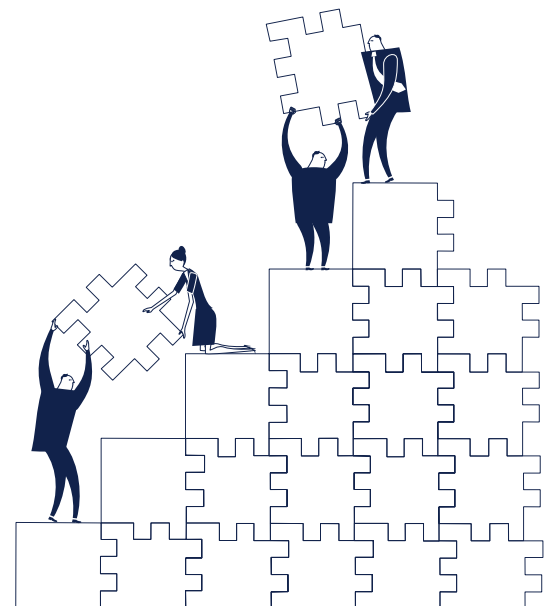

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Social Capital and Adoption of Agronomic Practices: Theory and Findings

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Mutuality in Business

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1 ABOUT THE AUTHORS

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Morten has a background in international education. Having recently obtained a MSc in Comparative Education at the University of Oxford, he is particularly interested in bridging gaps between knowledge and practice in the private and public sectors. His work on the Mutuality in Business project focuses on the role different types of capitals play between multinationals, smallholders, and academia.

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Social Capital and Adoption of Agronomic Practices

Social capital describes human relations and norms that support productive activities. In the agricultural sector, food companies can leverage social capital to increase smallholder farmers' adoption of agronomic practice and technology. Here is what you need to know:

- Most contemporary research defines social capital in relation to a function (i.e. an outcome).
- Studies have established correlations between social capital measures and smallholder farmers' adoption of agronomic practice and technology.
- Social capital interventions should be context-specific and backed by a responsive state.
- Patience, persistence, and realistic expectations about the efficacy of social capital as a production input is key for sustainable interventions.
- Outcomes of social capital interventions are best captured using interdisciplinary research approaches.

Social Capital and Adoption of Agronomic Practices

ABSTRACT: Social capital is a concept that captures ways that human relations support productive activities. The concept had a meteoric rise in academia during the 1990s and has been picked up more by multinational corporations who are using the concept to improve their production and brand. This study explores: (1) what are the common assumptions behind social capital research; (2) can social capital increase the adoption of agronomic technology and practice; and (3) can social capital be purposefully built? Tying practical questions to a deeper understanding of social capital is instructive for future social capital research, as it identifies productive ways of dealing with theoretical tensions in the literature.

2 INTRODUCTION

Global food companies rely on smallholder farmers, who provide a major part of the world's food.¹ Improving their productivity presents a compelling business case, not least of all in the cocoa sector, which is seeing a global supply shortage (ICCO, 2015). Productive communities draw on complementary types of capital; and the outcomes of interventions providing one input only, such as infrastructure, are depressing (Ostrom, 2000). Multinational corporations are, against this backdrop, considering how social capital, defined as productive social bonds and community norms, can help transform their food production.

Social capital is an exciting concept that had a meteoric rise in academia during the 1990s (Forsman, 2005) and has recently been picked up by corporations such as Danone, Unilever, Pepsi, Equity Bank, Vodafone (Champriss, 2011). Mars Chocolate, the world's biggest chocolate vendor, is conducting social capital interventions throughout the cocoa value chain. Though this sudden fame has left some scholars sceptical about the intentions behind social capital movements (Fine, 2010; Harriss, 2002), evidence suggests that enthusiasm is justified in the context of increasing smallholder farmers' adoption of new technologies and practices.

Despite these positive indications, correlational evidence between social capital and adoption is still a far cry from successfully and consistently improving productivity through social capital interventions. Furthermore, the term is known for its "catch-all" nature resulting in fluid and conflicting definitions that blur the lines between corporate "image washing" and genuine reform programmes improving smallholder farmers' productivity and welfare. Revisiting some of the assumptions underpinning social capital research provides insights that are helpful for identifying genuine reform programmes today. In addition, reviewing studies that aim to improve smallholder farmers' adoption of technologies and practices, as well as interventions that seek to develop communities' social capital, can help gauge the potential of building social capital. As such, the review explores the following three questions:

- What are the common assumptions behind social capital research?
- Does social capital increase adoption of agronomic technology and practice?
- Can social capital be purposefully built?

¹ Smallholders' actual contribution is difficult to estimate; recent research questions the validity of commonly cited proportion of 50% to 70% of global food production (Graeub et al., 2016).

3 SOCIAL CAPITAL

3.1 OVERVIEW AND MEASUREMENTS

Social capital is measured at meso, macro, and micro levels and can be defined as productive social bonds and community norms. Researchers have captured its effects using both individual and aggregate measures (Durlauf & Fafchamps, 2005); an individual outcome variable could be a farmer's production, whereas an aggregated outcome variable could be the production output of a village.

Cognitive and structural social capital are two categories of social capital with noteworthy conceptual differences. The former is difficult to measure because it comprises "intangible elements such as generally accepted attitudes and norms of behaviour, shared values, reciprocity, and trust" (Grootaert & Bastelaer, 2002, p. 3). Common approaches to measuring it include surveys such as the American General Social Survey and the World Values Survey, though behavioural economists are increasingly using field experiments and games to measure trust and reciprocity as indicators of cognitive social capital (Barr et al., 2009; Johansson-Stenman, Mahmud, & Martinsson, 2013).

