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Is microcredit a blessing for the poor? A meta-analysis examining development outcomes and contextual considerations

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ABSTRACT

Increasing efforts aim at economic development and the reduction of poverty in developing countries through microcredit-enabled entrepreneurship. Following the award of the Nobel Peace Prize to Prof. Yunus, microcredit lending has risen to prominence and the volume of microcredit loans has increased substantially. However, theory on the outcomes of this financing form is controversial. Furthermore, the academic community lacks conclusive empirical evidence about the impact of such programs. Primary empirical studies report fragmented and to a large extent contradictory results. In this meta-analysis, we empirically synthesize a total of 545 quantitative empirical findings from 90 studies conducted to date. Our findings reveal a positive impact of microcredit on key development outcomes at the level of the client entrepreneurs. Additionally, we scrutinize how the development context influences the effectiveness of microcredit and find that microcredit generally has a greater impact in more challenging contexts. With our findings we contribute to research on the nexus of entrepreneurship and economic development, and offer recommendations for practitioners and academics working on this promising frontier.

1. Executive summary

Poverty remains one of the key global challenges. According to the World Bank (http://www.worldbank.org/en/topic/poverty/overview), 1.22 billion people lived in extreme poverty with an income of less than $1.25 a day in 2010. Furthermore, these people have little means for personal development (Chen and Ravallion, 2007). Their lack of access to financial resources has been proposed as a key obstacle blocking their development (Chen and Ravallion, 2007; Stiglitz, 1990; Yunus, 1998). Without access to financial resources poor individuals face difficulties to initiate, maintain and expand economic activities. Due to a lack of financial capital they have little chance of benefiting from positive effects of entrepreneurship even though these individuals might perceive promising business opportunities.

While some scholars proposed microcredit as a salient instrument to address credit constraints, enable entrepreneurial activity and broadly foster individual development, other scholars challenge the proposed benefits (Kent and Dacin, 2013; Morduch, 1999; Stewart et al., 2010). Furthermore, the controversy in the theoretical domain is reflected by conflicting findings about consequences of microcredit in the empirical domain (Hermes and Lensink, 2011; Khavul et al., 2012).

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To address the controversy, our meta-analysis synthesized the vast yet fragmented empirical research on outcomes of microcredit. Following Amartya Sen's prominent theorizing on capabilities and his conception of development as freedom (1999), we report the effect strengths of microcredit on various financial (venture survival, venture growth and venture profitability as well as the financial well-being of the individual) and non-financial (empowerment, education, health and nutrition) outcomes. Moreover, we scrutinize how the development context – namely characteristics at the country level – affect the strengths of the microcredit-outcome relationships. Some scholars have argued that microcredit is a substitute for traditional financing instruments (Ghatak, 1999; Stiglitz, 1990), hence suggesting that the performance effect should be greatest in less developed countries where institutions fail. In contrast, others have proposed synergistic relationships between increasing levels of social, economic and institutional development and the performance effects that additional development interventions such as microcredit can generate (De Soto, 2003; Sen, 1999).

Building on 545 empirical effect sizes from 90 individual studies, our meta-analysis uncovers various positive effects on human development outcomes including venture growth, venture profitability, financial well-being, health & nutrition, empowerment of women as well as education. However, the effect strengths are markedly different. Further, no effect was determined with regard to the survival of microcredit funded ventures. With respect to the development context, we find that the majority of moderating effects are negative, indicating support for the view that microcredit is most beneficial in weak institutional environments, for instance where access to health support or education is limited or political freedom and transparency are reduced (for specific contextual effects consult Table 2). Yet, we also find exceptions to this general pattern, including positive moderating effects of economic development on the relationships between microcredit and venture growth as well as financial well-being of clients. Moreover we find that in a context of greater political freedom, the effectiveness of microcredit for women's empowerment is increased.

We discuss our various findings and point to future research opportunities that can help determine how and under which circumstances microcredit financing can foster the economic and broader development of the poor at the base of the pyramid. Furthermore, we encourage researchers to make comparisons across different development interventions to gain a better understanding of the promise of microcredit financing vis-a-vis alternatives for fostering development.

> "If we are looking for one single action which will enable the poor to overcome their poverty, I would go for credit. […] If we can come up with a system which allows everybody access to credit while ensuring excellent repayment — I can give you a guarantee that poverty will not last long."
>
> [Yunus (1994)]

> "Micro-lenders make the people of this country their guinea pig. They are sucking blood from the poor in the name of poverty alleviation."Sheikh Hasina, Bangladesh Prime Minister (The Financial Times, 2010)

2. Introduction

Large parts of the world's population live in poverty and do not have access to financial resources (Chen and Ravallion, 2007). In consequence, these individuals face challenges to initiate, maintain or grow their venture activities and to participate in market transactions. Without the capability to actively engage in market transactions, they and their associated families might be forced into subsistence-based lives (Yunus, 1998). A lack of collateral, frequently non-existent credit histories and limited property rights of poor individuals coupled with high transaction costs of the minimal loan amounts demanded, thwart conventional banking organizations from providing credit to the poor and lead to an imperfect credit market (Ghatak, 1999; Stiglitz, 1990; Webb et al., 2013). Although these individuals and their families might perceive promising business opportunities, failure to obtain the necessary financial resources can prevent them from pursuing these opportunities and engaging in entrepreneurial activities. As a consequence, they have little chance of benefiting from the wealth-enhancing effects of entrepreneurship (Guiso et al., 2004; King and Levine, 1993; Schumpeter, 1934) and thus of escaping persistent poverty traps (Yunus, 1998). In this regard, it is important to note that entrepreneurship for individuals living in poverty in developing countries has important ramifications that transcend the generally studied entrepreneurship phenomenon in developed countries.

In the past decades, microcredit (MC hereafter) has become a popular instrument to address credit constraints and enable entrepreneurial activity (Yunus, 1998). MC schemes refer to "the issuance of small, unsecured loans to individuals or groups for the purpose of starting or expanding businesses" (Khavul, 2010: 58). According to data collected by the Microfinance Information Exchange, more than 3600 MC providers had reached over 205 million borrowers as of 2010 (Maes and Reed, 2012).

