‘Money is Bookkeeping’

The key to effective financial literacy

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Abstract

The 2008 global financial crisis occasioned many governments to press for financial literacy teaching in secondary schools, the idea being that the absence of such literacy was a key contributor to the crisis, suggesting that the New York sub-prime market was not the result of incautious lending but uneducated borrowing. However one analyses that event, there is a perceived need today for financial literacy; the question is whether it is or will be effective. This largely depends on what one means by financial literacy and whether the behaviour of the newly financially literate proves to be any different post 2008 than ante. Bearing in mind, that many commentators are warning that the circumstances of that time are with us again, the success or effectiveness of financial literacy to date is clearly a moot point.

Another essential consideration in this regard concerns the nature of the ‘economic mechanisms’ that translate financial literacy into macro-economic and social outcomes that are, or ought not to be, crisis free. As well as requiring precision as to what is meant by financial literacy, this question concerns two topics that cannot be treated independently of each other: How is financial literacy imparted and how is it measured?

This paper takes its cue from recent work by its two authors. A Masters thesis from Switzerland's Fribourg University by Fionn Meier entitled *Money as Accounting – Historical and Theoretical Issues*, the essential argument of which is that money is bookkeeping, and the design by Christopher Houghton Budd of a financial literacy seminar[1] for a project based at Oxford University.[2] The seminar is based on three interdependent precepts – adequate profit, appropriate types and amounts of capital, and positive cash flow maintenance – each one of which is measureable directly by standard accounting methods.

Introduction

Already in 2005, the OECD Council remarked that, "as financial markets become increasingly sophisticated and households assume more of the responsibility and risk for financial decisions, especially in the field of retirement savings, financially educated individuals are necessary to ensure sufficient levels of investor and consumer protection as well as the smooth functioning, not only of financial markets, but also of the economy" (OECD Council, 2005).

The financial crisis of 2008 served to reinforce this concern, leading to governments seeing financial literacy as crucial not only for individual economic and financial well-being, but also for the functioning of the economy as whole, resulting in a boom of new research in this field. In the US, for the first time a 'President's Advisory Council on Financial Literacy' was established, writing in its first annual report that "the market turmoil and credit crisis of 2008 underscores the critical need for improved financial literacy in the United States. While there are many causes to the economic problems facing the country, it is undeniable that a lack of financial literacy is a contributing factor" (President's Advisory Council on Financial Literacy 2009). Similarly, an OECD question-

[1] Houghton Budd. C. (2017) Financial Literacy Seminars: Seminar #1 Technical University, Delft. CrESSI Deliverable 10.6.

[2] Creating Economic Space for Social Innovation (CrESSI). https://www.sbs.ox.ac.uk/faculty-research/research-projects/creating-economic-space-social-innovation-cressi.

naire sent to 30 different countries showed that "the vast majority of the population is ill-equipped to participate in the global economy because they lack basic financial skills, an issue that has not necessarily received enough attention so far" (OECD, 2009, p. 7).

From the above, it is clear that the expectation regarding such education is to ensure that people understand how modern finance works in order to mitigate crises and instability, at least insofar as these can be attributed to a lack of financial literacy. And yet, for the most part financial literacy amounts to becoming familiar with and so adopting without question the way finance is understood and conducted today, i.e. accepting the viability and validity of the assumptions that underpin it. This, despite the view of many experts that a main contributor, if not the true cause, of the 2008 crash was what Adair Turner described as the 'train wreck' of the efficient markets hypothesis.[3]

Young people especially are to become financially literate. Yet here, too, high school textbooks are replete with unquestioning iterations of the prevailing paradigm – essentially one of financial liberalism – or else critiqued from within a somewhat antagonistic approach to finance. They have much to say concerning standard macro-economic policy and general economic theory, but scarcely anything to say about bookkeeping or accounting more generally. This is somewhat strange when one considers that modern finance is based on double-entry bookkeeping, which unto itself has an incontrovertible logic, even truth, and so can be used to teach not only the basis of finance, but also the ethical stance that (without any loss of rationalism[4]) some say needs to accompany it.[5]

[3] See 'How to tame global finance', *Prospect*, September (2009). Also Turner (2012) and The Financial Crisis Inquiry Report, Authorized Edition (2011).

[4] As Carruthers and Espeland (1991, p. 33) note, "both Weber and Sombart, and, to a lesser extent, Schumpeter, postulate a close relationship between capitalism, rationality, and the development of double-entry bookkeeping. They emphasize that double-entry bookkeeping contributed to the historical emergence of a "rational worldview".

[5] See Cheffers and Pakkaluk (2005), cited later.