Trust is arguably the most important component or type of cognitive social capital, and social scientists tend to distinguish between two types of trust:

Trust may be understood as an optimistic expectation or belief regarding other agents' behavior. The origin of trust may vary. Sometimes, trust arises from repeated interpersonal interaction. Other times, it arises from general knowledge about the population of agents, the incentives they face, and the upbringing they have received [Platteau (1994a, 1994b)]. The former can be called personalized trust and the latter generalized trust. The main difference between the two is that, for each pair of newly matched agents, the former takes time and effort to establish while the latter is instantaneous (Durlauf & Fafchamps, 2005, p. 1646).

According to recent estimates by Graeub et al. (2016), family farms constitute more than 98% of all farms, indicating that family relations, and the personalised trust they engender, are core in the farming industry. Skilfully navigating farmers' informal kinship structures and formal participation in agricultural cooperatives, is an unavoidable part of successfully trading with smallholder farmers. Generalised and personalised trust may function as useful heuristics for multinational corporations wanting to buy smallholder farmers' crop and encourage increased production. Should a corporation try to (i) improve the personalised trust between farmers and a local agent promoting the company's cause or (ii) buttress generalised trust levels in the communities where farmers live? It is outside the scope of this text to answer these questions fully; however, actors trying to increase trust should consider the context and history of the community targeted, as suggested by Platteau:

...the social fabric and the culture of human societies matter a great deal and, to the extent that norms and cultural beliefs are rooted in historical processes, history necessarily determines the development trajectories of particular countries (1994b, p. 535).

This is not to say that the future is closed. (People can develop trust and vice versa.) Rather, it is to emphasise that social communities have a history; historical and contextual approaches can deepen outsiders' understanding of it, and thereby inform potential interventions.

Structural social capital is easier to measure because it refers to "externally observable social structures such as networks, associations, and institutions" (Grootaert & Bastelaer, 2002, p. 3). It can, among other methods, be measured using group membership, number

of friends, or by people's positions in a network; Putnam's early studies from Italy and the U.S. famously aggregated measures of structural social capital including voting patterns and participation in public organisations (Putnam, 1993, 2000) to correlate with economic development and other macro level outcomes. This approach has since attracted some criticism (Field, 2003: 37-39) and the following will demonstrate pitfalls to avoid when seeing the concept "as a resource that functions at societal level" (p. 40).

3.2 FALLACY OF COMPOSITION & FREE RIDING

The relationship between social capital measured at the individual level may not be predictive for social capital measured at the aggregated level. Durlauf and Fafchamps (2005) demonstrate this by juxtaposing fallacy of composition and free riding.

The fallacy of composition surfaces in situations where (i) individuals are competing for scarce resources through social capital; and (ii) social capital does not impact individuals' subsequent use of said resources. Imagine, for example, that a company offers to apply fertiliser to the fields of 50 farmers, in a village inhabited by 100 equally productive farmers. Then imagine that the farmers' social networks influence their chances to be nominated for one of the 50 interventions, without influencing the actual production gains of those chosen for the intervention. In this example, social capital has distributional effects on private return, but no effect at the village level.

The free riding problem exemplifies the reverse situation (where an excess of social capital results in positive externalities but only limited benefits to the individual). Imagine, for example, a village where all inhabitants discharge their wastewater in a nearby lake (thereby polluting a vital water source for all). It is difficult to restore this common good without some form of coordination, cooperation, or legislation as the individual effects on the overall pollution levels are negligible. Through collective action, however, inhabitants can commit to reducing their personal pollution levels, cooperate to build a common sewage system, or coordinate shared use of purification tanks. Because individuals with high levels of social capital are embedded in the social fabric of the village, they may feel more obliged to honour such agreements (or to volunteer their time to do upkeep on common infrastructure), resulting in diminishing individual returns to social capital. People with low levels of social capital, on the other hand, may ignore such social obligations and in turn enjoy the benefits of an improved lake without suffering the cost of contributing to its decontamination.

These hypotheticals draw on certain assumptions about rational behaviour and highlight how measuring a function of social capital at different levels may drastically change the effects captured. By now it is clear that we cannot adequately understand, for example, local adoption mechanisms relying solely on aggregated social capital measures at the macro level. Aggregated measures at the community level, or individual measures at the meso and micro level, may be more appropriate for understanding context-specific adoption behaviour. Furthermore, it is worth outlining these key assumptions and their theoretical implications.

3.3 FUNCTIONALIST PERSPECTIVES

Functionalist perspectives are at the forefront of social capital research, which typically examines links between social bonds, connections, and community norms in relation to a given function such as crop production. In sociology, such perspectives rely on the work of Durkheim and Parsons and focus on social systems, "how they change, and the social consequences they produce" (Johnson, 2000 n.p). One could think of a social system that, relative to a different social system, obstructs the production of cocoa beans. This working paper will not go into discussions about functional or dysfunctional systems, but simply note

that a social consequence is the difference between such systems, expressed as a measurable effect on an outcome variable (such as crop production).

