been forced open by Western imperialism due to her defeat in the Opium War of the 1840s, Chinese ideology had remained largely conservative during the second half of the nineteenth century. But it was not until her disastrous defeat in 1894–96 by Japan – a nation that had engaged in far more thorough Western learning (including the introduction of Western DEB methods) – that Qing China began a genuine reform movement based on the successful Western learning experience of Meiji Japan (Ma and Rubin 2024). Similarly, although Western-style debit-credit double-entry bookkeeping entered China through foreign-owned and foreign-controlled businesses and government entities (such as the Maritime Customs), China’s genuine engagement with Western accounting methods only started in 1905 with the printing of *Lianhang Zhangbu*, which means ‘Chain Accounting’, by Cai Xiyong and his son Cai Zhang, who visited Japan (Aiken and Lu 1998, p. 142; Chen 1998, p. 79). Cai attempted to make debit-credit double-entry bookkeeping more amenable to China by retaining the bi-vertical layout of Chinese accounts instead of adopting the bilateral layout of Western-style T-accounts, by using Shuzhou numerals⁴ instead of Hindu-Arab numerals and by using the Chinese accounting terms *Cún* [存], which means ‘keeping’ or ‘stocks’, to represent the assets side and *Gāi* [该], which means ‘owing’ or ‘claims’, to represent the liabilities/equity side of the balance sheet.

The second book, *Yinhang Bujixue*, which literally meant ‘Bank Bookkeeping’, was published in 1907 by two authors who had originally learnt Western accounting through Japanese sources (Auyeung and Ivory 2003, p. 15). This book was instrumental in introducing debit-credit double-entry bookkeeping to accountants in China and in its adoption by the modern (as opposed to the traditional) banking industry (Chen 1998, p. 79).

The question of accounting theory and standards had come to the fore in the 1920s and 1930s, especially in China’s treaty port of Shanghai, which had seen rapid industrialisation and the rise of modern firms and banks. More importantly, Western learning or knowledge had become the source of power and prestige especially in Shanghai. This was accompanied by the Republic of China’s promulgation of accounting and auditing legislation and the rise of accounting firms,

⁴ In Chinese, numbers can be represented in three different ways: (1) standard characters for numbers, (2) Shuzou numerals or ‘*Sūzhōu mǎzì*’ [苏州码字], derived from rod numerals, which are simplified numerals that merchants used for calculations and account books, and (3) more complex characters in financial documents to prevent forgery. See Yuan et al. (2017).

accounting professional societies, and schools in major urban centres (Guo 1988, pp. 310–351 and Chapter 9). In this context, an insightful debate ensued between the proponents of gradualist reform of Chinese accounting, led by Xu Yongzuo, and proponents of wholesale transformation, led by Pan Xulun, both based in the Western treaty port of Shanghai. Both sides of the debate agreed that deficient accounting was one of the most important factors causing industry and commerce to remain underdeveloped, and that improving accounting was crucial for Chinese business and economic development.

In 1933, Xu Yongzuo articulated the objectives of the movement to improve Chinese-style bookkeeping and accounting with a ten-point reform plan to generate what he termed a ‘reformed Chinese accounting method’. Xu, the proponent of gradualist reform, started by identifying the main problems in traditional Chinese accounting as the lack of scientifically rigorous accounting principles, methodical accounting practices and systematic classification of accounts in the general ledger, as well as insufficient attention to the preservation of accounting documentation. In particular, Xu highlighted the pervasive social prejudice that regarded accounting and accounting professionals as merely recording transactions (Guo 2023, p. 2892). Nonetheless, Xu’s gradualist reform could accommodate important features of traditional Chinese accounting by retaining and continuing to use the *shōu-fù* duality concept, the vertical format and the Suzhou numerals, etc. (Li 1935).