Accordingly, this paper argues that if financial literacy is to be an effective deterrent against, let alone obviator of, crises, it requires students to understand the accounting process – from single entry to double entry to closing entry to trial balance – then apply this to any analysis they make of financial events and behaviour, *their own in particular*. It also rests on starting at a young age (e.g. secondary school) and on piloting this work in order to identify not only what financial literacy entails, but the effectiveness (or otherwise) with which it can be taken up.

The paper has two complementary dimensions. One derives from an earlier paper[6] by one of its authors, Christopher Houghton Budd, featuring the 'cognitive apprenticeship' approach[7] to teaching finance based on double-entry bookkeeping. It argued that financial literacy entails understanding the accounting process, and ended by stressing the need to frame and pilot future financial literacy research in link with in-field experience derived from case studies.

The second dimension is provided by the other author, Fionn Meier – namely, the idea that money is now, always has been, and always will be bookkeeping. The form of bookkeeping may change as humanity passes through different stages, so that, whether Metallist or Chartalist, coins or paper, and regardless of its cover or issue, in its essence money is only ever bookkeeping. This idea sits above, and so resolves, today's many differing views and debates about money, debates that will no doubt continue precisely for want of this very idea. Teaching bookkeeping is like teaching people to read a road map, allowing them to understand where they are, where they might want to go, and how to get there.

Quite apart from the theoretical and practical implications the idea has for economists' (somewhat convenient) perennial lack of consensus about money, once it is understood to be bookkeeping, the mark and measure of any financial literacy that would hope to address the kind of

[6] Houghton Budd, C. (2016), "In the Shoes of Luca Pacioli. Double-Entry Bookkeeping and Financial Literacy", in C. Aprea, E. Wuttke, K. Breuer, N.K. Koh, P. Davies, B. Greimel-Fuhrmann and J.S. Lopus (eds.), *Handbook of Financial literacy*, Singapore: Springer Science + Business Media, Ch. 39, pp. 621−638.

[7] See Collins et al. (1987).

topics listed below then becomes accounting. (The difference between them being that accounting provides the logic, principles and ethics in terms of which books are kept.)

- Sustainable and inclusive economic growth
- Monetary policy and economic policy guidance
- Innovation and digitalisation of finance
- Sustainable Development Goals
- Entrepreneurship income and/or wealth inequality
- Financial inclusion
- Poverty reduction
- Gender and migrant issues

Typical of many such lists, this one from by the OECD has at its base the need for people everywhere to engage more consciously with the world of finance and economics in order that their own self-directed behaviour comports with that expected by experts and authorities, insofar as those expectations are realistic and have not been overtaken by events. In short, therefore, how can individuals be expected to understand modern finance if they do not know how to keep accounts – their own especially – or how to differentiate between income and expense and balance sheet items? Or how to budget or maintain positive cash flow?

Our argument is that none of the above issues can be addressed effectively if the 'nuts and bolts' of financial literacy are unknown to people and, more importantly, used by them to guide and evaluate their *own* financial understanding and behaviour. Accordingly, the paper focuses on the methodology and practicalities of 'money is bookkeeping'. In particular, it conceives accounting in its own right, rather than seeing it in terms of the use made of it to maximise profit or minimise taxation, a distinction many commentators find hard to make or simply do not believe in. And yet, if a mirror is straight and clear, it reflects reality undistorted; likewise, accounting done for its own sake becomes an instrument or organ of perception with which to understand the fundamentals of today's economic processes.

What's the story?

A review of financial literacy literature since 2008 can be very telling. In what follows, six papers have been taken at random but placed in a thematic sequence that reveals the story they implicitly and collectively tell. Reproduced in their own words by the shameless device of reproducing highlights from their abstracts, their overall combined message is here treated as one synthetic statement (numbers refer to the works studied):[8]

Policymakers have embraced financial literacy education as a necessary corollary to the disclosure model of regulation (1). Often, however, it is framed in terms of how financial literacy is critical to retirement security (2). Indeed, financial literacy is typically defined as the ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions (3). But financial education is also necessary to ensure smooth functioning, not only of financial markets, but also of the economy. Moreover, its implementation will have to take into consideration various economic, social, demographic and cultural factors and, thus, will vary from country to country. There are also numerous methods to develop successfully financial education for a particular audience. (4) That said, financial literacy has varying conceptual formulations, as well as diverse operational definitions and values, leading to the need for a common ground (5). As the most widespread, existing finance-related subject, accounting would be the most appropriate vehicle through which to teach financial literacy (6). This in turn requires that double-entry bookkeeping be appreciated in both its rhetorical and technical aspects (7).

