Currency Innovation for Sustainable Financing of SMEs: Context, Case Study and Scalability

Abstract

The purpose of this paper is to introduce the topic of complementary currencies to the academy engaged in research on corporate responsibility and responsible finance, as well as the broader field of progressive management studies. It responds to the growing awareness that both managers and researchers need to address a systemic challenge of our time, concerning stagnating economies and growing inequality. An underlying cause of that problem is identified as mainstream monetary systems and the implications for inadequate financing of SMEs and microenterprises. The potential of currency innovation, from cryptographic currencies like Bitcoin, to local currencies and then to commercial barter and countertrade are discussed. Given the novelty of these phenomena for management studies in general and corporate responsibility in particular, an interdisciplinary literature review is presented. Then a case study of a complementary currency in an informal settlement in Kenya is presented and implications for the wider adoption of useful new currencies discussed. It concludes therefore that SMEs need certain types of complementary currency more than others and proposes that companies can engage in currencies as part of their corporate responsibility programmes as well as for direct business benefit.

Keywords: Complementary currency, blockchain, barter, digital currency, bitcoin, collaborative credit

Introduction

Political events in the Arab world and then the West over recent years have stimulated conversations about the origins of the resentment that might be driving a rejection of established politics. Those not directly engaged in political life may still question what we might do to address the root cause of such resentments. Many analyses point to growing economic inequality, falling standards of living and the decline of opportunities for well-paid employment (Raworth, 2017). Such factors directly involve the private sector as well as impacting on the market and non-market environments of business. As such they are clearly considerations for research in the field variously defined as corporate social responsibility, corporate sustainability, and corporate citizenship, as well as related research fields in banking and investment. There has been a vibrant discussion on the origins, coherence and utility of different terms to describe that broad field (Montiel, 2008; Matten and Moon, 2008). The merits of those conceptualisations are not a focus in this paper, so the field will be referred to as Investor and Corporate Sustainability and Responsibility (ICSR) as a means of referring to all the issues and actors that are covered by the many other terms.[1]

Both the practice and research in the field of ICSR has not engaged much with systemic causes of inequality, falling standards of living, or job insecurity. To do so would suggest addressing matters that shape the economy at large, such as taxation, transfer pricing, or monopolist practices (Bendell

[1] The use of the acronym ICSR is not intended as a new conceptualisation but simply to avoid the need to keep listing the dozen different terms that describe the social, environmental and ethical dimensions of business and finance. The acronym is not intended to prioritise sustainability or responsibility over accountability or citizenship. Theorising on the terminology used in the domain of this journal is neither an intention or necessity for this paper.

and Doyle, 2014). It would also invite far greater attention to support for Small and Medium Sized Enterprises (SMEs), given they are the major employer in most economies and spend their income more locally than large Multinational Corporations. Attention has been paid to how to support SMEs and microentrepreneurs serving the income poor in developing countries, with support for social entrepreneurship and achieving umbrella sustainability certification for groups of firms. The role of microfinance in helping microentrepreneurs has also received major attention, with the impact on social progress being both variable and contested (Bateman, 2010). However, the systemic question of better financing SMEs at scale so that they can grow, create jobs and diversify economies, has not featured significantly in the ICSR field, with little attention since a United Nations project on this issue over ten years ago (Bendell and Chawla, 2007). Meanwhile bank lending to SMEs has declined continually in many Western nations, as the banks find simpler and less risky profits to be made by lending for property purchases (Ryan-Collins et al, 2011). How does this issue relate to ICSR? Initially we might consider bank practices, and how they could be upgraded to improve SME and microentrepreneur financing and to what extent this could be achieved voluntarily rather than require regulator action. Increasingly, though, ICSR considers the potential for innovation and entrepreneurship to address problems in business-society relations (Bendell and Thomas, 2013). The growth of peer-to-peer lending platforms, such as Kiva and Zopa, and of crowd-financing platforms, such as Kickstarter, StartSomeGood, and BankToTheFuture, interest some observers. However, these innovations do not create new liquidity via new credit, instead helping an existing pool of money to reach new projects. As such, they do not offer a systemic answer to SME financing at a time of constrained credit.

Recent years have seen encouragement to address systemic social challenges at scale, for both researchers in the field of ICSR (Bendell and Doyle, 2014) and management studies in general (Dodgson et al, 2015). This paper responds to that challenge by exploring how innovations in currency and credit could provide a systemic response to the problem of poor SME and microentrepreneur financing. Although Bitcoin has brought currency innovation to the attention of the general public, there are a range of other types, some in existence for decades. The detailed literature review in the paper focuses on a wider range of currency innovation in disciplines that relate to the interdisciplinary field of ICSR. I will then present a Case Study of an example involving microenterprises in Kenya which show the transformative potential of some forms of currency innovation. Then I will present hypotheses on what the impediments to scaling similar types of currency system for SMEs around the world, based on my 7 years of reflective practice in this field. To my knowledge, based on a literature review summarised later, at the time of writing this is only the third paper on currency innovation in an English-language journal focusing on matters of corporate social responsibility or business ethics, and the first to consider economic aspects.

The Monetary System and Inadequate Financing

To understand the potential importance of certain forms of currency innovation for SME and microentrepreneur financing, it helps to understand the nature of mainstream monetary systems in nearly all countries of the world. For a moment, you could ask yourself “where does money come from?” A typical reaction would be to think of how we earn it. But consider how it was issued originally, before we earn it. Many people think of how physical notes and coins are created. Yet notes and coins are used to settle only a tiny volume of monetary transactions, typically around 5% in most economies worldwide. Most of what we use to settle transactions is not cash but promises of cash recorded in bank accounts, in other words, credit. When a bank issues a loan to provide

electronic deposits in a client's account, that newly created credit-money is considered as good as money itself.