Xu’s reform plan generated lively debate among accounting professionals in Shanghai and faced criticism from the Western-trained accounting professional Pan Xulun. Almost echoing the Western accounting professionals of the time, Pan attacked the very idea of a dichotomy between Chinese and Western accounting and argued that if DEB is scientific, then it is also universal and should not be pigeonholed by national or cultural labels (Pan 1934, pp. 203–204; Guo 2023, pp. 2904–2905). Hence, Pan did not see the merit of the continued use of the *shōu-fù* duality concept for recording transactions, as it would lead to fundamental conceptual confusion. The *shōu-fù* duality concept in traditional Chinese accounting records the origins and destinations of cash from the subjective perspective of the owner(s), whereas the debit-credit duality concept records the dual effect of transactions on the assets and liabilities of the business entity. The concept of the business entity – a concept that was either vague or absent in Chinese accounting practice – lies at the heart of double-entry bookkeeping. In China, the subjective *shōu-fù* duality

concept records the origins and destinations of cash or transactions from the perspective of the owner(s).⁵

Pan Xulun's camp held that debit-credit double-entry bookkeeping is the international bookkeeping method that is universally recognised as rational and complete. Hence, his proposal was relatively straightforward: wholesale reform of bookkeeping and accounting in China.

The 1930s Xu–Pan debate echoed many of the much larger and somewhat ferocious debates stirred up by the Western challenge since the mid-nineteenth century in the political, economic, cultural and social spheres (see Ma 2022 for the wider debate). In accounting practices, it was the more radical voices from the Pan camp that carried the day, aided by China's adoption of the Arabic numeral system, the horizontal writing format, ink pens (rather than traditional brush pens), modern paper and printing. By the time of the founding of the People's Republic of China in 1949, the debit-credit double-entry bookkeeping method was widely used in medium- and large-sized businesses (Chen 1998, p. 81).

Nonetheless, the scholarship and debates of the early twentieth century left a long-lasting legacy as scholars in both camps began to systematically scrutinise and theorise traditional Chinese accounting history and practices in an attempt to accommodate or adapt to Western accounting practices. Their efforts led to an insightful reconstruction of a traditional accounting system composed of what they called the Three-Legged Account and Four-Legged Account systems – terms probably reinvented in the early twentieth century – as well as the Dragon Gate Account system – a term that had appeared in traditional Chinese accounting manuals. These reconstructed systems, sometimes referred to as pre-reform Chinese-style accounting, to a certain degree incorporated some Western accounting practices (Zhang 1934a, p. 80). Part of the reconstruction aimed to show, as Xu Yongzhuo did, that traditional Chinese bookkeeping could be adapted into a debit-credit double-entry bookkeeping system over time despite their fundamental differences.

3.2 The Birth of a Counter Myth

Hence, the 1980s reforms that opened China to marketisation and the West also led to the rediscovery of the intellectual legacy of the early twentieth-century debate, which had once aimed to show that traditional Chinese accounting could be reformed to be compatible with the Western

⁵ In the West, Pacioli described the debit-credit duality concept in 1494, but it was Don Angelo Pietra who, in 1586, first thought of a business enterprise as distinct from its owner, although the concept had been inherent in the Florentine *compagnie* or commercial partnership of the fourteenth and fifteenth centuries (Peragallo 1938, p. 79).

accounting system. We argue that this rediscovery – with the Western learning rising again as the new source of prestige - morphed into the very foundation of a counter-myth that historical China had a parallel or nearly equivalent form of indigenous double-entry bookkeeping developed prior to or without Western influence.⁶ In particular, Guo Daoyang articulates a grand narrative of a three-stage Chinese accounting developmental sequence evolving from single-entry to double-entry bookkeeping (Guo 1988, 2023). The first intermediate stage, the Three-Legged Account system, combines single entries for cash transactions with dual entries for non-cash transactions. Then came the second stage around the seventeenth century, the Dragon Gate Account system, which was allegedly an indigenous form of double-entry bookkeeping developed by Shānxī remittance/draft bankers. In the third stage, the Four-Legged Account system came into being by the mid-eighteenth century, that is, well before China’s forced opening to the West during the mid-nineteenth-century Opium Wars.

These descriptions or constructions of a parallel counter-myth of Chinese DEB were, interestingly, derived from a reframing of the arguments made in accounting journal articles and textbooks by practitioners and academics during the 1920s and 1930s (Guo 1988, pp. 298–310). For example, in a chapter of the university textbook *Bookkeeping and Accounting* published in 1930, accounting scholar Jiang Canglang explicitly used traditional Chinese accounting terms and methods to explain Western double-entry bookkeeping and also subjected the Chinese-style double-entry recording methods, balancing procedures, and classification systems to analytical exposition and theoretical justification from the standpoint of the (Western) scientific principles inherent in the Four-Legged Account system (Guo 2023, pp. 1814–1818). Extending this argument, Guo (2023, pp. 1816–7) went on to claim that Jiang’s explanation actually demonstrated the fundamental consistency between the Four-Legged Account system and debit-credit double-entry bookkeeping principles, or the existence of Chinese double-entry bookkeeping, while elsewhere Guo himself actually noted fundamental conceptual differences between the traditional Chinese and Western accounting systems (2023, pp. 2892–2905).