[8] (1) Willis, 2008; (2) Lusardi and Mitchell, 2011; (3) Lusardi, 2015; (4) OECD, 2005; (5) Remund, 2010; (6) Samkin et al., 2012; (7) Carruthers and Espeland, 1991.

Even though a brief paper such as this can do little more than set the stage, outline the script and conduct preliminary auditions, we thus arrive at our own ‘story’ or thesis not a priori but born of a survey of the literature, coupled to first-hand experience of teaching financial literacy to teachers and students alike in many contexts over a number of years on the part of Houghton Budd, and an examination of the long history of money and bookkeeping by Meier.

With numbers corresponding to those given two paragraphs earlier, the essence of our story is as follows:

Transparency, disclosure, etc. are fine as far as they go (1), but they can be weak in the face of events if their focus and goal is comfortable but conventional retirement planning (e.g. knowing how pension funds work does not protect one against fraud or ensure that those systems work when the demographics change or the earning potential of the economy becomes compromised) (2). Advocating financial literacy is all well and good, but it should be for life (starting young) and not just the end of life (3). A smooth functioning of the financial markets needs not only protection, but also 'ethical’ behaviour. One must understand the effect one’s behaviour has on the economy as a whole. For this the target agent should be the individual, rather than the consumer or the investor, which are predefined categories, whereas, diversity notwithstanding, the key to financial literacy – double entry bookkeeping – is universal, like the law of gravity (4). Much also depends on how financial literacy is understood and so defined (5). A financial literacy suited to the times would not only teach wise debt management, for example, but also consider the overall nature, scope and validity of debt going forwards in economic history. Our approach concurs with the view of those who would predicate financial literacy on *accounting literacy* (6). However, one does not come to grips with accounting until it is seen in its own right, as a way of making visible and so ‘seeing’ the intention, conduct and outcome of economic behaviour, beginning with one’s own, rather than as something used to maximise profits or minimise exposure to taxation. This requires double-entry bookkeeping to be placed centre-stage (7).

The problem of definition

Before proceeding, we need to address the problem of definition. Despite much research in this area, a consensus has yet to emerge, witness the following examples. In 2005, the OECD Council proposed "the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being."[9] Later, in 2008, the US-President's advisory council defined financial literacy as "the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being,"[10] while Remund's extensive review of the various definitions of financial literacy used from 2000 to 2010 led him to recommend: "Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate, short-term decision-making and sound, long-range financial planning, while mindful of live-events and changing economic conditions."[11]

For Hung, Parker and Yoong (2009, p. 12) financial literacy is the "knowledge of basic economic and financial concepts, as well as the ability to use that knowledge and other financial skills to manage financial resources effectively for a lifetime of financial well-being." This echoes a more recent OECD formulation: "Financial literacy is a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual

[9] OECD (2005), op. cit., p. 4.

[10] President's Advisory Council on Financial Literacy (2009), op. cit.

[11] Remund (2010), op. cit., p. 284.

financial well-being" (Atkinson and Messy, 2012; OECD, 2016). This definition was also endorsed by G20 leaders in 2012 (G20, 2012).

From this (typical) sampling, the question arises, however: Is financial literacy about merely educating people to understand and use the *current* financial system effectively (and mainly to their advantage), or should it be more radical? If we would effect change, do we not need to understand how the financial system came into being and the principles on which it rests? Noting that its data show that "far too many students around the world are failing to attain a baseline level of proficiency," PISA 2015, for example, identifies four 'content categories':

– *"money and transactions"* includes awareness of the different forms and purposes of money, and handling simple monetary transactions, such as everyday payments, spending, value for money, bank cards, cheques, bank accounts and currencies.

– *"planning and managing finances"* covers skills such as planning and managing income and wealth over both the short and long term, particularly the knowledge and ability to monitor income and expenses, and to make use of income and other available resources to enhance financial well-being.

– *"risk and reward"* incorporates the ability to identify ways of managing, balancing and covering risks (ranging from insurance to saving products) and an understanding of the potential for financial gains or losses across a range of financial contexts and products, such as a credit agreement with a variable interest rate, and investment products.

– *"financial landscape"* is concerned with the rights and responsibilities of consumers in the financial marketplace and within the general financial environment, and the main implications of financial contracts. It also incorporates an understanding of the consequences of change in economic conditions and public policies, such as changes in interest rates, in taxation, taxation or welfare benefits" (OECD, 2017, p. 50).