The functionalist creed is omnipresent in social capital definitions: the OECD, for example, defines social capital as “networks together with shared norms, values and understandings *that facilitate co-operation* within or among groups” (OECD, 2000, p. 103 emphasis added). Though researchers have measured countless social capital functions, most gravitate towards defining social capital in relation to one prime function: improving economic outcomes. In an influential review for the World Bank, Grootaert identified several approaches to social capital in the literature that are distinct but share four common features:

- “All link the economic, social, and political spheres. *They share the belief that social relationships affect economic outcomes and are affected by them.*”
- All recognize the potential created by social relationships for *improving development outcomes but also recognize the danger for negative effects...*
- All focus on relationships among economic agents and how the formal or informal organization of those *can improve the efficiency of economic activities.*
- All imply that “desirable” social relationships and institutions *have positive externalities...*” (Grootaert, 1998, p. 4 emphasis added)

This view on the economic world emphasises that economic transactions are contingent on social exchange; this conviction is best summed up by considering how “search and trust” may influence economic development. In a sweeping review of the social capital literature, Durlauf and Fafchamps explain:

As Hayek (1945) was among the first to point out, information asymmetries are an inescapable feature of human society. As a result, exchange is hindered either because agents who could benefit from trade cannot find each other, or because, having found each other, they do not trust each other enough to trade. In either case, some mutually beneficial exchange does not take place. Similar principles apply to the provision of public goods. Search and trust are thus two fundamental determinants of the efficiency of social exchange. If we can find ways of facilitating search and of fostering trust, we can improve social exchange (Durlauf & Fafchamps, 2005, p. 1645).

Economic behaviour is, from this perspective, rational and mediated by people’s links and attitudes to each other. From a research perspective, it follows that political and economic performance across borders cannot be properly explained without including factors like “trust and norms of reciprocity, networks and forms of civic engagements, and both formal and informal institutions” (Ostrom & Ahn, 2003, p. xii). Ostrom and Ahn imply that this is partially why social capital approaches to economics gained traction during the 1990s:

The social capital approach takes these factors seriously as *causes* of behavior and collective social outcomes. The social capital approach does this in ways that are consistent with continued and lively usage of the neo-classical economics and rational choice approaches. In sum, the social capital approach improves the knowledge of macro political and economic phenomena by expanding the factors to be incorporated in such knowledge and by enabling scholars to construct richer causality among those factors... (Ostrom & Ahn, 2003, p. xii original emphasis).

Grounded in rational choice theory, social capital “is defined by its function” as productive entities that “consist of some aspect of social structures, and they facilitate certain actions of actors—whether persons or corporate actors—within the structure” (Coleman, 1988, p. 98). Coleman’s writing on social capital has been extremely influential (Forsman, 2005) and springs from large quantitative studies showing the influence of children’s background on their educational performance (Coleman, 1961; Coleman et al., 1966). In this view, the creation of human, physical, and social capital all ease productive activity. Their individual returns on investment are, however, different according to Coleman: investment in both human capital (for example, by studying diligently) and physical capital (for example, by transforming steel and wood into a hammer) have direct returns; while many types of social capital do not:

For example, in some schools where there exists a dense set of associations among some parents, these are the result of a small number of persons, ordinarily mothers who do not hold full-time jobs outside the home. Yet these mothers themselves experience only a subset of the benefits of this social capital surrounding the school. If one of them decides to abandon these activities—for example, to take a full-time job—this may be an entirely reasonable action from a personal point of view and even from the point of view of that household with its children. The benefits of the new activity may far outweigh the losses that arise from the decline in associations with other parents whose children are in the school. But the withdrawal of these activities constitutes a loss to all those other parents whose associations and contacts were dependent on them (Coleman, 1988, p. 116).

In this perspective, social capital has a public good aspect that can arise as an unintended result of the rational actions within a particular social context. For Coleman, in the context of education, social capital is worth pursuing because it helps to build human capital, which early on was seen as a growth input (Becker, 1964; Schultz, 1961). Today, the example with mothers not taking a paying job to continue her work with the local school may sit awkwardly with contemporary understandings of gender equality. This is indicative of a functionalist perspective that is heavily influenced by the differences it can capture between prevailing social systems, which perhaps limits the “social” that can be imagined through it. This is not a critique of Coleman who surely was aware of such limitations. Rather, the example can help us think about the intentions behind this fundamental theory building (and its implications).

Indicative of contemporary understandings of social capital, Coleman’s work tried to bridge sociology and economics, and has attracted its fair share of critics from both disciplines (cf. Fine, 2010; Harriss, 2002). Other scholars have adopted social capital lenses that do not build on neo-classical economics or rational choice. Most notably, Bourdieu sees social capital as an avenue for people to “jockey for a more favourable position in a complex but hierarchical social space” (Wall, Ferrazzi, & Schryer, 1998, p. 313). This is not to say that Bourdieu believes social capital to be a zero-sum game in relation to an economic output; rather, his interest lay elsewhere. Bourdieu’s critical lens is more prone to see the ubiquitous power structures and histories that social capital is embedded in: norms and expectations are only potent if they can sanction exclusion.

Today such critical approaches to social capital research are in short supply and sanctioning through exclusion takes on a different role. For example, the widely celebrated social capital scholar Putnam (drawing extensively on Coleman’s work, while ignoring Bourdieu), juxtaposes exclusive bonding social capital and inclusive bridging social capital. Bridging social capital is “outward looking” and encompasses people from different cleavages (Putnam mentions the civil rights movement and ecumenical religious organisations as examples) and continues:

[s]ome forms of social capital are, by choice or necessity, inward looking and tend to reinforce exclusive identities and homogeneous groups. Examples of bonding social capital include ethnic fraternal organizations, church-based women's reading group, and fashionable country clubs ... Bonding social capital constitutes a kind of sociological superglue, whereas bridging social capital provides a sociological WD-40. Bonding social capital, by creating strong in-group loyalty, may also create strong out-group antagonism (Putnam, 2000, pp. 22–23).