The most striking case of reconstructing a counter-myth is the invention of the timing of the first appearance of the so-called Dragon Gate Account system or *Lóngmén zhàng*. Its appearance was dated to about the middle of the seventeenth century (i.e. about 150 years after the first appearance in Italy in 1494 of Pacioli’s printed *Summa*, and up to 350 years after the first Italian records believed to have been kept in full DEB), with a final refinement (the ‘Four Feet’ system,

⁶ Ma (2004) briefly describes the search for sprouts of capitalism in China in the 1950s and 1960s. For a more in-depth discussion, see Faure (2006, Chapter 2).

also known as ‘Heaven and Earth Matching’: *Tiān Dì Hé* 天地合) coming in the mid-eighteenth century (1988, pp. 114–116). We can show clearly that this supposed history of indigenous Chinese double-entry bookkeeping and its dissemination was largely a reconstructed myth patched together through a broken chain of empirical and factual deduction. At the time, the only surviving evidence to show that Dragon Gate accounts were used by the Shānxī bankers came from the early twentieth century. In order to push the existence of the Dragon Gate Account system back to the seventeenth century, the claim was made that the origin of the Shānxī bankers or *piàohào* could be traced to their connection with two eminent late Míng anti-Manchu intellectuals by the names of Gu Yanwu (1613–1682) and Fu Shan (1607–1684). However, historians quickly dispelled any connection between the Shānxī *piàohào* and Gu Yanwu and Fu Shan in the seventeenth century (Shi Yuqian 1985, Zhang Lishen 2006). Further, it turned out that the Shānxī banking/remittance business who allegedly used Dragon Gate bookkeeping only started in the nineteenth century, or more precisely in 1823.

Interestingly, the invoking of the late Míng intellectual elites such as Gu Yanwu and Fu Shan seemed like a subconscious attempt to make up for the absence of equivalent intellectual elite of the kind like Luca Pacioli in the West. Indeed, as mentioned earlier, not only was there a glaring absence of any systematic rigorous treatise on accounting until the 1920s, but also the few accounting guides that had survived in the 19th century were part of commercial handbooks written by largely unnamed authors (Yuan and Macve 2024, Zhang 2025 and Wang 2026). Nonetheless, the claim that Dragon Gate system or the myth of Chinese DEB continued to spread since Gu Daoyang’s book was published in 1988 in Chinese (pp. 114–123).⁷ The counter-myth became complete as this narrative found its way into the Anglophone literature (Lin 1992, Aiken and Lu 1993, 1998, Auyeung 2002, p. 6, Auyeung and Ivory 2003, pp. 10–11, Chen 1998, pp. 76–77, Ji and Lu 2013, pp. 324–325, and Lin 2003).

⁷ The paper by Chen Shenshu (cited in Guo Daoyang 1988), published in 1980 (in Chinese), is the earliest piece that we have seen that speculated on this origin and made the claim that Lóngmén zhàng began with the Shānxī bankers, who in turn had supposedly originated in the seventeenth century, but the paper gives no references in support of this claim. Both in Gu’s 1988 book and in his later works with others, the fact that Lóngmén zhàng also originated in the sixteenth and seventeenth centuries is then taken as given with almost no references at all to original sources. Guo’s 1988 work did not cite the work by Shi Yuqian (published in 1985 in Chinese), who disputed the late Míng / early Qīng origin of the Shānxī bankers. His book did cite works by Zhang Taiyan Zhang Yilin and others who were writing in Chinese in the 1910s and 1920s. But both these Zhangs only wrote about the (supposed) relationship between Gu Yanwu and the Shānxī *piàohào*, with no mention of Lóngmén zhàng. Guo himself admitted that the dating of the origin of the Shānxī bankers was controversial, but he was inclined to believe that they originated in the late Míng / early Qīng. Although now careful not to state that Gu and Fu developed the Dragon Gate Account system, Guo (2023, p. 1588; 2023, pp. 1587–1589) clarifies that he regards old legends and popular expressions by Zhejiang merchants as corroborating that the Dragon Gate Account system was already being used by the late Míng or early Qīng periods.