While MC has grown into a worldwide industry, scholars have raised doubts regarding the actual impact of MC for the client entrepreneurs (Hermes and Lensink, 2011; Morduch, 1999). They point to a lack of profit-generating potential of the financed ventures (Bradley et al., 2012; Hulme, 2000; Karnani, 2007); a lack of management skills of the entrepreneurs (Evers and Mehmet, 1994); and high interest rates (Webb et al., 2013). This raises the question of whether entrepreneurs are able to generate sufficient income to cover the costs of loans and assure loan repayment. Hence, controversy in the theoretical domain leaves the academic community in doubt about the effects of MC on development outcomes for the MC recipients (Kent and Dacin, 2013).

In order to address the controversy in the theoretical domain, a proliferating body of empirical studies has emerged, investigating the effects of MC on recipients. Surprisingly, while some studies present positive results of MC (Dunn and Arbuckle, 2001; Khandker, 2005; McKernan, 2002), several other studies have reported non-significant, or even negative impacts of MC on financial outcomes

(Banerjee et al., 2009; Coleman, 1999; Copestake, 2002; Stewart et al., 2010). Overall, the current lack of conclusive empirical evidence in this body of literature (Hermes and Lensink, 2011; Kent and Dacin, 2013; Khavul et al., 2012) casts doubt on the capacity of MC to improve the financial standing of enterprising individuals. Ambiguity also remains regarding MC's ability to generate a positive impact on additional development outcomes, such as empowerment, education, health and nutrition. Entrepreneurship and development scholars alike have called for greater attention to multidimensional outcomes that extend beyond wealth creation (Fauchart and Gruber, 2011; Gimeno et al., 1997; Miller et al., 2012). MC might help improve the capabilities of poor people on several dimensions of human development (Sen, 1999); yet, empirical studies in this area have failed to reach robust conclusions.

Furthermore, to date little emphasis has been placed on the context in which MC programs are implemented. Following a normative call for a greater need for financial resources for the poor, MC programs have been institutionalized in a multitude of countries with diverging economic, social and institutional settings. Following contingency theory, the context in which MC is deployed, and more specifically the country-related characteristics, likely affect the outcomes of MC (Sen, 1999; Weiss and Montgomery, 2005). Yet, opposing streams of literature suggest competing arguments as to where the benefits from MC are strongest. On the one hand, scholars perceive MC as a substitute for traditional financing instruments in environments where credit markets have failed (Ghatak, 1999; Stiglitz, 1990); hence, the performance effect of MC should be greatest in less developed markets. On the other hand, development literature proposes synergistic relationships between higher levels of social, economic and institutional development and the performance effects that development interventions such as MC can achieve (De Soto, 2003; Sen, 1999). However, to date we lack substantive empirical evidence on whether MC displays supplementary or complementary fit properties.

Given these gaps in the literature, our study addresses three research questions: (1) How does MC affect entrepreneurial outcomes at the individual level of the client (i.e., in terms of venture survival, growth and profitability)? (2) How does MC affect other key development outcomes at the client level (such as financial well-being, empowerment, education, health and nutrition)? (3) In which contexts do clients benefit most from MC in terms of the outcomes mentioned above? For theoretical guidance, we draw on Amartya Sen's capability approach and his conception of development as freedom (Sen, 1999).

We contribute to the literature in several ways. First, we synthesize literature from both entrepreneurship and development economics, which has been conducted on the topic of MC, in order to develop predictions regarding the effectiveness of MC. Given the interdisciplinary nature of research on the development outcomes of entrepreneurship, we seek to provide insights both for the entrepreneurship community – which has only recently begun to address this important yet distinct entrepreneurship context – and the development economics literature which generally fails to consider either theoretical or methodological advances in entrepreneurship research (Bruton et al., 2013). Second, we provide substantive empirical evidence of MC's impact on both financial and non-financial development outcomes for MC recipients based on a meta-analysis of the existing research. A meta-analysis is an established and powerful method to systematically synthesize empirical research findings and a logical next step in situations where rich, yet contradictory results exist. Our meta-analysis is based on substantial empirical evidence as we synthesize a total of 545 empirical effect sizes from 90 studies. Third, we examine how the development context in which MC is deployed affects the relationship between MC and the different outcomes. Taken together, these contributions provide a starting point for entrepreneurship scholars wishing to address the important topic of MC, while they offer practical implications for policy makers and entrepreneurs.

3. Theory and hypotheses

MC has sparked substantial academic interest in a number of fields, including development economics (Khandker, 2005; Morduch, 1999; Roodman and Morduch, 2009) and more recently entrepreneurship (Bradley et al., 2012; Bruton et al., 2011, 2013; Kent and Dacin, 2013; Mair and Marti, 2009). Sen's theoretical framework on development can act as an overarching basis for synthesizing extant MC literature, connecting it to predictions derived from entrepreneurship theories and enriching our understanding of multidimensional outcomes that are meaningful for MC's success (Ansari et al., 2012; Roodman, 2012; Sen, 1999). The pillars of Sen's theory are the concepts of functionings, capabilities and freedoms. In his framework, functionings, a concept borrowed from Aristotle, refers to achievements people enjoy on a variety of key aspects of quality of life. Simply put, functionings are "various things a person may value doing or being" (Sen, 1999: 75), such as being healthy, having a job, being properly nourished, participating in one's community or having self-confidence. The concept of capability introduces the idea of agency in choosing one's functionings. A person's "capabilities" in this framework are thus the "alternative combinations of functionings that are feasible for her to achieve" (Sen, 1999: 75). The distinction between actual achievement and capability is illustrated in an example offered by Nussbaum (1997: 289): "The person with plenty of food may always choose to fast, but there is a great difference between fasting and starving". Thus it is the concept of capabilities, or "freedoms" that is central in assessing the success of development interventions. While the two terms have been used interchangeably in Sen's work, capability has been more frequently used to denote the construct at the individual level, while freedom has tended to be used at the country level. We will be employing a similar mode of usage throughout this article.

Sen's theory is particularly relevant to MC for a number of reasons. It suggests that MC can act as a means of development by increasing individuals' capabilities to act as entrepreneurs and improve their livelihoods. Additionally, Sen provides compelling arguments that a number of aspects of socioeconomic development can act concurrently as antecedents and as outcomes in the process. While he avoids compiling a definitive list of those capabilities (Nussbaum, 1997), he elaborates on certain non-financial capabilities that are particularly influential, such as health, education and women's empowerment (Sen, 1999). These aspects have been extensively studied in empirical work on MC (Hashemi et al., 1996; MkNelly and Dunford, 1998; Pitt and Khandker, 1998; Wydick, 1999). Moreover, Sen argues for the acknowledgement of multiple "ends" of development as legitimately valued outcomes (Ansari

et al., 2012; Nussbaum, 1997; Sen, 1999). According to him, financial ends alone can paint an incomplete picture when looking at development. Building on Aristotle's observation that "Wealth is evidently not the good we are seeking; for it is merely useful and for the sake of something else" (Aristotle, Nichomachean Ethics, cited in Sen, 1999: 14), he suggests that wealth is primarily a means – instead of an end – of the development process, which might in turn facilitate other valued outcomes.

