



Historical Note: Did double-entry bookkeeping contribute to economic development, specifically the introduction of capitalism?

John Ryan¹

The purpose of this note is to offer a broad historical setting in which to review Yamey's criticisms of Sombart and other historians regarding the significance they attributed to the introduction of double-entry bookkeeping for economic development. In a series of articles Yamey (1947, 1949, 1959, and 1964, for example) challenged their views of the importance of double-entry bookkeeping to economic development. The note is organised as follows. The views of Sombart, Spengler, Nussbaum and Mattessich are quoted, and an overview of Yamey's position is provided. The historical setting is then extended to include a broader context facilitating comparison of different approaches that may be classified as microeconomic or macroeconomic.

Authoritative views

Johnston (1949: 35) claimed that the "historical importance of the invention of double-entry bookkeeping is acknowledged by all leading historians". For example, Spengler (1922: 490) wrote that: "The decisive event, however, was the invention ... of double-entry book-keeping by Fra Luca Pacioli in 1494. Goethe calls this in *Wilhelm Meister* 'one of the finest discoveries of the human intellect', and indeed its author may without hesitation be ranked

¹ Honorary Professorial Fellow, University of Wollongong, jryan@uow.edu.au.

with his contemporaries Columbus and Copernicus.”² Spengler then goes on to quote from Sombart as follows: “Double-entry book-keeping is born of the same spirit as the system of Galileo and Newton ... With the same means as these it orders the phenomenon into an elegant system, and it may be called the first Cosmos built up on the basis of a mechanistic thought. ... Double-entry book-keeping rests on the basic principle, logically carried out, of comprehending all phenomenon, purely as quantities.”

Nussbaum (1933:159) expressed a similar view, writing:

“The significance of systematic bookkeeping for the development of capitalism, that is, for the rationalistic pursuit of unlimited profits, can hardly be exaggerated. ...It reduced the idea of gain to an abstraction by putting the profit in a specific form, a definite sum of money in contrast to the natural aim of subsistence which was at the forefront of the medieval business man’s mental attitude. It was this abstraction of profit that first made the concept of capital possible.”

Mattessich (1964: 101), a contemporary accounting historian, observed that Pacioli’s “famous chapter ... will remain the mark-stone of a cultural event that has been ranked with the achievements attained by Columbus, Copernicus, Galileo, Descartes and Newton.” Moreover, he raised the apparent incongruity of these remarks with the scientific methodological imperative of the age, writing that “[t]his may sound outrageous in a time when most of us are conditioned by a positivistic indoctrination which often distracts our attention from cultural forces ...”. Be that as it may, there is little doubt that Mattessich (1964) regarded Pacioli’s explanation of double-entry bookkeeping as having great cultural significance.

Yamey’s arguments

Yamey’s several papers challenging the scope of these statements traverse the issues from somewhat different perspectives whilst maintaining his critical position. The 1978 Preface to his collected *Essays on the History of Accounting*, in offering a “few words on the order of the presentation of the papers”, indicates that the first papers in the collection have “more general themes” (Yamey, 1978: vii). Following the order of those essays, his 1949 paper is

² While whoever invented double entry is unknown, Pacioli’s “Summa” published in 1494 is regarded as the first printed publication to include the method. It is generally agreed that he described the system as it had been practiced for about 200 years.

considered first, and then the “Further notes on a theme by Sombart” published in 1964. The 1947 and 1959 papers are drawn on to ‘round out’ the issues he raised. Although he published other papers on accounting history, the papers referred to appear to provide a fair representation of his views on this issue.

Part I of Yamey (1949) introduces the reasons why Sombart and others assigned double-entry bookkeeping such a prominent role in the history of capitalism. Part II considers the needs and purposes served by statements of account, with Part III taking up what bookkeepers and authors of the period said about the profit and loss account, the capital account, and the balance account, the forerunner to the balance sheet. Basically, Yamey sought evidence that these accounts provided relevant information for economic decision making. In essence, he was looking for evidence of regular balancing, believing that, unless accounts were balanced regularly, it would be difficult to sustain the claim that they provided relevant information. Regularity was not, however, a feature he discovered.