From a neo-classical perspective, inward looking cultures (as far as they limit efficient social exchange) represent a missed opportunity and highlight the normative dimension to the functionalist concept: negative outcomes (in the eyes of the researcher) is fittingly denounced as the “dark side” of social capital (see Putnam, 2000 chapter 22).

The tension is clear: on the one hand, functionalist perspectives guide researchers to conduct relevant research (that is, research that buttresses a given function like agronomic adoption). At the same time, if such research turns into superimposing predetermined structures, it may digress into tautology. To avoid this, it is useful to **think about induction and deduction as complementary approaches**; to implement these complementary ways of reasoning, research designs can utilise a tight data framework in parallel with a loose data framework (see Bryman, 2012; Miles & Huberman, 1994). It is out of the scope of this text to outline these complimentary research approaches in any detail. Instead it will introduce a “how” and “how much” language, which supports productive ways to think about social capital, research designs, and agronomic adoption.

3.4 A NEW WAY FORWARD

Coleman and Bourdieu never tried integrating their intellectual projects (cf. Bourdieu & Coleman, 1991), and this early divide between cultural and functional approaches to social capital should be seen as symptomatic for the debate. Citation evidence clearly suggests that authors drawing on neo-classical economics and rational choice approaches have dominated the debate since the mid-1990s, Putnam being their most famous proponent (Forsman, 2005).

Putnam (1993, 2000) essentially conducted macro-sociological analyses that explained changes in societies through social structures and norms (at a high level of abstraction and generalisation). Much of Putnam's analyses are based on data capturing individual people's attitudes and behaviour, such as voting behaviour, church attendance, television watching habits, and trust in others. To conduct such analysis, one must deal with micro-to-macro-transitions (Coleman, 1990); that is, establishing the connection between the micro level phenomena and the macro level effect.² According to Coleman, social capital is one such “tool”:

The value of the concept of social capital lies first in the fact that it identifies certain aspects of social structure by their functions, just as the concept "chair" identifies certain physical objects by their function, despite differences in form, appearance, and construction. The function identified by the concept of "social capital" is the value of these aspects of social structure to actors as resources that they can use to achieve their interests.

By identifying this function of certain aspects of social structure, the concept of social capital constitutes both an aid in accounting for different outcomes at the level

² Coleman's unifying theory of social science has three components to explain “system behaviour [that] derives from actions of actors who are elements of the system” (Coleman, 1990, p. 10). They are: (i) a macro-to-micro component; (ii) an individual component; and (iii) a micro-to-macro component.

of individual actors and an aid toward making the micro-to-macro transitions without elaborating the social structural details through which this occurs (Coleman, 1988, p. 101).

Coleman uses revolutionary activities in France, Russia, and South Korea as examples of different organisational structures “that have fulfilled the same function for individuals with revolutionary goals” (Coleman, 1988, p. 101). Table 1 is an example of three aspects of social structure (social exchange, collective actions, and risk taking) that influence adoption of agronomic practices, according to the literature.

It is a daunting task to discuss—at a general level—whether micro-macro transitions at such high levels of abstraction are advisable or ontologically sound. Instead, purpose of this working paper, it is advised to maintain a keen eye to details in the different social structures, because the research objects are smallholder farmers’ production of cocoa in multiple different countries. This can be achieved through thick description (Geertz, 1993), captured in a loose data framework (Miles & Huberman, 1994), analysed using inductive reasoning (Bryman, 2012).

In this vision for social capital research, anchoring thinking to concrete adoption mechanisms is the first step in priming research projects into a strand of reasoning that invites middle-range theory building, as opposed to “grand theorising” such as structural functionalism (see Merton, 1957). The second step going forward will then be to expand Table 1 with an additional dimension elaborating on context specific details in different social structures (categories could include family structure, village structure, and characteristics of the state).

Asking the right questions is critical in conducting social capital research receptive to details in social structures. From a functionalist perspective, the function of a smallholder cocoa farmer includes crop production. Using the example of a smallholder farmer, two questions come to mind: “how” does social capital influence the farmer’s production, and “how much” does it affect production? The “how” question focuses on potential mechanisms changing the outcome of an activity, while the “how much” question focuses on the outcomes of these changes.³

Most social science research asks the second question to produce clarity through generalisations, which in turn helps managers or policymakers to make decisions and feel confident in their outcomes (Gordon, Lewis, & Young, 1977). This clarity, however, comes at a cost as it too often ignores the details in the mechanisms that changed the outcome, leaving practitioners in the dark about what levers to target in social capital interventions. More detailed insights may be particularly useful for multinational corporations, insofar as they operate in different countries (with different social structures). This is not to critique research focusing on the “how much” question, rather it is to elucidate the importance of asking the “how” how much” questions in tandem.

Traditionally, most Anglo-Saxon scholarship has kept the “how” question at arm’s length by drawing its assumptions from rational choice theory (Coleman, 1988). Through trust games and field experiments, behavioural economics is challenging this doctrine by testing non *homo economicus* behaviour known from psychological literature (Barr et al., 2009; Fehr, 2009). In controlled test environments, these studies explore more adequate accounts of the trust, reciprocity, and risk aversion underpinning adoption mechanisms, such as collective action. However, though promising, behavioural economists also generate their

³ The two questions are relevant to all social capital research, regardless of the function researched; for example, they are applicable to research on social capital’s influence on democracy (Putnam, 1993), microfinance (Rankin, 2002), and economic development (Woolcock, 1998).

own blind spots by decontextualizing their test subjects from the local power structures they act in. The Sociological social capital research and theory is receptive to such power dynamics (Bourdieu, 1986) and together their insights and methods can help to more fully uncover the mechanisms affecting adoption.