This focus on accepting and using rather than understanding and if necessary rethinking the current financial system – what the journalist Mariella Frostrup once characterised as 'mechanics without enlightenment'[12] – is harshly criticised by Willis (2008, pp. 284-5): "Ironically, the model ensures instead the sovereignty of the market. Overtly, the model is and attempt at social engineering, trying to change not only consumers' skills, but their thought process, feelings, motivations, and ultimately their values. In the world that financial-literacy advocates, consumers are but wealth maximizers, looking out for their own financial interests rather than shared societal and civic goals." If, therefore, financial literacy is not to be reduced to the mere "provision of solutions the market deems profitable" (Arthur, 2016, p. 116), and if, as seems to us necessary, it is to have its own ground and so also avoid becoming snagged on ideological references and debates, then it also needs its equivalent to the law of gravity – that being, in our estimation, the idea that 'money is bookkeeping'.

It is for this reason that our own definition – better put, working hypothesis – is that financial literacy is best understood and measured as *the ability to give concrete expression to 'money is bookkeeping', making the idea evident and operational in one's own thinking, circumstances and behaviour.*

A brief history of money as bookkeeping

To assert that to be effective financial literacy needs to be accompanied and predicated on a thorough and radical rethinking of the nature of money might seem a topic too far. But is it really? If

[12] Quoted from a panel discussion by experts on BBC Radio 4 (18 January 2014) concerning financial literacy in schools, which stressed the danger of teaching technique without ethics. It also warned against treating money as a source of value rather than as a means of exchange.

financial literacy is about knowing how to manage money, do we not need to be clear what money is? The topic would not warrant any attention if the answer to that question were clear. However, the current state of monetary theory is characterised precisely by its lack of a clear and commonly agreed concept of money. For example, the equilibrium model, which underpins most peoples' understanding of today's economy and financial markets, does not include money at all. This was already observed by Hahn in 1987, who remarked that "the most interesting and challenging aspect of money is that it can find no place in an Arrow–Debreu economy" (ibid., p. 21). And after the financial crisis of 2008, Goodhart, a member of the Bank of England's Monetary Policy Committee from June 1997 to May 2000, remarked in an interview that the most advanced model of mainstream economics (the 'Dynamic Stochastic General Equilibrium model'), which is also used by most forecasting institutions, including most central banks, "excluded all sorts of financial intermediaries, and really, it excluded money as well".[13]

A second problem is that for centuries there have been two opposing theories on the nature of money, which to this day both claim to explain the nature of money. As Goodhart writes, "there exists a continuing debate between those who argue that the use of currency was based essentially on the *power* of the issuing authority (Chartalists) – i.e., that currency becomes money primarily because the coins (or monetary instruments more widely) are struck with the insignia of sovereignty, and not so much because they happen to be made of gold, silver and copper, (or later of paper) – and those who argue that the value of currency depends primarily, or solely, on the intrinsic value of the backing of that currency (Metallists)" (Goodhart, 1998, p. 408, italics in the original). According to Schumpeter (1954, p. 56) these two views can even be traced back to Aristotle (Metallism) and Plato (Cartalism).

[13] Goodhart (2013), *Charles Goodhart: The State of the Global Economy - A Central Banker's Perspective*, Interview with the Institute for New Economic Thinking. Accessible on the YouTube channel of the Institute for New Economic Thinking, https://www.youtube.com/watch?v=7p8fPRGACUQ (last accessed on February 13, 2018).

How can one teach the management of money or think about effective 'mechanisms' (if, indeed, that is the right metaphor) to connect personal finance with the stability of the overall economy, if even in the most advanced economic models money is absent?

It is from this obviously unsatisfying state of affairs, that the hypothesis underlying the idea of financial literacy in this paper – that money has to be understood as bookkeeping – derives its pertinence. This idea has already been alluded to by some 20th century authors,[14] but not in the novel way recently put forward by Meier (2017). His research into this idea from a historical point of view not only evinces its validity on historical grounds, but also its importance for the current economic and financial challenges humanity faces. Its core ideas are presented next.

Step 1: Temple Administrations – Centralized, single-entry bookkeeping

A first step happened around 3000 B.C. in places like Mesopotamia, Babylon and Egypt, where for the first time advanced and complex accounting systems emerged. In those times, societies were administered by temple authorities. The temple priests and their staff were responsible for society as a whole; that means, as Davies (2002, p. 50, italics added) remarks, "the royal palaces and especially the temples were the centre of Babylonian *economic* and administrative as well as of *political* and *religious* life (these elements were not as compartmentalized as we have made them)". Today's independent market economies did not then exist. The economic process was administered top-down by the temple authorities using a complex accounting system based on barley, with all economic processes tracked on clay tablets.[15] Almost no economic activity went unnoticed. In the view of Garbutt (1984, p. 19), this accounting practice can in certain aspects even be considered analogous to "more modern computer based accounting systems with their data files, information retrieval and reporting system."