Yamey quotes three cases given by Dafforne in 1651 in which a balance was required; namely, when the journal and ledger were full, when the merchant ceases to trade and when “the book-owner departs this world” (Yamey, 1949: 106). He also notes that the ‘revaluation’ of assets was rarely carried out. But here interpretation from a profit measurement perspective becomes murky. For example, if the balancing was due to the death of a partner, revaluation to market value would be appropriate on transfer of the assets to a new partnership (as a new accounting entity was being formed). Otherwise, were an annual balance being taken out, or being undertaken because the books were full, the normal adjustments for profit measurement might be expected. It is also clear that during this early period, the profit and loss account quite likely included a whole miscellany of both private and business items.

As Yamey (1949: 110) concluded there is “little evidence of a careful calculation and analysis of profit”, and “most merchants of the period we are considering did not use their bookkeeping, whether by double-entry or otherwise, to keep a regular and accurate check on their capital or profits”. Accounting, including double-entry bookkeeping, was mainly valued for its systematic record, or the “methodising” of business life. But this was a limited role. In describing this conclusion as “not surprising” he ventures the opinion that the “majority of merchants were probably so intimately concerned with the details of their own business

affairs that they did not need elaborate accounting calculations to inform them of the size of their fortunes or to acquaint them with the results of their enterprise” (Yamey, 1949: 111).

This reflection was probably valid in respect of individual merchants, and small partnerships. Even so, as businesses expanded and grew in size beyond the capacity of a single entrepreneur to manage effectively, a growing need could be expected for more detailed information on sales volumes, and the costs and prices of the various lines of goods traded. Indeed, Yamey (1949: 111-12) devotes a final section to contrasting the benefits of “early accounting” for decision making in which separate accounts were kept for individual ventures or consignments as opposed to the then ‘modern practice’ of using aggregate sales and expense accounts, and asks the obvious questions regarding the practical worth of the more detailed information provided by the former. However, the detailed use of accounting records for economic decisions, as in cost accounting for example, was a comparatively late development.

Solomons’ (1952: 2) view that it not until about 1875 that the technical problem of bringing industrial activity “within the compass of double entry bookkeeping, and ... extending it to cover transactions within a business” was confirmed by Garner (1954: 349), who also believed that the transition from accounting for merchandising to industrial firms was slow in evolving. Writing on the genesis of modern management in the period 1750 to 1830, Pollard (1965: 220-45) drew attention to the great difficulty of accountants and owner-managers in industry in establishing “a reliable basis for total or overall calculations of the firm as a whole”. So long as “wages and other outgoings were paid, books kept in order, and liquidity maintained to meet liabilities” employers were largely satisfied. Further, “accuracy in accounting was less essential at a time when selling prices tended to be so far above costs.” While Pollard’s comments related to industrial accounting, there is little evidence supporting extended use of accounting information in merchandising firms.

The Yamey (1964) paper, subtitled “Further notes on a theme by Sombart” organised in four sections, commences by again emphasising that Sombart gave “prominence and prestige” to the “humble art of accounting”. In Section I, Max Weber is identified with “a rational capitalistic establishment”, being one which determines its income by using bookkeeping in the striking of a balance (Yamey, 1964: 121), and, as previously, he concludes by questioning the relevance of the total profit figure for economic decisions. After arguing convincingly in

Section II that double entry is unnecessary for the justification of the entity concept, in Section III he returns to decision making within a firm in respect of three different product decisions. First, the introduction of a new product; second, choice amongst alternative products with which the businessman is familiar; and third, as for the second, but with the additional information that costs and prices are known to be stable.

His conclusion that the “accounting records, double entry or otherwise, could have played no more than a minor part” in decision making for the profit making firm, is entirely consistent with the earlier comments on the comparatively late development of costing. Section IV, the final section, considers the “*distinctive* contribution of double-entry accounting of the methodising of the management of the more routine problems of business” (Yamey, 1964: 133). The benefits stressed are its comprehensiveness, stemming largely from the equality of debits and credits, thereby enhancing the possibilities for orderly arrangement of the data. In his view these benefits are insufficient to confer any real advantage over single entry information for economic decision making.