Combining research that draws on functionalist assumptions (such as a randomised controlled trial [RCT] testing farmers' adoption incentives) with inductive approaches receptive to details in their social structures (such as ethnographic enquiries), has the potential to yield actionable insights that are credibly grounded in the investigated social structures. As such, it is possible to establish causal links between social capital and the adoption of agronomic practices or technologies, by answering the "how" and "how much" using both quantitative and qualitative methods.

4 ADOPTION OF AGRONOMIC PRACTICES AND TECHNOLOGY

Several studies find significant correlations between social capital and smallholder adoption of innovative technology or practices. In some studies, adoption is measured after an intervention (such as training farmers). In other studies, the focus is also on how technologies or practices reach farmers outside of the target group (diffusion). Studies that explore diffusion often see the organisation of communities through the lens of social networks or relations. Collecting network census data is costly but makes it possible to test the ways in which technologies spread through social networks.

Using a social network approach, a comprehensive RCT introduced new technologies to two seed farmers in a number of different Malawian villages (Beaman, BenYishay, Magruder, & Mobarak, 2015) and found that targeting specific farmers based on their network position within a community increases technology diffusion. In accordance with social network theories on complex contagions (Centola & Macy, 2007), their findings are particularly pronounced when the farmer has to see the technology or practice multiple times to understand it or become familiar with it (what the authors call complex learning). When complex learning is necessary, being connected to multiple farmers who are using the technology is predictive for adoption. The researchers believe this is because farmers wish the information to be confirmed by multiple sources.

The salient effect networks have on these processes are also echoed in earlier findings from a smaller study that found a U-shaped relationship between technology adoption and the number of adopters a farmer has in his or her network (Bandiera & Rasul, 2006), and another study that found core and periphery advice structures among cocoa farmers in Ghana (Isaac et al., (2007). **This suggests that smallholders' learning processes are social in nature: they happen as farmers observe each other's practices and discuss different farming strategies.** Decisions exposing farmers to ample risk may require more convincing than less risk-heavy decisions, and complex technologies require many opportunities to observe them before they are understood.

From this perspective, learning is both a prerequisite for and barrier to technology adoption. Farmers must acquire knowledge and skills to (i) adopt a technology and (ii) judge if a technology is worth adopting. Learning comes with actual costs and opportunity costs, and its effect on income is uncertain (Waddington et al., 2014, p. 25). The above network studies thus indicate a correlation between structural capital and adoption: targeting people with strong social networks in interventions can improve chances of diffusion. This strategy might be particularly potent in circumstances where solid proxies for social capital are readily available (such as union membership). However, social capital is often correlated with other types of capital (Putnam, 1993) and interventions tapping into dominating social structures run the risk of exacerbating existing inequalities (for further explanation, see the above discussion on fallacy of composition).

Technology adoption studies focus less on diffusion through relations and more on the individual farmers' adoption. For example, Baffoe-Asare et al. (2013) see Ghanaian cocoa farmers' adoption as a binary decision for or against the technology taken on the basis of individual utility maximisation. As such, adoption studies may be well suited to measure the direct effects of an intervention. Many of them, however, do not go that far and only present correlations independent of an intervention. For example, in a study comparing Brazilian farmers' use of slash-and-burn technologies to more sustainable practices, Caviglia-Harris (2003) found that union and cooperative membership, the number of years families have inhabited their land, and farmers' knowledge of sustainable agricultural practices all correlated with adoption of alternate farming technologies. Van Rijn et al. (2012), in a study using data from various African border regions, found significant correlations between adoption of innovative agronomic practices and aggregated measures of social capital.

Upon further analysis, they showed that the positive effect is primarily associated with bridging social capital (agricultural links that stretch outside the village), while cognitive social capital has a negative association with adoption.⁴ The authors aver that this could be indicative of the “dark side” of social capital but stress that:

High levels of cognitive social capital might result in inward-looking modes of behaviour, or displace time and resources away from agricultural innovation. However, this result does not imply that cognitive social capital is unimportant – it could serve other functions for community members (including insurance to idiosyncratic shocks, etc.). It only suggests that communities may pay a price for such functions in the form of attenuated incentives for innovation (Van Rijn et al., 2012, p. 121).

Thinking back to the initial discussion of social capital and Bourdieu, this should not come as a surprise since norms and values are only potent if they can sanction exclusion: the question then becomes why members value new “innovations” worthy of inclusion or exclusion. To avoid invalid conclusions, research focusing on “how much” questions must be careful not to overstretch by offering “why” answers. From the outside, what might seem to be inward-looking behaviour may actually be grounded in highly sophisticated and accurate considerations about village life or other social dynamics that can only be captured by qualitative research. Though the negative association is a mystery, Van Rijn and colleagues perceptively point to informal relationships and their function as cushions against shocks, which in turn may also be key to solving the “puzzle” of negative correlation between adoption and cognitive social capital.

Furthermore, and as discussed earlier, cognitive social capital is inconspicuous: measuring it through surveys relies on people accurately remembering and representing their attitudes. Finally, many studies do not divide their social capital measures into cognitive and structural categories, impeding generalizable evaluations on cognitive and structural adoption effects. For example, in a fairly widely cited study, Isham (2002) found that adoption of fertiliser correlates with social capital at the community level in rural Tanzania. Social capital is measured on the basis of ethnic affiliation, consultative norms, and leadership heterogeneity.