[14] Inter alia Keynes and Schumpeter.

[15] See Nissen et al., 1993.

Economists and historians nowadays debate whether money started with coinage in ancient Greece, or whether money already existed before.[16] However, if money is understood as bookkeeping, there can be no question but that money predates coinage. As a form of bookkeeping, money was the basis of ancient economies.[17] Indeed, the bookkeeping of those times was not dissimilar to today's cashless economy, in which money has immaterial form. A main difference, however, is that in those times double-entry had not yet been invented; meaning the temple money took the form of single-entry bookkeeping.

Step 2: Public Coinage – Externalised bookkeeping

Not only did coinage appear in ancient Greece about 700 BC, but also then for the first time in history a rights life was established and formalised independently of religious authorities. The *poleis* that emerged at that time established a system of public finance based on taxes and wages paid to state employees (among which soldiers were usually the biggest expense). Both taxes and wages were paid with coins minted by the *poleis*. This new system spread rapidly eastwards, where it lead to the end of the ancient temple-based accounting system, and then, once adopted by the Romans, spread far into the west and north of Europe.

Ancient bookkeeping practices disappeared, but did bookkeeping as such disappear? The transfer of coins between trading parties is usually not considered as bookkeeping, and yet, as al-

[16] For example, Powell (1996) argues that in Mesopotamia all commodities that have been used in exchange goods and services in a certain degree had a monetary character. In contrast, Schaps (2004, p. 15) argues that, "historically, the invention of coinage was the invention of money."

[17] A similar view is also put forward by Ingham (2004, p. 95) who argues that "money was the very means by which society was organized and managed by a hierarchy of value (money of account), which measured the flows and allocation of resources and the pivotal temple-farmer, creditor-debtor relation." However, he does not base his view explicitly on the idea of 'money is bookkeeping'.

ready remarked by Schumpeter (2014, p. 218)[18], from an economic point of view the transfer of coins is in fact nothing else:

"Finally, payment by handover of coins or paper notes also proves itself to be a particular case of the economy-wide account-settling process, the attraction of which is expressed in bookings on bank accounts, their netting, and finally in general clearing. When the passenger in a tram hands over a ten-penny piece to the tram's representative, the conductor, this means that ten pennies are deducted from his account and that the tram's assets are increased by ten pennies, or a debit, if such exists, is reduced by ten pennies."

In this regard, whether by writing on clay tablets or using coins, under the surface it is the accounting of economic processes that is the key to understanding what is happening. Bookkeeping takes place, whatever its form. And so it was that temple money in the form of single entry bookkeeping was replaced by state-minted coins, allowing a system to emerge based on what one might call 'externalised bookkeeping'. Instead of writing down numbers in ledgers, coins were exchanged.[19]

Step 3: Networks of Entrepreneurs – Decentralized Double-Entry Bookkeeping

With the collapse of the Roman empire, its monetary system also collapsed, which, based on the *aureus*, had provided the base for the then economic life of Europe. This was followed in Medieval and Renaissance Europe – a time of monetary chaos in Europe – by the emergence of an independent merchant class which invented and used double-entry bookkeeping to track its economic activi-

[18] Although written about the same time as Keynes 'Treatise on Money' (1930), Schumpeter's book on money was published posthumously, first only in German in 1970, and then in 2014 in English.

[19] It must be noted, that this term 'externalised accounting' denotes the process that accompanies all forms of legal tender money, whether in the form of coins or notes. The crucial thing is that it is a token issued and authorised by a government.

ties. First in Italy, and then in the whole of Europe, not only were modern corporate forms invented, but these merchants also created a payment system based on mutual credit clearing, a procedure based on double-entry bookkeeping. "Equipped with his balance sheet, each merchant would try to pay off his debts by transfer, either by cancelling out mutual debts or by substituting his claim on a third person, which had matured at the current fair. [...] De Rubys thus reports that a million livres tournois were paid in the course of one morning without a single sol being disbursed" (Boyer-Xambeu et al., 1994, p. 93). Instead of using legal tender (coins or notes backed by external fiat), the merchants agreed on a common unit of account (for example, the *écus de marc*[20]), in which they settled their mutual credits and debits – a payment clearing system not unlike that of modern inter-banking.[21] This new monetary system was not driven by religious or legal authority, but "by commercial practice" (Fox et al., 2016, p. 11). It worked "as long as networks of confidence were sustained" (ibid., p. 14).

Debates about whether the nature of this new form of 'bank money' (sometimes called ‘broad money’) is really money (i.e. legal tender) or a usurping of it become superfluous if money is understood to be nothing but a certain form of bookkeeping, for the bookkeeping done by merchants is then just another form of money. More than that, they thereby brought the process of bookkeeping to a new, third level – namely, *decentralized* double-entry bookkeeping.