Comments from two further papers appear relevant to an appreciation of Yamey’s overall position. Yamey (1947) initially likens accounting to crafts, as, like them, it consists of techniques designed to serve certain practical ends. Accounting too, like crafts, is responsive to changing circumstances. His attention then shifts to the question of whether double-entry bookkeeping can be explained as a natural outgrowth from single entry bookkeeping or agency accounting. On the former, Yamey (1947: 264) himself makes the point that “single entry as a *system* is more likely to have been a development from double-entry”, having noted that records under single entry “were in no way systematized”. But although aware of Littleton’s (1933) discussion of the process commencing with dual entries for some transactions, which by extension to all transactions enabled expansion into a complete system, Yamey (1947) did not, as Littleton had before him, go on to distinguish the form from the substance. Crucially, the substance of double-entry bookkeeping is that the periodic profit, an increase in the opening capital, can be measured independently of that capital. Further, assuming that no further capital was introduced nor dividends paid during a particular period, profit represents an increase in net assets over the particular time period. Hence, a clear relationship is established between capital and profit on the one hand, and assets, liabilities and owner’s equity on the other.

Regarding the claims of agency bookkeeping to be a pre-cursor of double-entry, Yamey's (1947) examination of several 16th century early German accounting manuscripts is largely inconclusive. However, he apparently agrees with the view of Littleton (1933: 38) that the distinguishing features of double-entry bookkeeping "would grow quite naturally out of the 'agency' relationships, as trading partnerships of a more permanent nature replaced single ventures or occasional agreements." Concluding tentatively, he observes that "[p]erhaps, it may be hazarded, it would be more realistic to regard the appearance of double-entry as a more or less complete break in the development of accounting methods, noting, however, that double-entry may have taken over many features of earlier techniques". But then he is drawn to the "more romantic view" of one Augspurg that double-entry may be the "inspiration of a happy moment" of the "genius of one individual" (Yamey, 1947: 272).

Turning now to Yamey's (1959) examination "from the point of view of accounting technique" of the double-entry accounts of six individuals and one partnership, the diversity revealed in the accounting practices of these entities virtually precludes generalising, especially in respect of economic decision making. Several factors could have contributed to this outcome. First, the period covered by the seven entities ranged over a 100 years (1655 to 1774), four within the mid to late 17th century (1655 – 1699), and the other three mid 18th century (1736 – 1774). Yamey (1959: 534) states that they were not "a representative selection" but were simply records "brought to his notice" and which were "readily accessible to him". His analysis focussed largely on the scope of the accounts, including, in particular, questions concerning balancing, profit calculation and the statement of asset values. Although the analysis is not directly relevant to economic decision making, the results are illuminating in respect of the diversity of practices revealed.

For example, in four of the seven business entities, some assets and liabilities were missing, that is 'unaccounted for' within the system. While three of the entities balanced annually, another three did so irregularly and one never balanced at all over an 11 year period. Three of the accounts were shown to be "out of balance". One completed the "ballance account" regularly, although in another case the balance account was completed twice when the ledger was full, and in yet another case the balance accounts were kept in a separate book. Apparently there was little evidence supporting the application of accrual accounting to periodic profit measurement and the related revaluation of assets. Interest on debts was likely

to be debited (charged) on due date without regard for the period over which it had been earned. Or it might simply be accounted for on settlement.

Generally, the basis for merchandise valuation (inventory measurement) was not disclosed, the balance carried forward simply being shown without explanation regarding its computation. Fixed assets might be valued by one of three methods: 1) 'net income' (receipts minus payments) transferred to profit and loss (with investment carried forward); 2) accumulated balance carried forward without adjustment; and 3) asset re-valued and the 'new value' carried forward, with any gain or loss calculated to profit and loss. Three of the seven entities disclosed re-valuations of stocks and shares. Two methods – immediate write-off, or transfer to “desperate debts” (or doubtful debts) - were used for bad debts. Regarding the latter method, it is unclear whether (and when) revenue was debited. The sole partnership did not have a separate profit and loss account, but instead used a general account in which capital and profit and loss accounts were combined. These seven sets of accounts, some more complete than others, examined in detail by Yamey (1959) displayed few common practices.

In summary, it is clear that in researching these issues over a long period, Yamey saw no reason to modify his initial view that the link between the output of the double-entry bookkeeping system and economic decision making had not been established. There was simply no clear support from accounting treatises, or evidence from accounting practice examined by him, of a direct relationship between the accounting information provided and decisions to buy and sell goods, and to undertake all the other commercial transactions (contracts) comprising merchants' and traders' business. Here he was concerned with individual entities and their individual decisions. Further, he also pointed out that the information that was available could have been provided by single entry, or it may have been available (and in greater detail) from agency records. Throughout Yamey did not depart from his view of accounting as a useful craft responding to owners' needs. But his researches disclosed that these were for purposes largely restricted to those of financial reporting and control. This general conclusion is supported by Winjum (1972). Thus, Yamey was led to conclude that the economic significance attributed to double-entry bookkeeping by Sombart and other historians was overstated.