3.1. Microcredit, entrepreneurship and venture outcomes

MC rests on the expectation that the availability of affordable credit will positively influence the entrepreneurship of clients, and ultimately their financial well-being (Sen, 1999; Yunus, 1998). The availability of credit is what enables entrepreneurs to pursue opportunities without being constrained by their current level of financial resources (Guiso et al., 2004; King and Levine, 1993; Schumpeter, 1934). Entrepreneurs can venture into rewarding projects if financial resources are available. Financial capital has been found to provide the "ability to buy time, undertake more ambitious strategies, change courses of actions, and meet the financing demands imposed by growth", thus aiding both the survival and the growth of new ventures (Cooper et al., 1994: 391). The availability of financial capital also acts as a buffer against shocks that might threaten small and vulnerable ventures (Bradley et al., 2011). Absence of such resources, however, can constrain their ability to execute promising ideas and decrease their profitability (Parker and Van Praag, 2006).

In resource-scarce environments, MC can offer a solution to the lack of financial resources that entrepreneurs face. Alternative financing sources such as funding provided by family and friends (Collins et al., 2009) are unlikely to be sufficient in poor contexts where saving is difficult, because individuals usually need the resources they have to fulfill their own basic needs. Additionally, formal institutions such as banks have traditionally been reluctant to lend to the poor (Khavul et al., 2012), as their lack of collateral coupled with the absence of, or weak enforcement of, property and legal rights imposes high agency costs, while transaction costs are high compared to the loan amounts requested (Ghatak, 1999; Parker and Van Praag, 2006; Webb et al., 2013). The result has been a widespread inability of poor people to secure loans at reasonable interest rates. Frequently this leads to a heavy dependence on short-term and high-interest loans extended by moneylenders, which can contribute to indebtedness (Yunus, 1998) while further exacerbating the problem of lack of credit and loan default (Stiglitz and Weiss, 1981).

Furthermore, in poor environments people frequently have no other market participation option than entrepreneurship; however, making downpayments to successfully set up or extend a productive activity generally requires a minimum availability of funds (Yunus, 1998). Lump sums of money are difficult to build through saving, due to the precarious situation of poor people as well as their lack of safe avenues for depositing savings (Collins et al., 2009). The lack of credit therefore limits abilities to invest in basic supplies, tools and materials, even for the most elementary types of entrepreneurial activities, as well as the ability to meet temporary cash-flow shortages that any such activity might face. Furthermore, being uninsured, poor people naturally tend to be risk-averse as even one unsuccessful project or investment could have a detrimental impact on their livelihood and survival (Bradley et al., 2012). Thus, the availability of credit options offered by MC organizations could remove some of the barriers that constrain entrepreneurial activity in poor contexts.

Although the literature in this field also points to issues that may decrease the effectiveness of MC such as a lack of profit-generating potential of the financed ventures (Bradley et al., 2012); a lack of entrepreneurial skills (Evers and Mehmet, 1994); and high interest rates (Pretes, 2002; Webb et al., 2013), overall, we expect MC availability to increase a poor person's capability to start, maintain and grow a business, and to successfully navigate it to a profitable level. This should be especially true in deprived contexts where financing alternatives either do not exist or are even more expensive due to high interest rates charged by informal moneylenders. Therefore, we hypothesize that:

Hypothesis 1a. Microcredit has a positive impact on the clients' venture survival.

Hypothesis 1b. Microcredit has a positive impact on the growth of the clients' ventures.

Hypothesis 1c. Microcredit has a positive impact on the profitability of the funded ventures.

3.2. Microcredit and personal finance outcomes

The main premise of MC proponents is that the aforementioned increased capability in achieving successful entrepreneurial outcomes will naturally translate into better financial well-being for the poor entrepreneurs. In essence, the justification of using MC as a development intervention rests precisely on its theorized ability to lift people out of poverty (Yunus, 1998). By providing financial resources to operate and run a micro-venture, MC can increase the financial well-being of funded individuals, especially in deprived contexts where entrepreneurship is often the only possibility to earn money due to the absence of alternative employment opportunities. Financial returns from successful entrepreneurial activities can enable loan repayment, while any surplus is expected to serve as additional income for their household (Bradley et al., 2012; Woller, 2004). In addition, MC can smooth income and consumption, hence having an additional positive effect on the financial well-being of funded individuals (Morduch, 1999). Empirically several studies have provided evidence of increased financial well-being for MC clients (Hossain, 1988; Khandker, 2005; McKernan, 2002). Thus, we expect the following:

Hypothesis 2. Microcredit has a positive impact on the personal financial well-being of clients.

3.3. Microcredit and human development outcomes

While proponents of MC have traditionally focused on its alleged impact on financial outcomes, growing attention has begun to focus on other, non-financial, "human development" outcomes (Hermes and Lensink, 2011; Sen, 1999; Ul Haq, 1996). Based on Sen's work, human development has been conceptualized as the "process of enlarging people's choices. The most critical ones are to lead a long and healthy life, to be educated and to enjoy a decent standard of living. Additional choices include political freedom, guaranteed human rights and self-respect" (Ross-Larson and Hanlon, 1990:1). Sen (1999) places special emphasis on health, education and women's empowerment as particularly influential components of development. These important development outcomes can be achieved either through economic activities, which can increase the disposable income of poor people and subsequently impact their standard of living, or through policies and programs to directly improve human development. In this study, we focus on MC's ability to impact these major human development outcomes.

The capability to lead a healthy life is such a key human development outcome. If financial circumstances of poor clients improve, they can allocate some of the funds earned through their ventures towards pressing health and nutrition needs (Barnes et al., 2001; Pitt et al., 2003). Adding to the positive impact through entrepreneurial activity and greater financial well-being, participation in MC programs can also provide direct educational benefits around appropriate preventive health practices, such as the selection of nutritious foods, care-taking of infants or immunization of children (Hadi, 2001; MkNelly and Dunford, 1998). These educational components are a frequent add-on to MC programs, leveraging the relationships and common spaces established through the interaction between the MC organizations and the client groups for the lending activities. Finally, the availability of even small loan amounts on an ongoing basis can facilitate direct allocation of funds for health expenses (Collins et al., 2009; Ranis et al., 2000). This availability can buffer shocks from unpredictable circumstances and increase the survival and health of clients. We therefore posit that:

Hypothesis 3. Microcredit has a positive effect on the health of client entrepreneurs and their families.