This view of money is far-reaching. If the evolution of money is understood in this way, it can be seen that what happens today within the global economy, is actually very similar to what happened in Medieval and Renaissance Europe. Around the globe, clearing networks are emerging using 'virtual money' for payments. Of course, the technical developments since Medieval and Renaissance times have been immense, but the underlying structure of the global monetary economy consists of nothing but balance sheets connected by different clearing institutions.

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[20] An 'imaginary' money (money of account) used by the merchants at the fair in Lyon (see Boyer-Xambeu et al., 1994, pp. 73 and 78).

[21] "…historically, the Medieval fair interbank facility was the genesis of the interbank clearinghouse, and led to the performance of interbank multilateral clearing" (Geva, 2016, p. 440).

It is in this sense that, once money is understood to be bookkeeping, the history of money can be understood to have happened in three main steps – 'single-entry', 'externalised', and 'double-entry', each one linked to the changing way economy and society was organised. Looking at things in this way, and *pace* Ferguson (2009), rather than speak of the *ascent* of money, one can equally speak of its *descent*, with its locus moving from temples to states, and then to commerce and economic life itself. And so to today. As a truly universal accounting standard would reveal, were we able to see how all our accounts – balance sheets and income and expense – are interlinked, we would see that money today amounts to nothing other than a complex yet comprehensive global bookkeeping system in which everyone is implicated and plays a part.[22] Becoming aware of this essential nature of money allows one to see that one does not stand outside the global financial system. On the contrary, taking care of one's own financial affairs also means taking care of the world's finance.

Imparting financial literacy

With all this in mind, the cardinal question for financial education is how can financial literacy avail itself of the idea, let alone fact, that money is bookkeeping? The answer may seem obvious and straightforward, and yet bookkeeping is rarely taught to young people, and when it is taught, even to adults and professionals, the focus is usually on technique (which can almost be learned by rote), with scarce attention paid to the long, even sacred evolution of that technique. Why, for example, are debits always on the left and credits on the right? Why is income shown with a minus sign?

Here is not the place to embark on such an exploration, however; we mention it only to highlight that double-entry bookkeeping in not *just* a technique. The accounting process – from single entry to double entry to closing entry to trial balance – is a metaphor for balance in life and uprightness in dealing, traits which, along with lack of financial literacy, are often wanting in our

[22] A distributed ledger without peer, for those enamoured of cryptocurrencies.

times. Per Cheffers and Pakaluk's (2005) trenchant critique of the accounting profession, there is a clear pathway from virtue to principles to technique, but treading it requires Aristotelian 'character'. With the proviso that we need to be "concerned enough" (pp. 172-3), we can be helped in this by "accurate and truthful thinking [without] a view to consequences" (pp. 63-4).

Precepts

Teaching, better put, imparting financial literacy to young people especially puts a premium on all these dimensions. This is the reason why, in a recently completed project at University of Oxford's Saïd Business School, which sought to amalgamate the approaches of Amartya Sen[23], Jens Beckert[24] and Michael Mann[25], the design of a financial literacy seminar[26] was predicated on three precepts: *adequate* profit, *appropriate* types and amounts of capital, and *positive* cash flow management, linked in this sequence to the Income & Expenditure, the Balance Sheet and the Closing Entries. The adjectives are deliberate ethical qualifiers of the merely technical side of finance. Take these away, and one defaults to financial rather than social profit, to use the vocabulary of many critics of modern finance. People and planet are forgotten; only profit is remembered. It is all too easy to learn accounting, for example, merely for profit maximisation or tax minimisation purposes, without thought as to how profit arises and whether it is fairly gained and/or equitably distributed.

[23] Indian economist best known for his 'capability approach'. See, for example, Longshore Smith, M. and Seward, C. (2009), "The Relational Ontology of Amartya Sen´s Capability Approach: Incorporating Social and Individual Causes", *Journal of Human Development and Capabilities*, 10(2) pp. 213-235.

[24] German social scientist who combines a three-field analysis (cognitive frames, social networks, institutions) with a good 'ear' for finance.

[25] American sociologist who analyses society in terms of 'powers': cultural, economic, artefactual, security, political, natural.

[26] Houghton Budd. C. (2017) Financial Literacy Seminars: Seminar #1 Technical University, Delft. CrESSI Deliverable 10.6. Op. cit.