The institutional environment

Yamey's technical, microeconomic analysis of individual accounting entities can be contrasted with the much broader social appraisal of the historians quoted, rendering comparison difficult. These historians were concerned with the significance of double-entry bookkeeping for medieval society. Mattessich (1964) captures this in comparatively modern terms by describing Pacioli's famous chapter as the "mark-stone of a cultural event". Nussbaum (1933) highlights the contribution of the system to capitalism, detailing its essence and the reason for its significance. First, it was (and continues to be) relevant to the development of capitalism by reducing "the idea of a gain to an abstraction by putting profit in a specific form, a definite sum of money", and secondly, by the claim that "this abstraction of profit first made the concept of capital possible" (Nussbaum, 1933: 159). Both the related concepts of capital and profit are necessary to capitalism, and it is difficult to see how the system could have come into existence without them. It is also significant that Nussbaum believed that the abstraction needed its physical counterpart; that is, a means for its measurement and application, and this was provided by transactions measured in money.

This understanding and recognition was necessary for the development and spread of capitalism. Due to its limiting assumptions, the framework provided by neoclassical economics is too narrow for the comparison of these two approaches. A broad approach is required to enable inclusion of social developments at a macro level. In particular, the motivation provided by the institutions established by society "to create order and to reduce uncertainty in exchange" (North, 1991: 97) are omitted. North (1991) defines institutions as the "humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct) and formal rules (constitutions, laws, property rights)".

The new institutional economics (NIE), including transaction cost economics, expands the neoclassical economic view of the firm as a production function to include its motivation and governance. In addition, the concept of 'bounded rationality' applicable to economic actors is introduced to provide a more realistic explanation of the behaviour of economic decision makers. Thus the expanded economic framework includes, in addition to the marginal analysis yielding prices and quantities, rules for the play of the game (profit making, Coase (1960), and rules for organisational governance, Coase (1937)).

In explaining this approach of the NIE, Williamson (1988) distinguishes four levels of social analysis, with Level 1 being the most general, and Level 4 the level of application. These levels are described briefly, and then an attempt is made to locate the two approaches within them. The first level describes the informal institutions (customs, norms etc.) including religion “embedded” within a society. According to Williamson (1988) the norms at this level are treated as given by most institutional economists, and change at this level is very slow, maybe taking centuries or millennia.

Level 2 reflects the institutional environment, notably the “formal rules of the game, especially property (polity, judiciary, bureaucracy)” (Williamson, 1988: Figure 1, 26). This level will include the distribution of powers across the several levels of government and bureaucracy. Here the definition and enforcement of property rights and of contract law are important. Further, Williamson (1988: 27) claims that “first order economizing” follows from getting “the institutional environment right”. While change at this level may take decades or longer, a window of opportunity may be provided by a spectacular failure or breakdown. Level 3 is governance, or the rules governing the play of the game. Second order economising will flow from aligning governance structures and transactions. Research in transaction cost economics contributes at levels 2 and 3, with Williamson (1988) claiming that most problems here can be stated in contracting terms. Agency theory is concerned with the alignment of motivation of executives with the wealth maximisation principles of the owners. The final level is actual resource allocation and employment. Getting the marginal conditions right should result in third order economising.

This expanded framework from the NIE provides a relevant basis for comparing and contrasting the two views of the economic significance of the introduction of double-entry bookkeeping. Yamey’s technical approach focuses on applications, and, it will be recalled, he found virtually no evidence in neither the treatises nor the practice he examined that the information provided by double-entry bookkeeping was used directly in economic decisions. Indeed, that situation persisted generally until about 1875, long after the time period with which he was concerned. Even so, he acknowledged that many of the merchants and individual traders would have possessed full knowledge of their financial affairs, and thus did not need to consult their ledgers for relevant financial information.