An additional non-financial impact of MC might be improved education of the clients' children (Wright, 2000; Yunus, 1998). Following prior arguments, MC has a positive effect on households' financial budgets. Financial income enables parents to send their children to school, as access to schooling is often relatively costly in developing countries considering both direct costs (tuition, material, school uniforms etc.) and indirect opportunity costs (children could spend their time working and contributing to the families' income). An increase in families' financial budgets can be used to cover the schooling costs and increase their willingness and ability to send their children to school (income effect). Although we acknowledge that opening or expanding a venture could also prevent parents from sending their children to school so that they can work in their parents' businesses (a kind of substitution effect), we believe that in the majority of cases the 'income effect' (Chen and Snodgrass, 2001) on the family's budget coupled with the educational input MC organizations provide to clients will outweigh the substitution effect resulting from the substitutability of parents' and children's labor. In consequence, this will lead to a positive impact of MC on education. In addition, research has shown that group repayment schemes as used by the majority of MC institutions have a positive influence on children's duration in the school system and literacy levels (Holvoet, 2004). Hence, we posit:

Hypothesis 4. MC has a positive effect on the education level of client entrepreneurs' children.

The empowerment of women has been debated extensively in discussions of MC and its outcomes. Empowerment can be defined as "women's capacity to increase self-reliance, their right to determine choices, and their ability to influence the direction of change by gaining control over material and nonmaterial resources" (Sanyal, 2009). Women's empowerment is particularly relevant in the cultural context where MC was originally developed. Serious voids exist in women's autonomy and rights in some developing countries, which in turn constrain their involvement in entrepreneurship and more broadly in the labor market, limiting their mobility outside the confines of their homes (Mair et al., 2012).

The MC provision is in the vast majority of cases directed towards female clients, giving them greater control of resources, ownership and operation of enterprises, and abilities to contribute towards their household's income (Sen, 1999; Woller, 2004). It has been suggested that this increases women's empowerment, as it unleashes their productive potential previously constrained by social norms (Parker, 2009; Pitt and Khandker, 1998). For instance, Hashemi et al. (1996) find that participation in MC enables female clients to negotiate gender barriers more effectively, develop identities, and gain experience and confidence in the public sphere. The authors further find that women's mobility outside the household, their ability to make decisions, and their understanding of legal and political issues increases. Additionally, the creation of closer relationships, generated through participation in MC groups, enables them to better support each other and organize the protection of their common interests (Sanyal, 2009). Bradley et al. (2012) underline the transformative effect of MC-financed entrepreneurship, which can result from having started and managed a business. Thus, we propose:

Hypothesis 5. Microcredit has a positive effect on the empowerment of women client entrepreneurs.

3.4. Context-related moderators

Whether and how MC influences the various outcomes discussed above could be context-dependent. The extent to which a development intervention such as MC can be expected to improve capabilities might depend on the wider freedoms a country

enjoys (Sen, 1999, 2010). Sen (1999) highlights five salient "instrumental freedoms": economic facilities, political freedoms, social opportunities, transparency guarantees, and protective security, which should all be taken into account when discussing interventions aimed at enhancing development outcomes. Economic facilities refer to being able to maintain a decent standard of living financially, while social opportunities capture the quality of health, nutrition and education. Political freedoms denote the existence of a political system that ensures a fair, democratic process so that citizens can exercise their voice and decision-making in society. Transparency guarantees describe the existence of solid institutions and laws that can provide a basis for the proper functioning of government, business and civil society, and have been emphasized by several scholars as crucial to development (De Soto, 2003; McMullen, 2011; North, 1990; Portes and Haller, 2005). Finally, protective security is the level of a safety net for the truly vulnerable members of a society, which ensures they are not marginalized or left destitute.

In order to explore the nature of the moderating relationships between the above five instrumental freedoms highlighted by Sen (1999) and the outcomes of MC, we employ the concept of fit (Cable and Edwards, 2004; Shelton, 1988). More specifically, we aim at investigating the intervention–environment fit where MC is the intervention and the five instrumental freedoms addressed above describe the environmental context. Whether and to what extent MC achieves the desired outcomes could depend on whether MC has a complementary or a supplementary fit with the instrumental freedoms existent in the context where MC is deployed.

One line of thought suggests a supplementary fit between MC and instrumental freedoms. In a favorable environment, MC constitutes an intervention that matches other contextual variables. The success of MC would then be enhanced by higher levels of instrumental freedoms. This argument is consistent with Sen's expectation that certain capabilities or freedoms mutually reinforce others (Sen, 1999). For example, one could argue that economic facilities increase the positive effect of MC on outcomes because entrepreneurs whose ventures are funded by MC can make better use of these facilities. Rosenbusch et al. (2013) have shown that businesses can be more entrepreneurially oriented in munificent environments with abundant resources and opportunities, and as a consequence, their performance increases. Opportunities for growth instead of subsistence entrepreneurship should be greater in such contexts (Bradley et al., 2012; Gries and Naudé, 2011). Hence, in a more economically vibrant context, MC-financed entrepreneurs may have an easier time to deploy resources and assure venture survival as well as achieve higher sales and profits than in more deprived contexts. Subsequently, the increased performance of the venture could have positive effects for other outcomes such as health and nutrition or education of the entrepreneurs' children.

High transparency should also enable MC-funded businesses to increase entrepreneurial and other outcomes. In an environment with less corruption and stronger institutions, profits are expected to be higher because business owners do not need to pay bribes, which act like a tax on the business owners' income. Scholars have maintained that corruption and lack of legal frameworks hinders entrepreneurship and innovation (Anokhin and Schulze, 2009; De Soto, 2003; McMullen, 2011; Portes and Haller, 2005) and decreases the options for entrepreneurs. Hence, entrepreneurs' expectations for future development of the business are more limited (Acemoglu and Robinson, 2012; Aidis and Mickiewicz, 2006) and they invest less into the business (Johnson et al., 2002). In contrast, in a more transparent environment, the money provided by MC institutions is more likely to be used productively to improve the owners' ventures and personal situation.