“Ethnic affiliations” is the village share of households that report that their local organisations include only member of the same clan ... “Consultative norms” is the village share of households that report that members vote and discuss decisions within their local organisations ... “Leadership heterogeneity” is the village share of households that report that their local organisations have leaders with different livelihoods than other village members (Isham, 2002, p. 50)

While these factors may be good predictors of village cohesion and collaborative cultures, they also highlight the difficulties of categorising operationalised social capital measures as either cognitive or structural. Among other relevant studies are Baffoe-Asare et al. (2013) who find that Ghanaian cocoa farmers’ adoption of Codapex and other farming technologies correlate with social capital; Teklewold et al. (2013) finding social capital to be one among other factors driving adoption of sustainable agricultural practices in rural Ethiopia; and a study by Wossen et al. (2015) that also establishes such correlations by comparing different households’ adoption of new farmland management practices in Ethiopia.⁵ The study by Wossen et al. furthermore provides evidence helping us to

⁴ Adoption is here used as short hand for the innovation index created by Van Rijn and colleagues (2012, p. 114) that primarily measures adoption of innovative practices.

⁵ Using the Ethiopian Rural Household Survey <http://www.csaee.ox.ac.uk/datasets/Ethiopia-ERHS/ERHS-main.html>

tentatively gauge how different types of social capital might affect adoption in divergent ways:

Our result shows that social capital is a significant determinant of adoption of improved land management practices. In particular, the various aspects of social capital affect adoption differently. For example, membership in labor sharing arrangements, membership in informal local saving and credit association and connection to local authorities were found to have a positive and significant effect on the probability of adopting improved land management practices. However, other forms of social capital, in our model having large number of relatives and membership in funeral insurance arrangements, were found to affect adoption negatively (Wossen et al., 2015, p. 94).

It is out of the scope of this text to determine the ways in which different types of social capital interact. Demarcating such values may prove challenging because the adoption literature spans a number of different methods and geographies. (No meta-analyses estimating the average effects of social capital on adoption of agronomic practices were found).

Nevertheless, because correlation between social capital and adoption/diffusion of new agronomic technologies and practices is established, one key gap in the literature is an RCT study explicitly focusing on the effect social capital has on adoption of agronomic practices. Thus far, no studies have convincingly established causality between the two. As discussed, this can be achieved by using qualitative and quantitative methods in tandem: focusing jointly on “how” and “how much” social capital influence adoption.

Finally, longitudinal studies that go beyond three or four years (the typical duration of many development projects) are scarce (Avdeenko & Gilligan, 2015; Krishna, 2007), leaving ample space for commercial stakeholders with a long-term interest in the cocoa industry to substantially increase knowledge about social capital’s effect on agronomic adoption.

5 PURPOSEFULLY BUILDING SOCIAL CAPITAL

Plurality is indicative of the social capital literature and there is no consensus on which mechanisms create social capital or how long this takes (Glaeser, Laibson, & Sacerdote, 2002).⁶ Providing an overview of the currents in the literature, Krishna (2007) identifies four general hypotheses of how social capital is built:

1. Social capital is a product of government institutions;
2. Social capital production is dependent on internal characteristics of community groups;
3. Social capital is dependent on the volition of group actions; and
4. Social capital can be produced through purposive external interventions.

According to the researcher, people hold different degrees of optimism about the possibility of changing social capital levels in the short-term depending on the hypothesis they adhere to. People believing in the fourth hypothesis are, according to Krishna, the most optimistic about this. (This would also be the category for corporations engaging in social capital interventions in order to increase smallholder farmers' productivity.) The general consensus seems to be that it is challenging to generate social capital through interventions in the short-run (Ostrom, 2000).

The most convincing and recent empirical studies assessing whether it is possible to purposefully build social capital are conducted against the backdrop of large community-driven development (CDD) programs. CDDs are bottom-up interventions where local citizens engage in participatory processes to decide on funding allocations from an external body (World Bank, 2016). Such programs have received generous funding by international organisations over the last decade, and a key tenet of CDD is the creation of social capital (Dongier et al., 2002; IDA, 2009).

One of the weaknesses of CDD is the limited focus on the mechanism through which social capital is built. A World Bank publication indicates how social capital could be built from the bottom-up: “[CDD] can give...communities the opportunity to build social capital...by expanding the depth and range of their networks” (Dongier et al., 2002 quoted in Avdeenko & Gilligan, 2015, p. 413). The conceptualisation of building social capital adheres to the CCD programmes' creed of personal freedom:

CDD empowers poor people. The objective of development is not merely to increase incomes or to improve poverty indicators, but also to expand people's real freedoms. These are the choices people make between different valuable beings and doings, such as being nourished, being educated, participating in public debate, or being free to walk about without shame...Control over decisions and resources can also give communities the opportunity to build social capital (defined as the ability of individuals to secure benefits as a result of membership in social networks) by expanding the depth and range of their networks (Dongier et al., 2002, pp. 307–308).

CCD interventions buttress self-driven social capital formation through training in participatory engagement and by deploying community mobilisers. Training aimed at changing norms and values can be categorised as targeting cognitive social capital; interventions aimed at connecting people in networks may be categorised as targeting structural social capital. However, overemphasising the analytical duality between the two is counterproductive because, in reality, cognitive and structural social capital interact (and

⁶Eminent scholars have contended that social capital changes slowly because it is distinct from traditional types of capital (Ostrom, 2000) and because development is always deep-seated in history (Putnam, 2000). Most interventions do not share this long-term view (cf. Mansuri & Rao, 2012; Wong, 2012).

ideally reinforce each other). By way of example, if community meetings are a logistical prerequisite for organising collective action within a village, then trust and common values are crucial impetuses for starting and sustaining such actions.