Thanks to electronic payments and widespread cash machines, we experience this credit-money interchangeably from the government-issued cash. Furthermore, banks' promises to pay us cash are accepted in payment of taxes, practically reducing the distinction. The banks do not need an equivalent amount of money on deposit in order to issue loans, instead, the agreement of the borrower to pay back the bank becomes an asset to the bank, and their deposit in the borrower's account is the bank's liability, governed by contract, which includes how much they are prepared to provide in cash each day (Bendell and Doyle, 2014). This process is poorly understood by economists, who widely assume a mistaken view that the amount of reserves of cash that a bank has then restrict the amount of credit they create. According to the Bank of England (2014, p15) “rather than banks lending out deposits that are placed with them, the act of lending creates deposits - the reverse of the sequence typically described in textbooks.” The amount of money created depends instead on capital adequacy requirements and the ability to settle interbank payments (Ryan-Collins, 2011). Given a century of international cooperation on banking, this system is similar in most countries of the world, including Kenya, the location for the case study in this article (Ruddick et al, 2015).

Given this monetary system, if banks decide to lend less, then as existing loans are paid back, there is less money to go around, so less work is done within an economy. We call that process a recession. During such contractions in money supply, we witness more foreclosures, bankruptcies and unemployment. A response by some governments has been to cut spending on public services further contracting the money supply while creating social disruption for many citizens. In itself, the recessionary process just described is of material significance to investor and business success and thus a concern for ICSR. Additionally, recession affects the general public and triggers wider dissatisfaction with the political establishment, as we have seen in both the Arab world and West in recent years.

Mainstream monetary systems also affect the wider economy in non-recessionary periods. First, it means that the availability of a national currency in any area is dependent on how connected that area is to an economy that receives its new money via bank loans. Therefore, it demands that all areas are, through however complex a chain of trading relations, connected to enterprises that borrow from banks, or from governments that fund their spending on wages or benefits on borrowing from such banks by the selling of bonds. That is why many areas experience mini-recessions as money flows in and out of an area depending on the attention paid to it by the credit financed economic activity. Examples include informal settlements next to sea ports that experience fluctuating volumes of trade and thus changing demands for the labourers that live in the settlements. In periods when earnings by such labourers declines, so the cash in the local economy of the informal settlement declines, with knock on effects for the ability of people in the settlement to trade with each other (Ruddick et al, 2015).

This analysis highlights also that at all times, whether recession or boom, banks are deciding to whom, how much and at what price that new money is issued, thereby influencing the shape of any economy. In many countries banks are choosing to lend mostly to those buying property, as for the bank it represents a simple business transaction, long term profitable contract, collateral and guaranteed high willingness to service the debt. As most new money entering the private sector is in the form of housing loans, so the prices are funded to increase. Just because these prices are not included in inflation figures, does not mean this is not an example of asset price inflation with decisive effects on the decisions of people and business who need to service such loans. This pattern

also means that those without property rights are systematically disadvantaged as money is issued to property owners.

Given that interest is being charged on the creation of all money by banks, so these monetary systems necessitate the transfer of wealth over time to those that own or work in the financial system. That structural factor in our monetary system is the key underlying cause of inequality today (Ryan-Collins, 2011), which has grown to unprecedented and threatening proportions (Raworth, 2017).

Therefore, it should not be controversial to state that the current monetary system is a critical factor in business-society relations. It is also clear that because they do not create new money, neither peer-to-peer lending nor crowd-financing provide an additional aggregate amount of money to an economy, so would be insufficient innovations to focus on if the field of ICSR engages these systemic issues in future. Something much more transformative is worthy of consideration – currency innovation.

The spectrum of currency innovations

In 2013 Bitcoin came to the attention of the world's media. This private digital currency was being purchased for over 30 dollars and making some people very rich. That meant some of the specific benefits of the technology began to be discussed as well as the very idea that one could create a currency. Despite high volatility, the market capitalisation of all Bitcoins in existence, as measure by what people are paying for each bitcoin digital token, has risen from 0 at its launch in 2009 to around $20Bn at the time of writing. Bitcoin is the name simultaneously for a protocol, a digital token, and a torrent network which comprise a distributed payment system which has never been hacked. The digital tokens, or currency, are issued to the computer that cracks a code to win the chance to upload the latest summary of all transactions around the world to the one ledger called a blockchain. The system is sometimes called "trustless" because it allows no credit, and monetary policy is done with an algorithm rather than by humans. The system of issuance, dubbed "mining bitcoin" means that new bitcoin are issued to those who have the finances to invest in the most powerful computers. While its original impulse was a libertarian desire to obviate banks, one of its main current uses seems to be helping Chinese millionaires evade capital controls (Redman, 2017).

Since Bitcoin shot to fame a range of other "cryptographic currencies" have been launched, whether through forking the Bitcoin code or using new code. All of them use the same concept of a currency being created as a digital token by a computer programme, and thus being available to people only through participating in maintaining the system with powerful computers, through purchase, or through earning them in some way. As they would have to buy or earn them, the implications of Bitcoin and other cryptographic currencies for SMEs and micro-entrepreneurs are minimal, because they do not give them new spending power.

Bitcoin is the first application and herald of a family of technologies called blockchains. A blockchain is a cryptographic database which is periodically updated with the addition of a block of the latest items. The new block contains the hash (like a unique thumbprint) of the previous block, so that all the blocks form a continuous chain. A blockchain therefore has a consensus mechanism to decide what the new block is. In recent years blockchains have grown in popularity, as major venture capital has been put into start-ups that seek to apply a blockchain solution to different activities, from running a stock market to registering the flow of goods. Whether a distributively-managed database is the important factor for the services that many of these start-ups are focusing on remains in

question. However, both the World Economic Forum and the Gates Foundation have launched projects looking at the economic and social potential of blockchains, which indicates the way they are being seen as potential disruptors of established business practices.