Against a background of these all-important contextual concerns, in *In the Steps of Luca Pacioli*, Houghton Budd argued that from a young age – certainly no later than 15 – students should be taught the accounting process. The 'journey' from single entry to double entry to closing entry to trial balance is at the heart of all finance, whether at the micro level of individuals or the macro level of corporations, but it is not only technique. It is two other things as well. The first is that it replicates the above-outlined history of money as bookkeeping, and so serves as an in-built reminder of economic history – the 'plot' dimension that many feel modern economics lacks, reliant as it is on maths and modelling.[27] The second is that it gives to economics a ground in accounting – something that some scholars have been advocating for many years[28] (not least among them John Hicks[29]) and which the 2008 crisis has only made more urgent. In addition, we also argue that by allowing for a deeper understanding of the modern financial system, double-entry bookkeeping enables one take a macroeconomic view of financial affairs, including one's own, as above the 'fray of self-seeking'[30] – a point of view that is usually regarded as the prerogative of central bankers.

As well as the content, the *manner* of imparting financial literacy is also crucial if it is to be effective – that is, if it is to become the basis of subsequent financial behaviour. This depends in large measure on the enthusiasm of the teacher and the willingness to learn of the students, both of which can be strengthened by use of the earlier-mentioned cognitive apprenticeship approach to fi-

[27] See Heilbroner and Milberg (1996) for a pithy version of this tale, or Roll (1992) for a masterly overview of modern economics in a perspective reaching back to ancient times.

[28] A study of the writings of Deirdre McCloskey, Sangster et al shows how essential arguments made in the early 1990s need no retraction, their relevance having only increased.

[29] Witness the well-known conversation between Sir John Hicks and Arjo Klamer just before Hicks died in 1989 that ended: "...projected balance sheets [are] the rational way to make a business decision. A lot of these mathematical models, including some of my own, are really terribly much in the air...' Klamer (1989).

[30] The image is from Capie, F., Goodhart, C. and Schnadt, N. (1994, p. 91)

nancial pedagogy. Echoing the methods used by Luca Pacioli to teach accounting in the Renaissance, it has six stages[31]:

Modelling, where the 'expert' demonstrates what he or she is expert in by way of models that approximate the real world.

Coaching, where the expert 'sculpts' students' performance, allowing them to drive their education to the extent they are able to.

Scaffolding, providing strategies and methods that allow students to test their skills and understanding.

Articulation, where students express what they have learned.

Reflection, where students compare their understanding to that of their teachers or other experts, or even their peers.

Exploration, where students are given strategies that allow them to take over, as it were, allowing the experts to withdraw into the background.

In this spirit the CrESSI seminar is backgrounded by a more specific 5-step process which at its most complete and formal comprises:

Step 1: Introduction by teacher of principles via 'portable' content, using accessible material.

[31] Detailed in *In the Shoes of Luca Pacioli,* op. cit.

Step 2: Reception and assimilation of content by students via (1) discussion, (2) written assignments and (3) peer presentations.

Step 3: Conscious incorporation of principles into projects under the guidance of professionals.

Step 4: Assessed 'pitching' (whereby students present their stories and how they can be financed through the medium of a financial plan).

Step 5: Formal third party evaluation.

Empirical framing

In the Steps of Luca Pacioli ended by stressing the need for case studies or pilot projects in order to empiricise or 'road test' the effectiveness of financial education in-field, while the subsequent CrESSI seminar provides details of some initial steps in this direction. All the time, a main consideration concerns methodology: What methodology is apt to financial literacy?

The first thing is to conceive bookkeeping (and therefore money) as financial literacy's equivalent to the law of gravity. This is the significance of "a 'portable' constant content that allows diverse delivery, because the more objective the content, the freer will be the teacher as to how he or she will impart it."[32] It is also the reason for advocating multiple case study (after Yin, 2009) as an authentic match for the laboratory conditions readily achieved in physics but for which, in economics, *ceteris paribus* is an increasingly unconvincing equivalent. In Keynes's famous summation, "One has to be constantly on guard against treating the material [of economics] as constant and homogenous. It is as though the fall of the apple to the ground depended on the apple's motives, on whether it is worth while falling to the ground, and whether the ground wanted the apple to fall, and

[32] *In the Steps of Luca Pacioli*, op. cit., Section 39.8 Part 3: Empirical Research.

on mistaken calculations on the part of the apple as to how far it was from the centre of the earth."[33]

Finally, there is the challenge of measurable evidence – what kind of data will capture or represent financial literacy, and how will they be garnered and made use of? As with the methodology of empiricism, the nature of measurement also needs to be apt to its subject matter, in this case financial literacy. For this reason we argue that, in addition to the advantage accounting affords of a shared basis for both finance and economics, it also entails implicit measurement. Notwithstanding that many people today regard accounting and finance as media for capitalist oppression or as a means for overcoming such oppression, the reality can be otherwise. Accounting can be seen as a set of neutral tools for empowerment and agency, in the sense that profit can be seen as a metric on the social validity of a business, capital as the counterpart to, and thus a measure of, the capacities of its users (entrepreneurs), and cash flow as an expression of the ethical sovereignty of an enterprise, meaning that its ideal or social purpose is supported rather than subverted by its profitability. Indeed, the last of these – positive cash flow management – provides the basis for assessing students' financial literacy, both in their own right and as externally examined. In a word, the how and fact of positive cash flow management are also the measure of financial literacy's effectiveness.