4 Myths and Realities of Bookkeeping in Europe and China

4.1 Concepts Underlying Double Entry Bookkeeping

Because DEB is generally considered superior to single-entry bookkeeping, the latter has attracted relatively little attention (Yuryevich 2024). Yet there is limited agreement on how either should be defined, how one developed into the other, or whether DEB necessarily requires the periodic preparation of a statement of profit or loss and a balance sheet.⁸ We begin with Sangster's (2016, pp. 299–300) distinction between the emergence of double entries from dual entries and the development of an entity-wide DEB system in which the general ledger provides the basis for financial statements. Sangster (2016, pp. 300, 302) links the absence of separate cash accounts in late twelfth- and early thirteenth-century Italian banking and commerce to prohibitions on usury. The *quaderni di cassa*, or cash books, recorded cash receipts and payments as single entries in the personal accounts of the other parties to a transaction. He distinguishes dual entries from double entries. Dual entries record equal amounts on opposite sides of two accounts without indicating where the corresponding entry can be found. Double entries include cross-references to the corresponding debit or credit entries.

Sangster (2016, p. 308) argues that dual entries developed into double entries in Florence because the guild required accurate banking records and enforced this requirement through unannounced audits. Even without an entity-wide DEB system, cross-referenced entries facilitate internal and external checks. The earliest known example of dual entries appears in two parchment folios from a Florentine banking firm dated 1211 (Sangster 2016, p. 302). Lee (1972, p. 56) describes complex debt settlements involving offsets between customers and their debtors, possible use of bills of exchange or promissory notes, and transfers between bank accounts. Book transfers⁹ supported lending, currency exchange and the expansion of trade on credit. Lee (1973, p. 60) also argues that debit and credit concepts underlay the 1211 accounts, despite the absence of a two-sided layout.

According to Sangster (2016, p. 306), the ledger developed towards an entity-wide DEB system as accounts for cash,¹⁰ merchandise,¹¹ capital, income and expenditure were added to the personal accounts it had originally contained. A trial balance supported the preparation of a revenue and expense account, whose balance was closed to capital. Chapter 34 of Pacioli's bookkeeping treatise describes this process (Geijsbeek 1914, p. 73). Pacioli's discussion concerned a sole trader. In

⁸ We do not examine whether DEB necessarily entails a distinction between revenue and capital expenditure, or the use of accrual accounting, including depreciation of non-current assets.

⁹ Book transfers move funds between two or more accounts without physically transferring gold, silver or copper coins, or calculating exchange values for coins of differing purity.

¹⁰ Because the Catholic Church prohibited usury, interest transactions had to be concealed. Entries in the personal accounts of banks, moneylenders and merchants did not necessarily correspond to actual cash payments or receipts. See de Roover (1956, p. 120) for an example. Cash accounts became more common as restrictions on usury weakened in the mid-fifteenth century (Sangster 2016, p. 302).

¹¹ De Roover (1956, p. 117) argues that merchandise accounts developed in response to agency relationships involving goods received and sold on consignment.

partnerships, an entity-wide system could help determine periodic profit or loss and each partner's share under the partnership agreement. However, sole traders and simple partnerships could also determine profit by comparing net assets with invested capital without maintaining a full DEB system (de Roover 1956, p. 125).

The business entity concept distinguishes a business entity from its owners. Transactions, including those between the business and its owners, are recorded from the business entity's perspective. This distinction was implicit in Pacioli's treatise and made explicit by Pietra in 1586 (Peragallo 1938, p. 79). The accounting equation developed between the eighteenth and late nineteenth centuries, probably partly as a teaching device for explaining the rules of double entry (Edwards 2014, pp. 235–236).¹² The nineteenth-century language of 'scientific bookkeeping' reinforced the claim that accounting rested on a scientific foundation.¹³ The extended equation is: assets = liabilities + capital + (revenues – expenses). Debit entries increase assets and expenses and decrease liabilities, capital and revenues. Credit entries have the opposite effects.