For the other instrumental freedoms, not much research exists regarding their effect on entrepreneurship. Yet, they also have the potential to influence the impact of MC. In contexts with high political freedom for example, MC-financed entrepreneurs can voice their needs and may be able to improve economic policies in their favor in the long run. Further, in democratic structures there should be a closer link between MC and the empowerment of women because female entrepreneurs have greater opportunities to voice their opinions and exercise individual agency. With respect to social opportunities, their prevalence is an important contextual requirement that could facilitate individual economic achievement (e.g. Sen, 2010), which could enhance education, health and nutrition options. Finally, a context with more protective security may enable MC-funded entrepreneurs to take greater risks, for example by expanding their ventures, because they can rely on a safety net in case of failure. Hence, their options for entrepreneurial activity are increased. This could lead to superior financial performance of the venture and subsequently improved human development.

By contrast to the previously discussed rationale provided by Sen, a complementary intervention–environment fit can occur if MC is more effective in environments with low instrumental freedoms. Recently scholars pointed to the usefulness of entrepreneurship as a response in environments of market or government failures (Austin et al., 2006; Cohen and Winn, 2007; Mair and Marti, 2009; McMullen, 2011; Santos, 2012). In these contexts other interventions and market mechanisms are either unavailable or scarce. In environments with high instrumental freedoms, developmental effects might be achieved without the use of MC (Schreiner and Woller, 2003). In a situation of low instrumental freedom, however, MC could be needed to make up for contextual deficiencies. Following complementary fit arguments (Mischel, 1977), the effectiveness of MC should increase in contexts of low instrumental freedoms, as there is a general lack of other means to support entrepreneurs and their ventures. Complementary fit arguments have been used to justify the initial development of MC organizations, which initially appeared in challenging contexts with limited opportunities (Stiglitz, 1990; Yunus, 1998).

Empirical evidence buttresses the claim that the availability of financial resources can be most critical for ventures in challenging environments (Bradley et al., 2011). In environments with low transparency guarantees, people at the base of the pyramid are also more prone to be exploited by lenders, both formal and informal, as these would rarely face severe legal consequences for any misconduct. The same is true for contexts with low political freedoms, where existing and potential entrepreneurs cannot voice their needs. MC can therefore act as one of the few alternative types of financing which fosters the desired development outcomes while substituting for the lack of other institutions (Mair and Marti, 2009; Mair et al., 2012). In an environment with low protective security it can be argued that entrepreneurs have no other options, as there is no safety net through which to receive benefits to cover their needs. Hence, entrepreneurship is often the only option to earn money and improve financial well-being as well as non-financial

outcomes such as education, health and nutrition. Finally, underdeveloped social opportunities may create a similar effect. MC may be the only way for people in this type of context to obtain healthcare and education, therefore the effect of MC on outcomes may be stronger in environments less developed in that respect.

Taken together, it is not clear whether MC provides a supplementary or complementary fit to the dimensions of instrumental freedom as there are theoretical arguments supporting both views. On the one hand, MC-induced entrepreneurship could partly substitute for the lack of market or government alternatives (Austin et al., 2006; Cohen and Winn, 2007; Mair and Marti, 2009; McMullen, 2011; Santos, 2012), such that in very deprived contexts MC may add more value than in less deprived environments. On the other hand, entrepreneurial outcomes from MC funding may be facilitated by higher degrees of instrumental freedoms as choices for entrepreneurs and their ventures increase in such contexts (Bradley et al., 2012; Gries and Naudé, 2011; Sen, 1999). Based on the existence of these two contradictory lines of argument we propose the following research question:

> Research Question: How do instrumental freedoms moderate the relationships between microcredit and different outcomes of development?

4. Methods

4.1. Search and identification of studies

In order to collect a representative body of studies to meta-analyze, we relied on three different approaches as described in previously published meta-analyses (Brinckmann et al., 2010; Rosenbusch et al., 2013). First, we conducted a systematic search in the academic databases of EBSCO, EconLit, ABI Inform and ISI Web of Knowledge, during the period October to December 2011. We used combinations of keywords containing two or three of the following: "microfinance", "micro-finance", "microcredit", "micro-credit", "microloans", "micro-loans", "microenterprise", "micro-enterprise", "microdebt", "empirical" and "quantitative", and searched the databases in the fields of title, abstract and article keywords. We also manually searched a number of respected management and entrepreneurship journals ("Academy of Management Journal", "Administrative Science Quarterly", "Strategic Management Journal", "Journal of Business Venturing", "Entrepreneurship Theory & Practice" and "Strategic Entrepreneurship Journal") using the same keywords. We did not limit our searches to a specific time period, although the recent emergence of the phenomenon of MC and its even more recent exploration through quantitative methods in academic literature resulted in a set of studies that were all dated after 1980. Finally, we reviewed studies from the reference sections of studies that had already been identified as relevant through the initial database search, as well as from reference sections of qualitative reviews on MC (Duvendack and Palmer-Jones, 2011; Goldberg, 2005; Morduch and Haley, 2002; Stewart et al., 2010; Woller, 2004).

4.2. Inclusion criteria

We employed a number of inclusion criteria in order to make use of the maximum number of studies, while retaining conceptual and analytical clarity on the specific relationships studied. We thus only included studies if they:

1. Consider microcredit programs, and not pure micro-savings or micro-insurance programs. MC is sometimes bundled with other products such as savings, insurance or agricultural materials (Brau and Woller, 2004). We only considered studies eligible when credit was included. Savings as an add-on to MC was eligible; however, we did not look at standalone micro-savings programs.
2. Study the direct provision of credit to poor people. In developed countries, "microenterprise" programs provide business training and support to people to help them secure funding *from other sources*. We have therefore excluded studies on microenterprise programs that cannot distinguish between participants that finally managed to secure funding and those who did not.
3. Consider the actual participation and receipt of loans by MC clients. A number of studies alternatively look at the "intention to treat" the person, which signals eligibility to become a client in the future (Banerjee et al., 2009). As we are looking at the impact of the programs, we track only actual participation.
4. Refer to MC programs offered by any types of MC organizations, including for-profit, government, non-profit and cooperative legal forms. Both studies that refer to microloans specifically intended for entrepreneurship, and those that refer to general-purpose microloans, fall within the scope of our analysis. General-purpose loans can be used to finance venture activities or more broadly support the entrepreneurs' operations. Further, a lack of rigorous monitoring of the loans and the generally non-formalized nature of the ventures makes the ultimate use of these loans hard to verify (Ansari et al., 2012; Collins et al., 2009). In the development environment we analyze, where the majority of individuals are self-employed and pursuing unregistered, informal economic activities, the distinction between the individual and the venture is generally difficult to make. Thus, proclaimed business loans are sometimes used for personal purposes, while personal loans are used to support an individual's productive activity. We therefore include all types of MC loans, and run a robustness check to ensure no differences arise from different categorizations.