One application of blockchain that is relevant to SMEs and micro-entrepreneurs is the way it could record networks of credit, or IOUs between participants on the same network. The systems Ripple and Stellar both offer that functionality, so in theory any member of the network could issue their own currency, if they are trusted by other members of the network to redeem their promises. In practice, what has happened is that organisations are enrolled into the system to manage the system of credit issuance and clearing using the Ripple and Stellar blockchains. In the case of Stellar this is providing new opportunities for microfinance organisations in Africa to offer their beneficiaries new means of payment across the region.

By enabling the issuance of credit peer-to-peer, both Ripple and Stellar are somewhat closer in concept and design to the types of “complementary currencies,” sometimes also called “community currencies,” that have existed for decades. Though numerous examples can be found in history, the modern complementary currency movement really began with the publication of the LETSsystem design manual and the popularisation of Local Exchange Trading Systems (LETS) amongst individuals in the West in the late 1980s (Lietaer,2001). These systems involve people joining an initiative where they offer to do activities for each other, from dog-walking to providing garden vegetables, and each transaction is recorded on a ledger using a unit of account that they create for this purpose. The prices of services are agreed by the participants in any transaction. There is no benefit in hoarding the currency, as no interest is paid, and all debits and credits in the system should add up to zero.

One adaptation of this system is “timebanking” which developed since the late 1990s, and uses the hour as the unit of account. In many such systems, the agreement is that all participants hours of work are worth the same hour. Timebanks have focused on helping the poor to participate in community and over the years different forms of issuance have been tried, such as rewards for volunteering (Lietaer, 2001). The implication for SMEs and microenterprises of LETS and timebanks has been limited because they target individuals. However, there are instances where the same systems are extended to include businesses. In Greece, for instance, there are various instances where the local LETS has been extended to involve businesses that are struggling to cope with their customers having cash flow problems (Bendell and Greco, 2014).

Together these systems can be as “Collaborative Credit Systems” (CCS), which "involve participants monetizing their trust in each other by creating new agreements and symbols concerning exchange of value” (Bendell et al, 2015, p 5). They are described as collaborative, as they involve “voluntary collaboration between people and organizations, rather than compulsory arrangements between banks and governments, to issue and transact credit" (Bendell et al, 2015, p 9).

There are forms of CCS that are designed specifically for large organisations. The terms used to describe these systems include retail barter or commercial barter (which involve businesses)countertrade (which is sometimes used to specify inter-governmental trades) and reciprocal exchange (which involves both business and government). For simplicity, in this paper “commercial barter” is used as an umbrella term to refer to all of these activities, due to its wider recognition outside of specialist practitioners.

The oldest such system in the world is the WIRBank which has over 50,000 business members and been going since the 1930s in Switzerland. At present, the world leader in this sector is Bartercard, a UK listed company with franchises all over the world. One system started in austerity-ravaged

Sardinia, and has now grown across Italy: Sardex has 3700 members and is clearing about 80 million euros of trades a year (Littera et al, 2014). Several other barter networks survive in that market especially in the USA (Bendell et al, 2015). According to Z/Yen (2011), hundreds of thousands of businesses around the world participate in such systems and they have been a key tool in improving cash flow, increasing working capital, and providing a source of interest free credit. That indicates the benefits for SMEs and microentrepreneurs that can come from business to business collaborative credit systems. One study concluded that the WIR currency in Switzerland promoted economic stability by producing a counter cyclical effect against the Swiss Franc – when borrowing from the bank becomes more expensive or difficult, swiss SMEs have turned to the Wir (Stodder, 2000). Given some evidence of its potential, this is the type of CCS which is examined in a case study in this paper.

One ancient system of payment that continues today has some similarities to these CCS, in that they involve alternative means of credit issuance. It is called Hawala and is an informal value transfer system based on the honour of an international network of money brokers, primarily located in the Middle East, North Africa, the Horn of Africa, and the Indian subcontinent. The system involves someone approaching a hawala broker in one city and giving a sum of money to be transferred to a recipient in another city, usually in another country. The hawala broker calls another hawala broker in the recipient's city, so the intended recipient can be paid. No money is actually transferred, as the Hawala brokers seek to balance out the various transfer requests over time (Wilson, 2003). As the system involves using existing money and operates mostly as an international transfer system, it has not received much attention in the currency innovation field.

Another type of complementary currency has become famous in the UK in recent years. It involves organisations issuing local vouchers that are bought with pound sterling and can only be spent with participating local companies. The systems include Brixton Pound and the Bristol Pound but cities and regions across the UK are witnessing the creation of similar systems. One of the main reasons for these systems is the promotion of local trade, and thus supporting locally owned SMEs. By keeping more money in the locality this could increase the local liquidity supply and address the financing problem being considered in this paper. However, that is not an economy-solution. The extent to which the new vouchers are not redeemed, which happens when they expire, yet continue to be accepted by participants, is the extent to which these systems create new liquidity. Clearly, expiring notes is not an ideal basis upon which to generate liquidity, so the originators of such systems are now looking at the launch collaborate credit systems on the back of their initial successes (Bendell and Greco, 2013).

Many variables could be used to create a typology of innovative currencies, such as the technology involved, the mode of issuance, or the way they relate to the state. However, for the purposes of understanding this field of innovation from a management perspective, a useful variable is the primary stakeholder that is involved in a currency systems, whether as organisers or beneficiaries Box 1 outlines one such typology, with some typical characteristics and the main claims for benefitting SMEs.