4.2 Chinese Accounting Archives and Practices

We now examine evidence of Chinese bookkeeping practices associated with the Three-Legged, Dragon Gate and Four-Legged Account systems. Traditional single-entry cash accounting recorded receipts or inflows as *shōu* [收] and payments or outflows as *fù* [付]. Guo (2023, p. 1805) links the need for paired entries to the use of notional silver units of account: merchants settled receipts and payments through money shops by book transfer.¹⁴ These shops provided exchange, lending and pawnbroking services, requiring entries that recorded transfers between counterparties. The continued use of *shōu* and *fù* as recording symbols produced the *shōu–fù* duality concept.

The Three-Legged Account system,¹⁵ also called the 'Lame Accounts system' (*bōjiǎo zhàng* [跛脚账]), retained single entries for cash transactions and introduced dual entries for non-cash transactions. Cash receipts were recorded as *shōu* and payments as *fù* in the cash journal (*yinqing bu* [银清簿]), each representing one 'leg'. Cash sales and purchases were recorded in the merchandise or

¹² Peragallo (1938, p. 107) observes that, before the nineteenth century, authors generally asserted rather than demonstrated the equality of debits and credits. He describes Ludovico Crippa's 1838 formulation of the proprietorship equation and Vincenzo Gitti's use of it in 1878 to demonstrate that equality (p. 108). Edwards (2014, pp. 235–236) discusses equations proposed by John Clark in 1738 and Frederick William Cronhelm in 1818 to explain the algebraic basis of DEB. Although 'assetz' then denoted sufficient effects to cover debts (Edwards 2014, p. 239, n. 20), neither writer appears to have possessed the terminology or precise concepts underlying the modern balance sheet equation: assets = capital + liabilities.

¹³ According to McMillan (1998, p. 9), Sprague (1880, p. 2) presented the accounting equation algebraically. Sprague regarded it as more than a teaching device: he believed it could reveal the economic reality represented by the ledger accounts.

¹⁴ Book transfers appear to have contributed to the development of paired entries in both Italy and China.

¹⁵ Lin (1992, p. 109) uses the term 'Tripod Bookkeeping'.

inventory journal (*huoqing bu* [货清簿]). The books were closed when required using the Four-Pillar method, and the cash balance was checked against cash on hand (Ji and Lu 2013, p. 326).

Non-cash transactions required an inflow and an equal outflow in two corresponding accounts in the current accounts ledger (*wanglai bu* [往来簿]), representing two ‘legs’. Their duality therefore rested on the equality of *shōu* and *fū*. Yuan, Macve and Ma (2017) reproduce account books showing different treatment of cash and non-cash transactions at Tong Tai Sheng [统泰升], a business combining grocery trading and moneylending, between 1798 and 1850. Auyeung, Fu and Liu (2005, p. 85 and Appendix 1) likewise describe the Da Longjing salt-mining partnership in Zigong as using a Three-Legged Account system.¹⁶

Guo (1988) identifies the Dragon Gate Account system as China’s first DEB system. In this account, all transactions receive dual entries according to the *shōu–fū* concept and are classified under Receipts (*jìn* [进]), Payments (*jiǎo* [缴]), Keeping (*cún* [存]) and Owing (*gāi* [该]). Profit (*lì* [利]) equals total receipts less total payments. ‘Closing the Dragon Gate’¹⁷ (*hé lóngmén* [合龙门]) checks the records and calculates profit through the equation: total receipts – total payments = total keeping – total owing.¹⁸ Guo (2023, pp. 1811–1812) calls this the ‘dual track determination of profit or loss’. Whereas Western DEB requires equality between total debits and credits,¹⁹ the Chinese system requires equality between total *shōu* and *fū*.²⁰ Gardella (1992, p. 324) expresses the relationship as income – expenses = assets – liabilities, or assets + expenses = liabilities + income. Such translations require caution, however, because the modern meanings of these Western accounting terms developed over time and cannot automatically be attributed to earlier Chinese categories.

Auyeung, Fu and Liu (2005, p. 88 and Appendix 1) present evidence of Dragon Gate accounting in the books of Zigong salt-mining businesses in the 1910s. Re-examining these records, Yuan and Macve (2024) report that individual transactions can sometimes be traced from daybooks through personal accounts to annual summaries, but that the overall relationship between summary reconciliations and subsidiary records remains unclear. Studies by Cao, Li and Wang (2021) and Lowenstein and Cao (2023) examine the 1854–1881 accounts of Fengshengtai, a Shanxi salt trader operating in Henan. These studies appear to rely mainly on daybooks and personal ledger accounts using dual entries. They apply Yuan and Macve’s developmental scheme, but the absence of general ledger accounts leaves it uncertain whether the Dragon Gate was closed. Yuan and Macve (2024) also

¹⁶ Auyeung, Fu and Liu (2005) do not reproduce images illustrating the relevant features of these accounts. Their records also date from the 1910s, when Western accounting methods were already known in China.