The application of these criteria resulted in 153 studies that were conceptually relevant for quantitatively assessing the relationship between MC and our chosen outcomes. Unfortunately, a number of studies, even though quantitative, do not report the necessary statistics. Due to the nature of the meta-analytical methods used in this paper only studies for which bivariate statistics were available

have been included. We contacted authors of studies that did not report the necessary statistics, and when they have provided them (in 6.8% of cases), the respective studies were included in our meta-analysis. The final sample of studies coded is therefore k = 91 (59.48% of conceptually relevant studies). This procedure and its outcome are comparable to other meta-analyses published in entrepreneurship (Brinckmann et al., 2010; Unger et al., 2011). We provide the list of studies in Table A.1. of Appendix A.

4.3. Measures

4.3.1. Dependent variables

The outcomes of MC are measured in a variety of ways in the literature. Based on prior theorizing, we were particularly interested in measures that represented the following categories of outcomes: venture survival, venture growth and venture profitability, financial well-being of the clients, health of clients, education of clients' children, and empowerment of female clients. A common challenge in MC research is the precise measurement of outcomes of interest in the largely developing and informal contexts where MC is deployed, because official records and clear boundaries between the individual, the household and the microenterprise are lacking. Thus, proxies are commonly used for the measurement of key outcomes, for example income or expenditures are used as a proxy for financial well-being. Table A.2 of Appendix A lists the different operationalizations used in our sample of studies for each dependent variable, their frequency in our data, and illustrative examples.

When considering the different dependent variables and the respective outcomes of MC, it is important to keep the general development context in mind. For instance, in poor countries in the developing world, venture survival can be interpreted differently than in developed countries. The size, formality, regularity and/or sophistication of a venture's operations might be considerably different compared to ventures in developed countries, which are commonly scrutinized by entrepreneurship scholars. In poor contexts, low opportunity costs and a lack of alternatives may lead individuals to continue operations that have limited economic promise (Baker et al., 2005; Gries and Naudé, 2011). Similarly, venture growth and profitability need to be understood in light of the limited scale of operations funded by MC.

4.3.2. Independent variables

In most cases the independent variable is dichotomous, capturing the participation (or not) in MC programs, where participation entails receipt of at least one loan. We have also included continuous operationalizations of participation in MC programs, measured as time of participation since receipt of loan (these consisted of only .022% of the sample of outcomes measuring health & nutrition).

4.3.3. Moderating variables

To measure instrumental freedoms at the country-level, we have used established measurements publicly available from the United Nations Development Programme (http://hdr.undp.org/en/data) and Worldwide Governance Indicators project (http://www.govindicators.org/). We use the functionings, namely the actual achievement levels on different dimensions, as indicators of freedoms, following prior literature (Nussbaum, 1997). Nussbaum (1997: 291) notes that "it is easier to get information on health achievements than on health capabilities; to some extent we must work with the information we have, while not forgetting the importance of that distinction". The Human Development Index has been developed based on Sen's theory to highlight country-level functionings on a variety of human development indicators (Sen, 2010; Ul Haq, 1996). We use the HDI index of income to measure economic facilities, and the HDI index of education and HDI index of health to measure the two main aspects of social opportunities at the country level. We employ the Worldwide Governance Indicators' "voice and accountability" indicator as a measure of political freedoms and "control of corruption" indicator as a measure of transparency guarantees (Kaufmann et al., 2007). Finding a reliable metric for the dimension of protective security was not possible; while the World Bank measurements (http://databank.worldbank.org/data/) include an indicator of total social insurance contributions as a percentage of a country's revenue, the data is incomplete for many countries, thus we have excluded this dimension from our analysis. For all the moderating variables, we have used the measurement that corresponds to the country and the year of data collection of each study included in our dataset.

4.3.4. Control variables

MC scholars (Hermes and Lensink, 2011; Khavul, 2010; Roodman and Morduch, 2009) highlight the importance of the quality of MC studies. Qualitative differences between studies could influence the results of this meta-analysis. To ensure that our results are not biased, we controlled for methodological characteristics of the primary studies. We included dummy variables indicating whether studies a) followed an experimental or a non-experimental design, b) were longitudinal or cross-sectional, and c) employed a control group in their design. Experimental studies are expected to better mitigate biases of selection and self-selection, however they possess some limitations that prevent researchers from depending exclusively on such designs (Hermes and Lensink, 2011; Khavul, 2010; Roodman and Morduch, 2009). Therefore, both experimental and non-experimental designs are commonly used to study the effects of MC. Longitudinal research designs and the use of control groups are also expected to produce more valid results and reduce potential biases (for a detailed discussion of research designs, see Woller, 2004). We additionally controlled for a potential publication bias with a dummy variable indicating peer-reviewed publications, versus non-peer-reviewed (including practitioner reports, dissertations and unpublished academic work). Finally, we control for the broader region/continent where each study has been conducted.

For the main relationships between MC and dependent outcomes meta-analyzed, we conducted subgroup analyses to see if the control variables mentioned above would raise any concerns.[3] While the direction and significance of the effects remained identical for all relationships, for the dependent variables of venture growth, the effect strength was smaller for effects representing changes over time, versus effect sizes representing absolute values. For the respective relationship, we thus report findings both in disaggregated (for change effects and for absolute size effects) and in aggregated format. In the moderation analyses, regressions enabled us to control for the method variables mentioned above, by including them into our models.

4.4. Data analysis

In a first stage, we extracted the corresponding effect sizes from each study for each dependent variable. We coded the Pearson's product-moment *r* correlation reported in studies, or any other bivariate measurement that can be converted to *r* (Lipsey and Wilson, 2001). Several studies reported the exact statistics only when relationships exhibited statistical significance. Excluding these non-significant effect sizes might lead to results being upward biased. We therefore set the *t*-value to 0, when an effect size was reported as insignificant but its specific *p*-value had not been reported. This incidence occurred to a limited extent, in 9.3% of effect sizes. A robustness check revealed no changes when these cases were completely excluded from the sample.