[insert box 1]

Relevant Research on Complementary Currencies

Since its inception in 1997, the specialist *International Journal of Community Currency Research* (IJCCR) has shared pioneering and inter-disciplinary research on currency innovation. A review of this

journal revealed only one article that made explicit to reference to matters of corporate responsibility (Ruddick et al, 2015). I will explain the method and results of the literature review below, which covered both theoretical discussions and case studies. One of the main findings for the field of ICSR is that there were only two academic articles on currency innovation in established journals within this field. These were in the *Journal of Business Ethics* and discussed the pros and cons of Bitcoin from different ethical theories, though without commenting on the ethics of mainstream monetary systems (Angel and McCabe, 2014; Dierksmeier and Seele, 2016).[2] No articles on commercial barter in relation to ICSR issues were found in any academic journal, and no articles on the implications of countertrade for sustainable development.

Although ICSR research is mostly housed within management studies, it relates to many other fields, including economics, politics, geography, environmental studies, sociology, development studies, and law. As currency innovation presents a range of implications for economy and society, one might expect all of those disciplines to research the topic in future. As currency innovation is novel to most academic disciplines, it means that it is possible to review literature in all these disciplines to orient oneself in this landscape. Therefore, your author attempted a comprehensive review of journal articles across all the disciplines just named. Before explaining the process, I should note that as I was not focusing on historical experiences, two disciplines with fascinating contributions to understanding money and currency were not included in my literature review: history and anthropology (e.g. Graeber, 2011).Though they would have shown that money has been many different things over the years, and often forms of debt obligation, that background is not necessary for this paper.

A literature review of academic journal articles was conducted using three sources. First, OneSearch, the online academic search system, which queries all main journal databases. Second, the private ResearchGate website, which has built a repository of papers submitted by academics. Third, GoogleScholar. For OneSearch and ResearchGate, I combined one term about currency innovation[3] with one term for ICSR[4]. These searches generated over 100 academic papers. I examined the title of each and where it appeared to be focusing on a relevant topic, I studied the abstract to confirm relevance before examining the paper. Though a range of papers within computing research explore the technical aspects of cryptographic currencies (Alam et al, 2015), the broader implications would best be explored within other disciplines, so I excluded papers from computer and information science. This process led to over 40 papers in mainstream academic disciplines being identified as having some substantive comment on either cryptographic currencies, commercial barter, or complementary currencies on the one hand, and either sustainable development or corporate responsibility on the other.

For GoogleScholar I searched for bitcoin or complementary currencies and corporate social responsibility. These searches generated over 300 results, including a lot of books, chapters, reports and other materials. I looked at the titles of the first 100 results and if something looked especially relevant, I explored further. This approach supplemented an ad hoc collection of relevant academic studies over the years since 2009, as I participated in scholarly, activist and entrepreneurial communities of people engaged with the topics of complementary currencies, commercial barter

[2] There was also one article in a new independent journal, which explored the ethical implications of organisations being able to operate on the blockchain without direct human control (Gladden, 2015).
[3] Either: bitcoin, cryptographic currency, cryptographic currencies, commercial barter, countertrade, complementary currency, complementary currencies, community currency, or community currencies.
[4] Either corporate sustainability, corporate social responsibility, business ethics, environmental management, sustainable development, or impact investing.

and cryptographic currencies. The resultant literature analysis, which I present below, is necessarily top-level, as it describes a broad landscape of research.

The management studies academe has been encouraged to research currency innovation, with the prestigious Academy of Management Journal publishing a special editorial to invite more research on currency innovation (Dodgson et al, 2015):

"Money lubricates economic activity. It is also a deeply sensitive social and cultural issue for society, organizations, and individuals. Changes in the way money is created and used cannot be separated from its economic, technological, social, political, cultural, historical, religious, and ethical contexts. Digital money is in its early stages of development, and these complex and interrelated contextual factors will influence its future direction and adoption, adding to the unpredictability of its trajectory of adoption and influence." (ibid, p. 330)

Over the three decades prior to their call, some management researchers had studied the experience with countertrade or commercial barter, which can be included within a broad definition of digital money. There were several general overviews of the practice in the USA (Kaikati and Kaikati, 2013), in Africa (Oliver and Mpinganjira, 2011), in Australia (Palia and Liesch, 1997) in Switzerland (Stodder, 2009) and internationally (Carter and Gagne, 1988). There were discussions of it as a strategic management practice (Aggarwal 1989) and in particular how it provides a mechanism for trading in financially unstable markets in Russia (Zhuplev, 1994) and other emerging economies (Choi and Soo, 1999). All of these studies reported positive implications for the participants and wider economy.

Less research in management studies has focused on complementary currencies, which is understandable given that such initiatives have not traditionally focused on business participants. The earliest study looked at the potential for an entirely new type of money (Lietaer, 2001), though the lack of subsequent work citing that paper suggests it did not trigger wider research within the management academe. It took another 14 years before a second study within a management studies joirnal looked at this topic, with an analysis of what complementary currencies could mean for how we understand value in organisations (Safri, 2015).

The call in 2015 from the editors of the *Academy of Management Journal* was, however, more focused on the advent of cryptographic currencies like bitcoin. Ahead of the curve, some management academics have provided general overviews of cryptographic currencies in lesser journals (Yahanpath and Wilton, 2014) and guidance for how to teach business students about currency innovation (Barrea, 2015). Within risk management the existence of Bitcoin also began to be mentioned (Fischbacher-Smith and Smith, 2015), while those interested in maintaining competitive markets have noted potential for new competition from cryptographic currencies within the context of new payments technologies (Zucarro and Bridwell, 2016). Academics in accounting also realised there are interesting implications from Bitcoin for financial reporting (Smith and Weismann, 2014; Grant and Hogan, 2015). One interesting study suggests the criticisms of finance since the financial crisis have triggered enthusiasm for cryptographic currency and thus raise our awareness of how finance should act as a servant of economy and society. (Ansart and Monvoisin, 2017). This paper is based on such a view, and the case study from Kenya will demonstrate how currencies can be a servant of the income poor.