Evidence on purposefully building social capital through CDD suggests that most projects have had limited success (Avdeenko & Gilligan, 2015; Wong, 2012). For example, a four-year CDD project in Sierra Leone with a budget of \$2.5 million that integrated block grants with community support to help villagers decide how to invest it reported that: “[despite using a wealth of measures, we find no impacts on any of the five proxies for social capital – trust, collective action, groups and networks, access to information, and inclusion and participation” (Casey, Glennerster, & Miguel, 2011: vii). The authors conclude that “[c]hanging social norms and community dynamics is important but arguably incredibly difficult” (2011: 40) and non-CDD studies have also reported similar findings. Gugerty and Kremer (2000), for example, report on a prospective randomised evaluation on women’s groups in Western Kenya, as well as a study delivering block funding to a community school. The scholars did not find evidence suggesting that their intervention had strengthened social capital amongst the women, and only mixed evidence from the community schools.

This is not to say that building social capital is impossible. One RCT from Senegal successfully increased trust in leaders and others through a three-day seminar on organising producers collectively (Bernard et al., 2015). Another RCT from South Africa found increases in social capital measures following an intervention that combined access to microfinance with HIV information efforts (Pronyk et al., 2008), and a similar result was found in a non-RCT community development project in the Philippines (Labonne & Chase, 2011). Mansuri and Rao (2012), in an authoritative review to the World Bank on participatory development approaches, mention three key areas of concern in participatory programs. Because creating social capital is an explicit or implicit goal in such projects, it is reasonable to extend said concerns to social capital interventions:

- “Context, both local and national, is extremely important...Strong built-in systems of learning and monitoring, sensitivity to context, and the willingness and ability to adapt are therefore critical in implementing project.
- The idea that all communities have a stock of ‘social capital’ that can be readily harnessed is naive in the extreme. Building citizenship, engaging communities...requires a serious and sustained engagement in building local capacity.
- Both theory and evidence indicate that induced participatory interventions work best when they are supported by a responsive state” (Mansuri & Rao, 2012: 286–287).

Mansuri and Rao insinuate that the four hypotheses outlined by Krishna are mutually inclusive: creating social capital is difficult because it depends both on individuals, institutions, and context. This nosedives into an age-old discussion about the relationship between agency and structure. The unspoken assumption being that, in developing economies, both are broken. This is exemplified in narratives on the “failed” state (see, for example, the Corruption Perceptions Index [2016] that uses expert opinion to measure the perceived levels of public sector corruption worldwide); and at the individual level, narratives about its risk averse and distrusting citizens (see, for example, a much cited study by Zak and Knack [2001] that found correlations between economic growth and generalised trust). Social capital interventions that adhere to such assumptions may be counterproductive as they overlook context by superimposing a predetermined structure and run the risk measuring its success using indicators unimportant to smallholder farmers.

“Why” questions grounded in specific adoption mechanisms are critical in challenging “grand stories” and “self-evident” conclusions. By way of example, Zak and Knack frame their

findings by telling a humorous story from two countries with different levels of generalised trust:

Danish citizens routinely leave small children in strollers on the sidewalk while shopping or dining - a practice which resulted in the arrest of a Danish mother who was visiting New York City, where many people are not trusting enough to leave even their dogs tied up on the sidewalk (Zak & Knack, 2001: 295–296).

For the authors, this is telling example about two social systems that produce different social consequences. The difference is a measurable effect that could be expressed, for example, with the number of babies sleeping outside. Naively superimposing a predetermined structure on this phenomenon could lead to the simplified and possibly invalid conclusion that “babies sleep outside in trustful societies and inside in untrusting societies”. Instead, researchers should question how this phenomenon, for example, expresses perceptions of motherhood, conceptions of child neglect, and the relationship between the state and its citizens?

Of course, it is hard to imagine an intervention that measures its success by the number of Americans babies sleeping outside. That is the point. Going back to Casey and colleagues’ conclusion that “[c]hanging social norms and community dynamics is important but arguably incredibly difficult” (2011: 40), good social capital research supplements itself with “how” questions. How and why do such norms influence adoption, and according to whom? Besides illuminating subtler relationships between social capital and a given function, it also helps in evaluating whether the function is meaningful for the population targeted in the intervention.

By way of example, smallholder farmers’ adoption rates for agronomic practices may seem an obvious measure of success for an intervention aiming at increasing adoption rates of agronomic practices. However, besides being trivial for the farmer (who is focused on improving yield and income), it may also misinterpret farmer behaviour as binary. In reality, farmers use a technology or practice with different degrees of proficiency and consistency depending on, for example, training, incentives, and shocks. Yield (measured in kilogrammes) and income (measured in financial capital) capture different degrees of adoption. Income is particularly important to measure when the promoted technology or practice is used after the harvest in the production process (for example, technology providing accurate crop prices, or lending schemes that give farmers enough liquidity to choose their buyers).

6 CONCLUSION AND FUTURE RESEARCH

Social capital is a concept that captures ways human relations support productive activities and can be defined as productive social bonds and community norms. We have discussed its functionalist underpinnings and the subsequent theoretical implications: social capital effects that are based on micro-to-macro transitions are more credible when grounded in a qualitative understanding of the micro-level phenomena in question.