When more than one sample was used in the same study, we coded the effect sizes of each sample separately. In certain cases more than one study reported effect sizes taken from a common sample. If the overlapping studies reported the same types of relationships, effect sizes were taken from only one of the studies. If they reported different relationships, then effects were coded for all the relationships present, and the sample – not the study – was considered the unit of analysis. Once effect sizes had been coded, corrections were made for "artifacts" in measurements in the primary studies that can create systematic sources of variance and artificially distort findings (Geyskens et al., 2009; Hunter and Schmidt, 2004). Specifically, we corrected for artificial dichotomization and reliability of the measurements of the dependent variable (Hunter and Schmidt, 2004). Corrections for the measurements of the independent variable were not applicable: participation in MC programs is a naturally dichotomized and also objective measure, thus not vulnerable to artifacts of dichotomization or reliability.

After applying the corrections for the artifact of dichotomization and reliability, effect sizes were averaged out so that only one effect size was provided by each study for each relationship studied (Geyskens et al., 2009). We also checked for outliers that might bias our results (Lipsey and Wilson, 2001), excluding from the final analysis the few averaged effect sizes (12 out of 557) that deviated more than 2 standard deviations from the average of the effect sizes reported. After the combination of studies using the same sample and the removal of outliers, the final number of effect sizes used is 545, derived from 90 studies. The removal of outliers produces more moderate averaged effect sizes, especially in the dependent variables of health and nutrition, and of education. However, due to the limited number of outliers and their extreme values we consider their removal justified.

To combine the findings from the selected studies we have followed the Hedges & Olkin methodology (Hedges et al., 1985) and formulae provided by the CMA meta-analysis software (Borenstein et al., 2009). This methodology combines the averaged effect sizes of the primary studies into a total average effect, while controlling for their different variance and sample weights, and enables a test of the main relationships of interest in our study. We also calculated significance levels and confidence intervals, as well as the I^2 heterogeneity metric and prediction intervals according to the Hedges & Olkin approach (Borenstein et al., 2009). All results reported were calculated using random effects models, with the exception of the I^2 heterogeneity metric, which was calculated using fixed effects models.

For testing the moderator effects we ran weighted least squares (WLS) meta-analytic regressions for each dependent variable as suggested by Lipsey and Wilson (2001). In a meta-analytic regression, the effect size for the main relationship is the dependent variable whereas the moderators are the independent variables influencing the main relationship. Furthermore, we included a number of control variables that capture the part of the variance in results attributable to methodological differences between the empirical studies. Given the rather high correlations between some of the country-related moderators (which are to be expected due to their interrelatedness (Sen, 1999), but which may cause multicollinearity), we decided to run separate models, including all control variables and regressing each of the moderating variables on each dependent variable of interest, i.e. on the relationships between MC and different outcomes. Two dependent variables, namely venture survival and venture profits, were excluded from the meta-regression analysis, due to the small number of available effect sizes.

4.5. Robustness checks

Several robustness checks were conducted to ensure no biases affected our results. First, results were also calculated without artifact corrections of effect sizes as well as under different assumptions regarding the reliability correction.[4] Second, we compared

[3] Out of the 4 final effect sizes included in the "venture survival" calculation, all employed a control group and were longitudinal, and none were experimental. Out of the 34 effect sizes included in "venture growth", 33 employed a control group, 2 were experimental and 10 longitudinal. Out of the 6 included in "venture profits", all employed a control group, 2 were experimental, and 4 longitudinal. Out of the 62 final effect sizes included in the "financial well-being" calculation, 58 employed a control group, 6 were experimental and 23 were longitudinal. Out of the 42 ones included in the "health and nutrition" outcome, 41 employed a control group, 6 were experimental and 9 longitudinal. Out of the 26 final effect sizes included under "empowerment", 24 employed a control group, 3 were experimental and 10 were longitudinal. Finally, out of the 24 effect sizes included under "education", 23 employed a control group, 3 were experimental and 6 were longitudinal.

[4] The original effect sizes (prior to averaging out) that were coded as subjectively measured and thus relevant for a reliability correction were 96, out of which only 5 reported a Cronbach's alpha. In the main analysis we therefore chose to use the average of the reported reliabilities for the correction, when Cronbach's alpha was not reported. However, to ensure that such a choice would not influence the reported results, we also conducted robustness checks a) without any artifact corrections, b) with corrections, assuming Cronbach's alpha = 1 where it had not been reported, and c) with corrections for both subjective and objective measures of the dependent variables.

results across different legal forms of MC organizations (i.e. for non-profit, for-profit and government organizations) and across different types of loans (entrepreneurship or general purpose loans, where this information was available). Third, we excluded the cases of effect sizes mentioned earlier, which had been coded with a *t*-value = 0 because their precise *p*-value had not been reported. Additionally, we tested to see if different proxies for each of our dependent variables resulted in statistically significant differences in the relationships tested. Results remained stable across all of these robustness checks. Finally, we ran checks for the potential existence of publication bias potentially affecting the results of the meta-analysis. The calculation of Rosenthal's fail-safe N (Rosenthal, 1979) and the funnel plot graphic tests (Egger et al., 1997) indicate that publication bias is unlikely to affect our results.

5. Results

We tested our hypothesized relationships using random effects models, since random effects models yield more conservative estimations than fixed effects models (Geyskens et al., 2009). Table 1 summarizes the results of the meta-analysis, reporting the average weighted effect size for each relationship, its statistical significance and key heterogeneity metrics.

The results suggest that MC has a positive impact on diverse dependent variables, albeit with different magnitudes. The effect of MC on venture survival is positive ($r = .10$, $p < .10$), yet marginally significant, as the confidence interval includes zero. Thus, we find only weak support for Hypothesis 1a. Turning to the other dimensions, our findings corroborate the expectation that MC helps entrepreneurs achieve greater growth in their ventures ($r = .08$, $p < .01$) and increased profits ($r = .11$, $p < .05$), lending support to Hypotheses 1b and 1c, respectively. The effect of MC on financial well-being of entrepreneurs is also positive ($r = .16$, $p < .01$) supporting Hypothesis 2. Turning to the human development outcomes of MC, the effect on health and nutrition ($r = .08$, $p < .01$) as well as education ($r = .05$, $p < .01$) of the clients and their families is positive, substantiating Hypotheses 3 and 4. MC further has a positive impact on female empowerment ($r = .21$, $p < .01$), providing support for Hypothesis 5.