Moving beyond management studies, we find that economists have begun to provide broad overviews with reflections on what cryptographic currency may mean for the institution of money (Malovic, 2014; Weber, 2014; Richter et al, 2015; Egorova and Torzhevskiy, 2016). Others have used

it as a case study for analysing currency behaviours (Rogojanu and Badea, 2014) or as a way of observing regulators from an economics standpoint (Sauer, 2015). Prior to such studies, economists have studied commercial barter or countertrade, from a macroeconomic perspective on addressing liquidity problems (Marvasti and Smyth, 1998; Yavas and Freed, 2001), something this paper engages with, in the context of SMEs and microentrepreneurs. One recent study shows how Sardex in Italy has helped keep hundreds of businesses from growing bankrupt during the great recession (Lucarelli and Gobbi, 2016). The sub disciplines of local economics (Kim et al, 2016) and social economies (Peacock, 2006; Blanc and Fare, 2016) have also reported benefits arising from complementary currencies.

In the field of geography, the challenges of implementing complementary currencies has been analysed (Hughes, 2006), as well as their potential as tools for city planners (Kusakabe, 2013; Fuders, 2016). That relates to the broader field of environmental studies, which has further discussed the benefits of local complementary currencies for promoting sustainability in cities and towns (Evans, 2009; Graugaard, 2012; Barrett et al, 2016). Overviews of the sustainable development promise and limits of such currencies have also been offered within environmental studies (Seyfang and Longhurst, 2013; Arnaud and Hudon, 2015).

International development studies is used to interdisciplinary studies with practical relevance, so it is surprising only relevant paper was found within an academic journal (Pearson, 2000). The main academic research within this discipline being published by the UN Research Institute for Social Development (Bendell et al, 2015; Scott, 2016). The mainstream academe has been more focused on innovations in mobile payment systems than currency innovation (Maurer, 2012). The related field of political science has hosted some discussion of complementary currencies as a means of promoting local resilience and autonomy in the context of globalisation (Seyfang, 2000; Powell, 2002; Starr and Adams, 2003)

In sociology, there are discussions about what Bitcoin means for our socially constructed notions of monetary value (Dalal, 2014; Popescu, 2014; Bjerg, 2016). There is clearly great potential for social theory to cast critical light on cryptographic currencies, their users and regulators (Dodd, 2014). As cryptographic currencies like Bitcoin clearly raise new questions for regulators, there are a range of studies in legal journals (Bollen, 2013; Kien-Meng, 2014). In these articles, we did not see a focus on competition law, or the potential for monopolies to emerge in the field of digital currency, which is something we consider a major oversight and address in this paper, albeit from a strategic innovation standpoint rather than legal studies.

It is clear from this literature review that the studies in this field are tentative and exploratory, each inviting further work from colleagues in their discipline. Therefore, the topic is suited to futures studies and methodical speculation on the future of business-society relations (Amanatidou et al, 2015), something we will return to in concluding. For a field that has embraced the importance of innovation, the limited research within ICSR journals is likely to change. Early indications of this are not only the two papers on business ethics mentioned before, but also new chapters on the implications of complementary currencies for impact investing (Toxopeus et al 2017) and the future of responsible business (Bendell and Greco, 2013; Bendell and Doyle, 2015; Forcella and Servet, 2016).

One of the limitations of this literature review is that it was entirely within the English language, whereas interesting innovations have occurred in Spanish-speaking countries in particular (Powell, 2002). In addition, I focused on peer reviewed journal articles that could be identified by academic databases. Many more studies could be accessed by interested researchers through accessing a

database of complementary currencies such as www.cc-literature.de. The analysis presented here also had to be limited in depth, focusing on mapping the field. Yet what this review demonstrates clearly is that there is a need for research into the practice, potential and limits of complementary currencies in general and in collaborative credit systems (CCS) in particular, as a means of increasing the ability of SMEs and microenterprises to transact in conditions of limited cash or credit. With this need in mind, your author participated in case study research of one such system in Kenya.

A case study in Kenya

The analysis that a system of money that relies on bank-issued debt is not sufficient for those people and enterprises with limited access to banks would suggest that the complementary currencies they would most benefit from would be Collaborative Credit Systems. That is because such systems create new means of exchange without first needing to be purchased with national currency. That hypothesis was the reason for the founders of a CCS in a poor area of Kenya in 2013 and why I focus on it in a case study.[5]

Despite being a technological and logistical hub for East Africa, over 50% of Kenya's population lives in extreme poverty (Kristjanson 2010). One manifestation of this poverty is rapidly growing informal settlements (slums). These communities face numerous challenges due to glaring socio-economic marginalization, lack of property rights, poor education levels and minimal access to infrastructure, health and social services. In developing nations over 50 percent of urban populations live in informal settlements and as much as 70 percent in Kenya (Ruddick et al, 2015). Due to their size and rapid growth all over the world, sustainable development efforts should be directed towards such informal settlements.

The hypothesis is that Informal settlements may be especially well suited to reap the benefits of Collaborative Credit Systems due to their density and diversity of businesses, acute scarcity of the medium of exchange provided by legal tender (Kenyan Shillings), a lack of market stability and absence of public services. In 2013, a CCS was introduced to a slum in Mombasa rather surprisingly called "Bangladesh". This 'Bangla-Pesa' currency was a voucher representing the excess goods and services of participating micro-entrepreneurs. Because the voucher is redeemable at any shop in the network of participants, it creates flexibility not present in direct barter of goods and services. As the value of the voucher is tied to Kenyan shillings, it would allow easy trade of goods at well-known and established prices.