Studies have established correlations between social capital measures and smallholder farmers' adoption of agronomic practice and technology. No meta-analyses estimating the average effects on social capital on adoption were found and demarcating such values may prove challenging as the literature spans a number of different methods and geographies. Future social capital aiming at producing clarity through generalisation should embrace this diversity by grounding quantitative social capital effects ("how much") in qualitative accounts of the social structures that produced them ("how").

Thus far, research has found that purposefully building social capital through interventions is difficult. Social capital creation is, most likely, influenced by the state and its institutions, internal characteristics of community groups, the volition of group actions, and external interventions. Organisations or corporations wishing to improve the local "stock" of social capital through external interventions must be patient, persistent, and realistic. Its successful implementation is context dependent and factors such as backing from a receptive state are important for local participation and support. Considering all of the above, multinational food corporations are well placed for facing these challenges: longitudinal studies that go beyond three or four years (the typical duration of many development projects) are scarce, leaving ample space for commercial stakeholders with a long-term interest in the cocoa industry to substantially increase knowledge about social capital's effect on agronomic adoption.

Research gaps include establishing causal links between social capital and the adoption of agronomic practices and technologies. This can be done by combining research that draws on functionalist assumptions (such as an RCT testing farmers' adoption incentives) with inductive approaches receptive to local contexts (drawing on research methods such as ethnography). Applied in tandem, the two approaches have the potential to yield actionable insights that are credibly grounded in the investigated social structures. Table 1 tentatively outlines three aspects of social structures (social exchange, collective actions, and risk taking) that influence adoption of agronomic practices. The next step going forward could be to expand Table 1 with an additional dimension elaborating on context-specific details in different social structures. Categories could include family structure, village structure, and characteristics of the state.

The proposed research agenda, on the one hand, aims to establish generalizable effects that may help accommodate multinationals' need to leverage their capacity by scaling social capital interventions. On the other hand, it must stay receptive to local contexts, avoid tautologies, and illuminate whether interventions are attractive for the smallholder farmers targeted. Balancing the two is ultimately a more mutual approach to social capital research on smallholder farmers' adoption of agronomic practice and technology.

Table 1: Social capital and mechanisms of change

Mechanism	Theory of change	Why it matters	Potential research approach	Affected technology/practice example
Social exchange	<p>Efficient social exchange depend on trust and search (Durlauf & Fafchamps, 2005; Hayek, 1945).</p> <p>This means that farmers' ability and willingness to exchange goods and knowledge are dependent upon the number of people they are connected to (structural social capital), as well as the degree of trust they hold in them (cognitive social capital).</p>	<p>Most technology diffusion transmits through some form of social learning such as, for example, seeing and talking with your neighbours.</p> <p>Social learning cannot happen without social exchange. Social exchange is therefore imperative to diffusion of farmer technology and practices.</p>	<ul style="list-style-type: none"> • Social network analysis (Beaman et al., 2015). • Correlation analysis based on survey data (Isham, 2002). • Trust games (Johansson-Stenman et al., 2013) • Literature review (Waddington et al., 2014) 	<ul style="list-style-type: none"> • Farmer training (e.g. farmer field schools) • Connecting farmers to new markets through information schemes and infrastructure • Fertiliser adoption • Shade tree adoption • Cocoa tree adoption
Collective actions	<p>Collective actions depend on social cohesion, trust, coordination, and motives that go beyond short-term self-interest.</p> <p>When institutions cannot legislate or coordinate effectively, farmers' ability and willingness to coordinate and share common goods depend upon such attributes.</p>	<p>Collective action is needed to overcome 'first mover' and 'free rider' problems of technologies that are shared or have public good features.</p> <p>This is of particular importance in weak states where the government cannot provide, for example, irrigation infrastructure. Collective action is also needed to coordinate labour.</p>	<ul style="list-style-type: none"> • Case study (Uphoff & Wijayaratra, 2000) • Comprehensive intervention and RCT (Ashraf, Giné, & Karlan, 2009) • CDD using survey and observations (Labonne & Chase, 2011) • Prisoner's dilemma game dilemma (Ostrom, 1990) 	<ul style="list-style-type: none"> • Farmer groups • Joint liability micro credit • Cooperatives • Coordination and development of shared irrigation equipment • Infrastructure coordination and development • Consolidating land (will however often be driven by institutions, i.e. the state)
Risk taking	<p>Norms influence understanding of risk, and family and friends can protect against shocks. Together the two influence farmers' risk aversion (Fafchamps, 2009).</p> <p>This means that farmers' ability and willingness to invest in new technology and apply new practices depend upon structural and cognitive social capital.</p>	<p>Innovation exposes farmers to risks: new technologies require upfront implementation investments and the outcomes of new practices are uncertain.</p> <p>This is of particular importance to the cocoa industry because smallholders are risk averse, which halts adoption of technology and new practices.</p>	<ul style="list-style-type: none"> • Trust games (Johansson-Stenman et al., 2013) • Field experiment (Jack, Oliva, Severen, Walker, & Bell, 2015; Liebenehm, in preparation) • Correlation analysis using household data (Wossen et al., 2015). • RCT (Bernard et al., 2015) • Literature reviews (Fehr, 2009) 	<ul style="list-style-type: none"> • Micro finance • Soil conservation • Water harvesting technologies • Fertiliser adoption • Shade tree adoption • Cocoa tree adoption

Note: Table 1 is meant to help introduce readers to aspects of social structure that underpins adoption (called mechanisms), types of social capital, research approaches, and different technologies and practices. This is not meant to be a comprehensive distillation of the literature. The mechanisms are not mutually exclusive.

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