Piloting

Having given thought to the framing and imparting of financial literacy, this section focuses on the need for piloting. It formulates a generic project outline derived from a specific case being piloted in Folkestone, England, where the main partner[34] requires financial literacy education to dovetail with Level 3 studies in Personal and Business Finance and the students' probable career pathways.

Building on a previous six-week Fair Trade module with *age 11* primary school students that culminated in a one-week shop where they sold (profitably) the products they had made and priced,

[33] Keynes, J. M. (1973, p. 300).

[34] Edge School of Creative and Business, part of East Kent College.

this pilot involves students aged 16 upwards, i.e. the pilot is targeted on secondary school students and young people. Its structure has four steps in line with the cognitive apprenticeship approach:

1. Classroom-delivered introduction to the three precepts.

2. Students conceive, present and tell their stories (i.e. the reason for their course and career choices as reflected in the service or products they would like to offer the public).

3. Students tell their stories to the world by creating and running a one-week show or shop with accompanying financial plans (capital required, expected income and expenditure).

4. Students review their experience, mining it for subsequent use by themselves and others.

The experience to date of this (and similar projects) confirms the viability of the seminar design, its replicability by teachers and relevance to students. It also confirms, perhaps predictably, other considerations:

1. The importance of teacher and student enthusiasm, especially when it comes to finding the time and 'space' in already over-loaded curricula subject to examination pressures.

2. The need to accompany students in the manner of a parent teaching a child to ride a bicycle – providing a context for the students' initiative and willingness to learn by doing, by experiment.

3. Care needs to be taken in the case of students dissatisfied with their education, because financial literacy can give them a taste for independence and self-actualisation, and so start them thinking in terms of learning buy earning (rather than staying in school or college).

4. The challenge of finding an interface with the macro heavy, micro light, ‘job ready’, ‘how to use the system’ approach typical of many career advisory services and business studies programmes, that often also have a focus on narrowly financial rather than wider social outcomes.

In short, it is not enough to approach financial literacy on a merely conceptual level. It quickly becomes an ontological affair, passing quickly from theory to practice. This, however, is only to be expected if, as argued here, money is bookkeeping and if bookkeeping is taught early, straightforwardly and interestingly enough, and used to frame, guide and evaluate one’s *own* financial behaviour.

Conclusion

By way of conclusion, we mention below five policy considerations we would recommend. The first is to include bookkeeping in all financial literacy programmes, otherwise this vital pedagogical tool remains hidden, automated within accounting software or the private knowledge of experts, and so precluding direct experience of it and the benefits that can bring.

The second is to start at a young age. Many children learn algebra and geometry at age 11, when their minds have become able to comprehend abstractions, in which category, at first sight, bookkeeping belongs.

Third is to include a historical view of bookkeeping, allowing students to be aware of the transition from single entry to double entry and the latter’s role in the emergence of today’s global economy. This gives orientation and the ability to critique the relation between one’s own micro circumstances and the wider macro issues.

Fourthly, at risk of labouring the point further, throughout this paper we have stressed the importance of recognising that modern finance is a reflection of individual behaviour, albeit often-times collective, herd-like and aggregated. In the words of economic historian, Niall Ferguson (2009, p. 362): "… markets are like the mirror of mankind, revealing every hour of every working day the way we value ourselves and the resources of the world around us. It is not the fault of the mirror if it reflects our blemishes as clearly as our beauty."

Finally, although it points to the future and is included here by way of a postscript, thought needs to be given as to whether capital is something that should be preserved or circulated, 'stored' in financial markets, stock exchanges and real estate, or 'lost' into entrepreneurial activity (of young people in particular) so that new value can be created. In other words, is financial literacy about investing capital merely to 'grow' it for the investor, or is it about using it as the air beneath the wings of (young) entrepreneurs, on whose success, after all, future 'growth' depends. This is key to the question of 'economic mechanisms' and, therefore, to whether financial literacy can and will contribute to a more stable, less crisis-prone economy.

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