Looking at one cycle of trade within a community can help explain the process. Most households in the Mombasa slum use maize flour, vegetables, and charcoal (for cooking) every day. Imagine a mother of three selling peanuts (a high-demand supplemental food in Kenya). Her stock will go bad after a certain period. If members of her community don't have sufficient funds to purchase peanuts, she will lose the money spent to purchase her stock, and she will not have money to purchase the goods she needs. Given the fluctuations in demand for wage labour from the neighbouring port, the official money supply in an informal settlement is highly volatile and unpredictable which makes it hard for businesses buying stock to know whether customers will have official money on hand, on any given day.

Now, imagine a collaborative credit is introduced into this situation. The woman uses this voucher to purchase maize flour. This voucher is essentially a promissory note (IOU) promising to pay an amount in peanuts or other goods and services equal to the value of the flour. The person selling maize flour

[5] This section is based on research previously presented in Ruddick, W., Richards, M. and Bendell, J. (2015).

can then use the voucher to buy well water. The water vendor can use the voucher to buy vegetables, and the vegetable dealer can use the voucher to buy charcoal for cooking. The women selling charcoal can then return to the original woman in this example and exchange the voucher for the peanuts she promised to repay when she used the voucher to purchase maize flour. In this situation, excess stock that might have gone bad (maize flour, vegetables, and peanuts) and excess services that might have gone unused (well water collection) would be purchased through the exchange of a voucher which represented those excess capacity goods and services.

The hypothesis of the inventors of Bangla-Pesa was that that the introduction of a collaborative credit should lead to an increase in sales as people exchange their excess capacity goods and services using Bangla-Pesa and thereby improve their wellbeing. The Bangla-Pesa programme was initiated by organizing roughly 200 small businesses into the Bangladesh Business Network (BBN), an association that would govern the issuance of the new collaborative credit currency. A key aspect of the initiative which differentiated it from “mutual credit” systems, particularly those in Europe and North America, was that they based the initial allotment of Bangla-Pesa on a survey to assess the productive capacity of a participant, and with the backing by four other members in case of default.

Given the lack of research of these topics, as laid out above, the founders recognised the need to assess the initiative both for their own evaluation and learning and, if successful, to be able to communicate with a wider range of potential stakeholders. Recognising this need, I became involved in the design of a study and its analysis. The self-funded research team was led by Will Ruddick and Morgan Richards, working with a team of volunteer researchers in Mombasa.

Baseline data was collected in April 2013, focusing on documenting the typical minimum, average and maximum trading volumes of participating micro entrepreneurs within the Bangladesh slum area. Follow up surveys were conducted a week following the launch. Immediately after the launch, more members completed the registration and backing process to reach a total of 109 members that backed the Bangla-Pesa. Each of those members received vouchers so that the total number of individual Bangla-Pesa vouchers in the community came to 1,090, which was equivalent to 21,800 Kenyan Shillings worth of goods and services.

Within a week of the launch, business owners reported using around 70 Bangla-Pesa a day at four other member businesses. This meant the total daily exchange was around 5,740 Bangla-Pesa. 83% reported that their total sales were increasing, and only 2 people reported decreases in sales. Research suggested that the 22% of daily trades done with Bangla-Pesa represented additional sales which might not have happened without this means of exchange (at least for those people whose sales in Kenyan shillings remained the same). Therefore, we concluded that after only a week of circulation, Bangla-Pesa helped community members tap into an estimated 22% increase in their sales. This is a substantial increase for a community of people living in poverty.

The full methodology of this study is available in a specialist paper for complementary currency experts (Ruddick et al, 2015) and a discussion paper issued by United Nations for development professionals (Bendell et al, 2015). With an implementation time of 6 months and implementation cost of roughly 4.000 Euros, these systems appeared to represent viable and cost effective sustainable development tools. The experience therefore led the founder, Will Ruddick, to establish the NGO Grassroots Economics and replicate the model across Kenya and then elsewhere in Africa.

Consequently, the same NGO has launched similar currencies in Kenya with the cooperation of local municipalities and the participation of over 20 schools. These schemes are now affecting over 60,000 people with over 1000 local business participants. Though more research needs to be done, initial

estimates are that each community currency is already increasing local trade in impoverished communities by the equivalent of 100,000 USD each year.

In addition, many community activities are now being funded by the community currencies, such as sports programmes, trash collection, and educational support. This process works by the community of small businesses that launch and back the collaborative credit system then paying a certain amount to their association that governs the currency, which then spends these collaborative credits on needed community work. Because the participants begin to save more of their Kenyan shillings, so they become interested in basic financial services, such as savings accounts. The NGO Grassroots economics now provides that facility and with the funds has invested in opening 5 cooperatively owned supermarkets and 3 permaculture-based school food farms in these communities. These further enable to the CCS to encourage local production for local consumption, as the collaborative credits need to circulate within the informal settlements, rather than leak into the wider economy, in the way that national currencies do.

Inter-trading between the Nairobi communities has now started, meaning that they are beginning to accept collaborative credits from other communities that use the same model developed by the NGO Grassroots Economics. On the basis of that experience, a nationwide system of Sarafu-Credit has been launched by the NGO, so that other communities can benefit from the system and intertrading between communities can become seamless.

All of this was launched with paper vouchers in a country that leads the world with mobile money. It is not that they didn't have other technology. The Bangla-Pesa example shows that the best currencies for the real economy and for the income poor are forms of credit not digital tokens like Bitcoin. In this Bangla-Pesa project they focused on trusting in each other. They trusted that people could and would redeem their promises. The initiative was co-designed and developed by the intended beneficiaries themselves.