In contrast to Yamey's microeconomic approach, Sombart and the other historians quoted emphasised the impact on society generally of the introduction of double-entry bookkeeping, describing it in terms that appeared to shock Yamey (1964). Their rhetoric suggests classification in the first level, the level of embedment as an informal institution. How change takes place in the informal institutions at this first level is unclear. Williamson (2000: 597) "conjectures" in this context that many of these informal institutions "have mainly spontaneous origins – which is to say that deliberative choice of a calculative kind is minimally implicated". Nevertheless, profit as the motivating force for engaging in trade and business would have taken some time to have superseded the medieval aim of subsistence. Furthermore, old doctrines like those of 'just price and usury' needed to be modified. Such fundamental changes may have taken several centuries, or at least several generations. The changes may have occurred initially in pockets of development, like the Italian city states where property rights were respected, and then gradually spread as nation states provided a secure environment, facilitating an increase in the scale of transactions. This view is consistent with the notion that Pacioli was simply recording a system that had been practiced for at least 200 years. This whole topic is ripe for further research, including changes in religion and the emergence of the protestant ethic. Guilds and their organisation would also have been impacted, and changes in their operation may have been significant.

Yamey's analysis focused on the accounting information relevant to economic decision making of individuals, and broader social issues were not his concern. The concept of a society undergoing fundamental change, and double-entry bookkeeping's place in it were simply not considered. In addition, he appeared to be uncomfortable with and to doubt the value of abstractions, criticising Robertson for seeing money values as the reality of the accounting system (Yamey, 1964: 123). Earlier in this paper, he had resiled from analysing Sombart's views (which he regarded as "too elaborate or fanciful"), nor did he "attempt to unravel the metaphysics attributed to such bookkeeping by Spengler and others" (Yamey, 1964: 118-19).

Spengler's (1922) description of the "invention" of double-entry as the "decisive event" was no doubt referring to its impact on society. But then, in the context of the emergence of capitalism, double-entry and capitalism are so intimately related that it would be almost impossible to explain either of them as a complete operating system in isolation from the other. His quote from Sombart also lauded the practical strength of the system, namely,

“comprehending all phenomenon, purely as quantities”. Nussbaum (1933) also drew attention to the latter, stressing its significance for the development of capitalism by reducing the idea of gain to an abstraction, putting profit in a specific form, a definite sum of money, which he also maintained allowed the concept of capital to be recognised. In repeating the names of five explorers and scientists with whom Pacioli’s achievement had been ranked, Mattessich (1964) in effect endorsed its social significance.

Certainly there is a gulf between the two approaches in terms of their relationship to society. On the one hand, Yamey considered how and whether double-entry bookkeeping provided relevant information to individual traders or partners in their largely microeconomic decision making whereas, on the other hand, the historians quoted were writing about its wider, overall impact on society, that is, at the macroeconomic level. Broadening the context for the evaluation to include specifically society as a whole enables both points of view to be considered. Without a method for portraying and relating the concepts of capital and profit, and, in addition, for then applying them, it is difficult to see how the capitalistic system could have developed, let alone prospered.

Once the possibilities for profit taking were perceived and acted upon, it would matter little whether the actual accounting was irregular, or poorly executed. Once ‘out of the bottle’, the genie released by double-entry bookkeeping was virtually unstoppable, and, as a motivating force, shows no sign of abating today. My conclusion is that the quotes from Sombart and Nussbaum on the first page of this note properly identify this motivating factor as the significant contribution of double-entry bookkeeping to economic development. Further, both these writers drew attention to the strength of the system in viewing all phenomenon (transactions) as quantities, thereby providing a means for their measurement, an essential element of the system. This contribution impacted the whole of society at both macro and microeconomic levels.

Yamey’s scepticism regarding the lack of textbook support, or lack of evidence from practice, justifying the claim that double-entry bookkeeping contributed to economic decision making by traders or entrepreneurs for the time period considered by him appears soundly based. According to several authorities, it was only in the final quarter of the 19th century that cost accounting was integrated with double-entry bookkeeping with the objective of providing relevant information for management decisions. But as has been argued here the

question of the contribution of double-entry bookkeeping transcends microeconomic decision making to include its overall social impact, its significance for society as a whole. I have framed this aspect as macroeconomic, but it could also be considered as forming a part of philosophy explaining double entry underlying economic philosophy. I conclude that double-entry bookkeeping, as an essential aspect of capitalism, emerged with it at about the same time, and with it, contributed to economic development.

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