¹⁷ Lin (1992, pp. 114–115) translates this expression as ‘closing the embankment’.

¹⁸ Aiken and Lu (1998, pp. 9–10) translate *cún* [存] as ‘stocks’ and *gāi* [该] as ‘claims’.

¹⁹ Debits: assets + expenses = Credits: liabilities + capital + income.

²⁰ Inflows (*shōu* [收]): {Keeping (*cún* [存]) + Payments (*jiǎo* [缴])} = outflows (*fū* [付]): {Owing (*gāi* [该]) + Receipts (*jìn* [进])}.

examine records from businesses in Huizhou, Wuhu and Huizhou for 1590–1593, 1742–1772 and 1847–1866, respectively. Without calling them Dragon Gate Accounts, they assess these records as reaching Level 3(i) of their scheme (p. 474), which we interpret as functionally equivalent to that system. Their reproductions of original account books may therefore provide evidence of comparable practices before 1850.

The Four-Legged Account system is described as a refinement of the Dragon Gate system, with broader classifications and more subsidiary books and ledgers (Aiken and Lu 1998, pp. 154–155). Lin (1992, p. 117, Exhibit 2) reproduces Guo’s (1988, p. 301) illustration of its structure. Profit was calculated through the *caixiang jiece* [彩项结册], a bi-vertical summary resembling an income and expense account. Receipts and any balancing loss appeared in the upper part; Payments and any balancing profit appeared in the lower part. A second report, referred to as the *cunchu jiece* 存出结册 or *cungai jiece* [存该结册], placed Owing and any balancing profit in the upper part, called *tiān fāng* (‘Heaven’), and Keeping and any balancing loss in the lower part, called *dì fāng* (‘Earth’). Balancing the two parts by adding profit to Owing or loss to Keeping was called ‘Matching Heaven and Earth’ (*tiān dì hé* [天地合]), extending the process of Closing the Dragon Gate. Lin (1992, pp. 116, 118) translates *caixiang jiece* as ‘Statement of Earnings’, *cungai jiece* as ‘Statement of Stocks and Claims’, and *cunchu jiece* as ‘Summary of Stocks and Claims’. Aiken and Lu (1998, p. 155) translate *caixiang jiece* as ‘profit and loss statement’ and describe *cunchu jiece* as listing capital and liabilities above assets and ‘debits’.²¹ For Lin (1992, p. 118), the important point is that Receipts and Payments are temporary accounts whose balances must be closed to the statement or summary of stocks and claims.

Guo (2023, pp. 1811–1812) reproduces a *caixiang jiece* and *cungai jiece* from the Guanfeng Cloth Store in the fortieth year of the Qianlong reign (1775) as direct evidence of the Four-Legged system. The profit calculated as Receipts less Payments matches the amount added to Owing to balance Keeping. Read alongside Aiken and Lu’s (1998, pp. 155–156) stylised translations, these records suggest that profit or loss was not closed to capital in the manner of Western DEB. Profit was instead added to ‘Heaven’ and loss to ‘Earth’. In our interpretation, this procedure primarily checked the consistency of the profit calculation rather than recording a change in capital. In Western debit–credit DEB, profit is credited to capital because it increases capital, while a loss is debited to capital because it reduces capital. In the Four-Legged system described here, capital and liabilities are not separately distinguished: profit closes to Owing or Claims, and loss to Keeping or Stocks, to maintain equilibrium.²²

²¹ ‘Debtors’ may have been intended here rather than ‘debits’.

²² If Keeping is translated as ‘assets’, adding a loss to Keeping would appear to increase assets. In Western DEB, by contrast, a loss reduces capital.

4.3 Four Schemes of Accounting Development

The European focus of much DEB history poses a problem for comparative analysis. If double entries are defined by cross-references between corresponding accounts, as in Sangster (2016, p. 302), Chinese practices without those cross-references are excluded at the outset. Whatever the relationship between debit–credit entries and *shōu–fù* entries, comparison should not depend exclusively on technical features such as cross-referencing or ledger layout. European ledger formats also changed over time (Littleton 1926).