The success of these Kenyan initiatives suggest that for Collaborative Credit Systems to thrive it is important to (i) involve businesses and organisations that are widely used, such as schools, (ii) allocate credit as vouchers to hundreds of businesses according to an audit of their capacity and with backing from other existing members, and (iii) design the system to fund its own upkeep and social service work (like waste collection) - using a community fund maintained by the currency rather than external legal tender (iv) maintain a focus on the currency innovation as part of a process of developing community resilience, thereby investing in cooperatively owned savings facilities, farms and supermarkets, as the effort progresses.

The grassroots initiatives in Kenya show there are systems of issuance that can be decentralized and democratic and backed by goods and services. This is a form of development which does not rely on large donors, banks or governments. Despite multiple funding applications to donors in development assistance, Grassroots Economics has not attracted significant grants from such organisations. Instead, it has been the enthusiasm of experts and global networks of friends that have funded the growth of these initiatives, as well as their early and successful defence against misguided legal action from regulators (Bendell et al, 2015).

As the system grows nationwide with the Sarafu-credit model so the incumbent banks may begin to play closer attention, as it could either augment or disrupt their business models. On the one hand, there is reason to consider that the improved development from CCS means that more people will seek to have financial services and thus the banking sectors client base will be able to grow. On the other hand, some defensively minded banking officials might worry over alternative financial service providers emerging from the grassroots. The experience in Argentina of how the incumbent banks

actively sought to undermine the complementary currencies that thrived during the economy crisis, is a warning that these complementary currencies will need to be protected within law from attempts at sabotage (Powell, 2002).

Exploring Impediments to Scale

As seen through the lens of analysing English-language research and talking to practitioners since 2010, the experience of Bangla-Pesa and Sarafu-Credit is an unusual one in the history of complementary currencies. Theoretically there is little reason today why whole economies could not be run in this way, whereby all credit needed could be created by producers, for producers. Why are there not more examples of Bangla-Pesa types of CCS? One reason is probably a lack of awareness, especially within the field of development assistance, as illustrated by the dearth of research within that discipline on this topic. In 2015 the international community agreed a framework for the future financing of development, and, despite the UN Task Force on Social and Solidarity Economy proposing the recognition of CCS as a form of domestic resource mobilisation, it was not supported by any member state so not adopted in the final declaration.[6] The clear need for general awareness raising is one reason for the launch of the free online course on Money and Society, cowritten by your author, which has over 300 alumni, a number of whom are now launching their own complementary currencies. It is also the reason for the creation of the new Research Association (RAMICS) which your author participates in by organisation their colloquia of doctoral researchers. The advent of cryptographic currencies has also led to more attention to this field, which may help promote the design of currencies that are more useful to SMEs than Bitcoin.

The Vircoin2SME project, funded by Horizon2020 budget of the European Union, sought to understand how to promote the use of complementary currencies, of all types, by SMEs. Their research identified barriers for more government agencies, SMEs and consumers to engage, which are broadly related to low confidence and the limited day-to-day utility of such currencies.[7] That research analysed the views and behaviours of stakeholders and potential adopters of complementary currency. As a form of marketing research, it was important to do. However, if we step back from the marketing challenge, some self-imposed restrictions on the commercial barter sector come into view. Since 2010 I have engaged in dialogue with practitioners in the commercial barter field, and read various business plans for start-ups or expansions in this field. From this reflective engagement, the following are hypotheses as to why the sector is not yet performing to its potential.

My first hypothesis is that growth in commercial barter is being held back by the inefficiencies of the platform providers, whereby membership is relatively costly. Each company has its own proprietary software, competition with other groups, administrative costs, legal compliance, tax, and sales functions. Bartercard's cheapest membership is about EUR75 per month, then they charge around 13% of each transaction in legal tender, and that's before the state extracts sales tax. The attractiveness of the systems for cash-strapped SMEs is therefore reduced. This cost contrasts with the zero barriers to entry for Bangla-Pesa and Sarafu-credit, as they do not charge members in national currency.

[6] Your author was an expert on this Task Force and co-drafted the input to the UN process.
[7] Your author participated in an external evaluation workshop for the Vircoin2SME project. http://vircoin2sme.com/index.php/project

A second hypothesis is that the taxation rules militate against growth in commercial barter is because an exchange is counted as a sale. It is unfair as sales generate legal tender income and hopefully financial profit, whereas an exchange brings in no money and only helps create profit indirectly, and only when that trade credit is spent, not earned. A just system would not tax trade credit earned, which corresponds to goods and services given away, but trade credit spent which corresponds to goods and services actually received. This cost contrasts with the situation in Kenya where the amounts involved are so low that they are beneath the threshold of concern for the tax authorities.

Third, there are negative stories shared in various online fora which suggest that barter networks are underregulated. Some members of these systems find it easier to sell (and earn credit) than to buy (and spend credit), so they end up with credit they can't spend. This situation, if not widespread, leads to some very vocal critics of the sector, who question why this happens. Perhaps it is too easy to set oneself up as a barter system, and use your insider knowledge to buy all the best goods with credit you issue freely to yourself, while never selling anything and so run your network into a liquidity crisis. Outside this sector, taking without giving is called theft, but because it happens within a 'commercial barter' context it is treated as failed entrepreneurialism. In the case of Bangla-Pesa a great deal of time was spent on building commitment to a clear form of governance and issuance of the currency, so that it would be accountable to all users.

A fourth hypothesis is that barter systems are held back because they are centralised, being the property of the software franchisee, who sets the rules for credit allocation, setting the pricing, arbitrating all disputes and taking all the profit. The intentions of these owners may not be to create the greatest potential for scaling through serving their members. This lack of control contrasts with the Bangla-Pesa which is governed by the participant themselves. However, it is also a reminder of the risks entailed of taking systems online, which will be a key process for Sarafu-credit to do right.

Fifth, there is an issue of fragmentation, which means that there are myriad networks, each with their own software and each with their own payment rails. With no formal interoperability between them, each network is small and therefore of limited usefulness. Neither members nor credit nor produce can flow between provider companies. Even one project that attempts to unify them, the Universal Currency, is just another group containing members of the other groups and offers no real interoperability. In the case in Kenya, each currency is being designed with the same issuance rules so as to allow confidence in each system and thus greater interoperability, which is now being scaled through the Sarafu-credit nationwide system.

Further research on these hypotheses on the causes of limited growth in commercial barter is needed, as well as on any impediments. One area that is particularly important to consider is the creation and use of open protocols for all forms of complementary currencies. Open protocols would allow different initiatives to interoperate and for collective clearing systems to be created, perhaps using blockchains. Such protocols would then reduce the likelihood of the sector becoming monopolised by enterprises that are backed by venture capital. In the absence of interoperability, those platforms that enrol the most users are then the most useful for any new users. The way platform corporations like Airbnb and Uber have intentionally sought and gained dominant positions to become billion-dollar valued “unicorns” is instructive (Thiel, 2014). If this occurs in the complementary currency field then although utility will grow through users being on the same network, we would risk the development of oligopolistic control whereby the network becomes a means of extracting wealth from the users, much the same as the current monetary system works. To avoid this “stampede of the unicorns” more funding and analysis of open protocols, platform cooperatives and effective competition law will be required (Bendell and Slater, 2017).

As we saw with the case study in Kenya, a CCS can be part of broader effort at promoting local resilience and sustainability. Therefore, it will be important to promote a diverse mix of interoperable systems, with some being controlled by SMEs and microentrepreneurs so that developments in complementary currencies achieved broader goals of sustainable development beyond matters of business financing.

The implications for larger firms that are working on ICSR is clear. Participating in collaborative credit systems, particularly those committed to interoperability and aligned to sustainable development aims, can help such systems to grow and have a positive impact on the local economy. Such engagement could now be part of a company's CSR programme as a tangible response to the systemic problems we witness with economies today (Bendell and Doyle, 2014).

Going forward, a key question for practice, policy and research will be how a scaling up of these innovations can grow the positive benefits for SMEs and their communities. Over time, it is likely that currency innovations will blend between the types outlined in Box 1. If technological and regulatory factors begin to reshape the way the systems serve the interests of their users then there will be risks to future effectiveness. The accountability and intelligence of the management will be key to how these risks are navigated.

Conclusions

"Mark Twain observed that the lack of money is the root of all evil; the transformational effects of digital money will be relatively most influential in poorer nations… While digital money will not remove poverty and inequality, it will provide a vital new tool in helping them to be addressed." (Dodgson et al, 2015, p 331).

The editors of the *Academy of Management Journal* were right to identify a lack of means of exchange as an evil. They are hopeful that technology can address that lack and uplift humanity. This paper suggests that technology in the field of complementary currencies, like in any endeavour, is not necessarily going to improve humanity – it depends on how it is used. A case study of successful implementation of a collaborative credit system in Kenya showed it is possible to grow a complementary currency without digital technology.

Key to the success of the Bangla-Pesa project was that the currency monetised the participants' own spare capacity and trust in each other, rather than requiring them to purchase something with national currency or receive donations. That process contrasts clearly with the limited benefit for SME and microentrepreneur financing from cryptographic currencies like Bitcoin. This paper therefore suggests that SMEs need certain types of complementary currency but not others. It also indicates avenues for further research on how to scale such systems and consider their long-term sufficiency, efficiency, security, inter-operability and accountability. If such systems are designed well, it could usher in a new paradigm in development cooperation, whereby we do not rely on the rich to give or lend more to the poor but enable the poor to create their own systems for creating currency themselves. Given the growing concern about inequality and its implications for business-society relations, the case is clear for more engagement by companies and financial institutions in complementary currencies as part of their CSR and more research on these processes within the ICSR field. The evidence in this paper suggests those companies that do engage may also find direct commercial benefits from doing so.

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Box 1: A stakeholder-based typology of currency innovation

Prime stakeholder	Terms used	Technology	Issuance	Examples	Main potential for SMEs
Financial services focused	Cryptographic currencies, digital currencies, virtual currencies, blockchain currencies	Typically distributed ledgers and mobile or desktop interfaces	Typically selling digital tokens (unless mining)	Bitcoin, Ripple, Ethereum	Aside from platforms for entrepreneurship, wider potential uncertain at this time
Community focused	Timebanks, time credits, LETS, mutual credit, collaborative credit, hawala	Typically a mix of paper vouchers and web-based databases	Typically collaborative credit, though sometimes awarded	Spice, Banglapesa, CES, Community Forge, Hawala	Providing additional low-cost to free means of exchange
Business or government focused	Commercial barter, retail barter, countertrade, reciprocal exchange	Typically web-based databases	Typically collaborative credit	Bartercard, RES, Sardex, GETS, Recipco	Providing additional low-cost means of exchange and brokering
City or region focused	Local currencies, local pounds, city currencies	Typically a mix of paper vouchers, mobile interface and some with electronic cards for payment terminals	Typically selling vouchers, though sometimes collaborative credit	Brixton Pound, Bristol Pound, SoNantes	Generating awareness of local producers and retailers, and potentially new means of exchange (if credit)
Consumer focused	Airmiles, loyalty points, and reward points	Typically web-based and membership cards	Typically by fiat (declaration) by a company	Krisflyer, Nectar points, MyDIO	Currently untapped for loyalty to SMEs