Table 1 compares the functional characteristics of the stages proposed by Winjum (1971), Yuryevich (2024), Yuan and Macve (2024), and Guo (1988, 1989, 2023). These schemes were devised for different purposes. Winjum sought to assess Sombart’s thesis more precisely than Yamey (1949, 1964), using Stage 3 as a benchmark that did not require regular calculation of profit and its closure to capital. Yuryevich relied mainly on Russian late nineteenth- and early twentieth-century instruction manuals. By then, Pacioli’s procedures for compiling an inventory of the owner’s assets and liabilities and recording debits and credits had spread across Europe.²³ Yuan and Macve designed their scheme to assess Chinese practices comparatively, while Guo sought to identify stages in the development of indigenous Chinese DEB.

The comparison yields three main observations.

First, the intermediate combination of dual entries for non-cash transactions and single entries for cash transactions appears broadly similar across the four schemes.

Second, traditional Chinese businesses calculated surplus or profit periodically, commonly at the end of the lunar year. Periodic calculation therefore appears throughout the stages described by Yuan and Macve (2024) and Guo (1988, 1989, 2023), without necessarily closing profit to a capital account. In Winjum’s scheme, periodic calculation and closure to capital appear at Stage 4; in Yuryevich’s, they appear at Stage 6.

Third, the starting points differed. Separate cash ledger accounts became more common in Europe as restrictions on usury weakened, whereas cash accounting formed the basis of traditional Chinese bookkeeping.

The Three-Legged system thus resembles single-entry bookkeeping with personal accounts for debtors and creditors and a cash account (Yamey 1964, p. 134). It appears comparable to an intermediate stage in the development of entity-wide DEB in both Europe and China (see Table 1). Yet the schemes assume different conceptual foundations. Winjum (1971)²⁴ and Yuryevich (2024) take debit–credit duality for granted, and Yuryevich begins with an inventory,²⁵ as Pacioli did. An

²³ See, for example, the discussion of single-entry bookkeeping in Hutton (1771).

²⁴ Winjum (1971) tests the Sombart hypothesis using Stage 3 as his benchmark.

²⁵ Yuryevich derives his scheme from nineteenth-century European textbooks and therefore begins with an inventory.

inventory was not the starting point in China. Yuan and Macve (2024) do not specify the duality concept, while Guo assumes *shōu-fū*. Similarities in early commercial practices therefore do not establish a common developmental path. Chinese dual entries did not acquire the cross-referencing that Sangster (2016, p. 300) uses to define double entries. In his interpretation, that development in early thirteenth-century Florence reflected the requirement that banks submit to audits.

Stage 5 in Winjum (1971), Stage 6 in Yuryevich (2024), and Stage 4 in Yuan and Macve (2024) require an integrated, closed system of accounts and periodic financial statements. The Four-Legged system and the other traditional Chinese systems examined by Yuan and Macve did not, in our assessment, meet all these criteria.

Finally, concepts that explicitly underpin modern DEB, including duality, the business entity and the accounting equation, do not translate straightforwardly across languages or historical periods. The accounts of Sangster (2016) and the schemes of Winjum (1971), Yuryevich (2024), and Yuan and Macve (2024) serve particular analytical purposes, but do not fully address these conceptual differences. Applying present-day terminology to older practices risks implying equivalence where it has not been demonstrated. Guo and others emphasise similarities between Chinese and Western duality even though the debates of the 1930s exposed important differences. Likewise, treating the Dragon Gate balancing relationship as equivalent to the Western accounting equation overlooks possible differences in both form and function. As identified by Aiken and Lu (1998, pp. 156–158) there are five areas of difference between traditional Chinese and Italian-style DEB: recording symbols, account classification, accounting equations, recording principles and underlying theory.

5 Conclusion

This paper has examined two connected narratives about double-entry bookkeeping: the claim that it was indispensable to the rise of European capitalism and the counter-claim that China independently developed an equivalent system along a parallel path. Both narratives assign considerable explanatory weight to a category whose historical meaning is less stable than they imply. Distinguishing the recording of paired or dual entries from an integrated system of accounts, and both from the modern theory of accounting, changes how the European and Chinese evidence can be compared.

The comparison reveals meaningful functional similarities. Credit transactions and book transfers encouraged the use of dual entries in both settings, and traditional Chinese bookkeeping supported the reconciliation of records and periodic calculation of surplus or profit. These practices challenge any simple association between the absence of Western forms and an inability to calculate commercially. They do not, however, demonstrate that Chinese and European systems shared the same conceptual foundations. In particular, the relationships among *shōu* and *fū*, Receipts and Payments, and Keeping and Owing cannot be assumed to reproduce debit–credit duality or the modern accounting equation. Adding profit or loss to balance a report is also analytically distinct from closing it to capital within an integrated system.

The evidence requires similar caution about chronology. Early twentieth-century accounts of traditional Chinese bookkeeping were written amid efforts to reform practice and explain Western methods. Later narratives sometimes treated these reconstructions as direct descriptions of much earlier systems. The construction of the Chinese counter-myth also reflects relationships between power and knowledge. Western accounting's authority encouraged searches for indigenous equivalents, while appeals to figures such as Gu Yanwu and Fu Shan helped confer historical prestige on the resulting narrative.

The resulting critique has implications for the Great Divergence debate. Rejecting Western exceptionalism does not require finding an indigenous Chinese counterpart to every European institution or practice. That approach can reproduce the very hierarchy it seeks to overturn by retaining the Western experience as the universal measure of development. A more productive comparison recognises the commercial achievements of Chinese bookkeeping while investigating differences in purpose, organisation and conceptual structure. It also avoids inferring capitalism from an accounting technique or treating the adoption of that technique as a sufficient explanation of economic transformation. China's eventual adoption of modern debit-credit bookkeeping is best understood within this history of changing commercial needs, institutions and accounting knowledge. It neither proves a universal developmental path nor erases the distinct history of the practices that preceded it.

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Table 1 Comparison of four schemes of accounting development

Winjum (1971)	Yuryevich (2024)	Yuan and Macve (2024)	Guo (1988, 1989, 2023)
0 (inferred): Presumably pure single-entry books.	1: Inventory-based single-entry bookkeeping.	1: Physical lists in single-entry books, periodically closed as opening balance + inflows – outflows = closing balance.	Receipts recorded as inflows (shōu [收]); disbursements recorded as outflows (fù [付]).
1: Debit and credit personal ledger accounts.	2: Inventory-based single entry plus debit and credit personal ledger accounts.	2: Dual entries for credit transactions.	Three-Legged Accounts: dual entries for non-cash transactions.
2: Debit and credit personal ledger accounts plus a cash ledger account.	3: Inventory-based single entry plus a cash ledger account.	2(i): Periodic profit or loss calculation without a balance account or balance sheet; conversion of currencies into one money of account.	
3: Personal ledger and cash accounts plus nominal accounts for revenues, expenses and ventures.	4: Inventory-based single entry plus personal ledger and cash accounts.	2(ii): Periodic profit or loss calculation with an incomplete balance account.	
4: Periodic closure of nominal accounts to capital and annual calculation of net income.	5: Inventory-based single entry plus personal ledger, cash and merchandise accounts.	3: Fully monetised accounts, including current and non-current assets, supporting summary “balance sheets” in which net assets = equity.	
5: Real and nominal accounts integrated in a closed system; income statements and balance sheets prepared at fixed intervals.	6: Inventory-based single entry plus personal ledger, cash, merchandise and nominal accounts, forming double-entry bookkeeping.	3(i): Profit or loss calculated as the net change in net assets.	Dragon Gate Accounts: “closing the Dragon Gate”; Profit or Loss = Total Receipts (<i>jìn</i> [进]) – total Payments (<i>jīǎo</i> [缴]) = Total Keeping (<i>cún</i> [存]) – Total Owing (<i>gāi</i> [该]).
		3(ii): Analysis of income statements and balance sheets; described as equivalent to the Four-Legged Account system.	Four-Legged Accounts: preparation of <i>caixiang jiece</i> and <i>cunchu jiece</i> .
		4: Full Western DEB: an integrated, closed and cross-referenced system in paginated and indexed books; profit and loss closed to capital.	

Note: Stage labels belong to their respective schemes. Row alignment does not establish equivalence between stages. Blank cells indicate that no corresponding stage was specified.