Methodological controls revealed that the magnitude of the effect for the dependent variable of venture growth was statistically different for effects based on changes across treatment and control groups over time ($r = .08$, $p < .01$) versus for effects based on absolute values across groups ($r = .12$, $p < .01$). However, the direction of the relationship does not change. As expected, effects representing change provide a more conservative estimate of the MC effect on venture growth. Disaggregated results are included in Table 1.

Heterogeneity across studies is high for the majority of dependent variables. The proportion of "true heterogeneity" to total variance (I^2) is over 75% for the majority of variables, suggesting the need for further moderator analysis. The results of our exploratory analysis scrutinizing the contextual dependence of the MC-development relationships are summarized in Table 2, while detailed results are provided in Table B.1 of Appendix B. Results indicate that the majority of the moderating relationships were statistically significant. The impact of most context moderators of interest on the relationship between MC and human development is negative (i.e., as the contextual situation of a country improves the effectiveness of MC decreases). An exception is the impact of certain contextual moderators on the MC-women's empowerment relationship. Further, results are mixed regarding the impact of contextual factors on venture and financial outcomes. We find that favorable economic facilities have a positive effect on the MC-venture growth and the MC-financial well-being relationships, while the effects of the remaining moderators are negative.

Table 1
Effect of microcredit on different outcomes.

Dependent variable	*k*	*N*	*r*	Confidence Interval (95%)	*Vw*	*Vb*	Total variance	I^2	Prediction interval (95%)
Venture survival	4	3780	0.10†	−0.02: 0.22	0.01	0.05	0.06	85.89	−0.10: 0.30
Venture growth (change e.s.)[1]	11	4668	0.08**	0.04: 0.12	0.10	0.01	0.11	11.81	0.08: 0.08
Venture growth (absolute e.s.)	23	16,294	0.12**	0.05: 0.19	0.16	0.57	0.74	95.60	−0.22: 0.46
Venture growth (total)	34	20,962	0.12**	0.06: 0.17	0.27	0.72	0.98	93.69	−0.16 : 0.40
Venture profits	6	4723	0.11*	0.02: 0.19	0.03	0.03	0.07	55.67	−0.04 : 0.26
Financial well-being	62	42,854	0.16**	0.12 : 0.21	0.52	2.01	2.53	95.21	−0.19 : 0.51
Health & nutrition	42	33,542	0.08**	0.04: 0.11	0.43	0.33	0.75	78.50	−0.09 : 0.25
Empowerment of women	26	16,608	0.21**	0.14: 0.27	0.29	0.55	0.84	85.60	−0.07: 0.49
Education	24	20,710	0.05**	0.02: 0.08	0.18	0.08	0.26	69.99	−0.06 : 0.16

k: number of studies
N: combined sample size
r: Pearson correlation
Confidence interval: interval within which effect sizes are expected to lie due to the level of standard error
Vw: total variance *within* studies
Vb: total heterogeneity *between* studies
Total variance: *Vw* + *Vb*
I^2: % of true between-study heterogeneity to total variance
Prediction interval: interval within which effect sizes are expected to lie due to level of heterogeneity between studies.
† $p < .10$.
* $p < .05$.
** $p < .01$.
[1] For the venture growth variable, effect sizes which measured the variables as absolute values at one point in time (but typically as a difference from a comparable control group some time after the MC loan had been received) were significantly different from those measuring the change in each group compared to a baseline before MC reception — yet, they were of the same direction and significance. We make use of the more conservative effect size based on change measurements in our Results and Discussion sections, but present the detailed breakdown here for completeness.

Table 2
Summary of effect of country-level moderators on MC outcomes.[1]

Country-level moderators	Venture growth	Financial well-being	Health & nutrition	Empowerment	Education
Economic facilities	Positive**	Positive **	Negative **	n/s	Negative **
Social opportunities (health)	n/s	n/s	Negative **	n/s	Negative **
Social opportunities (education)	Negative**	Negative **	Negative **	n/s	Negative **
Political freedoms	Negative**	Negative **	Negative **	Positive**	Negative †
Transparency guarantees	Negative**	Negative **	Negative **	n/s	Negative **

n/s: non-significant relationship.
* $p < .05$.
† $p < .10$.
** $p < .01$.
[1] For the dependent variables of venture survival and venture profits there were not sufficient observations to include them into the moderator analysis.

6. Discussion

6.1. Theoretical implications

MC has been suggested as one of the few interventions that have a significant impact on improving the lives of people at the base of the pyramid by enabling participation in the economic system. MC provides individuals with financial resources they can be used to start, maintain and grow their own ventures, which can enhance their financial well-being and broader human development outcomes. The proposed core link between MC and the different development goals is small-scale entrepreneurship, which gives people the opportunity to earn money and create value in their communities. Although MC has received much positive attention over the last decades culminating in the Nobel Peace Prize for Mohammed Yunus who pioneered MC lending, critics have pointed to negative consequences for borrowers such as social pressure on those who cannot repay (Hulme, 2000). After decades of theoretical and empirical research with conflicting findings the academic world is still faced with three major questions: (1) What are venture related outcomes of MC? (2) How does MC influence individuals' financial situations and broader development outcomes? And (3) is the effectiveness of MC context-dependent?

With respect to the first two questions, our results support Roodman's (2012) view on MC: there are positive effects on several human development outcomes but their magnitudes suggest that MC might not be transformational for many of the desired outcomes. The availability of MC appears to facilitate entrepreneurship at the base of the pyramid, extending research typically conducted in developed contexts (Cooper et al., 1994; King and Levine, 1993; Schumpeter, 1934).

The effect that stands out in terms of its magnitude is the one on empowerment of women which supports previous arguments (Hashemi et al., 1996; Sanyal, 2009) that MC may have more of a psychological effect related to being an entrepreneur and contributing money to support the family. The strong impact on empowerment may seem surprising considering the long and hotly debated discussion on this topic with many pro and contra arguments (Khavul, 2010). While MC might not change constraining structures that prevent women from engaging in economic activity (Goetz and Gupta, 1996; Rahman, 1999), participation in these programs assigns them responsibilities and rights (Mair et al., 2012). Thus, repeated social and economic interactions ultimately might confer more power to women and facilitate the joint pursuit of common causes that improve welfare of their respective communities (Sanyal, 2009). This effect can create a virtuous cycle, as a greater number of empowered women have the opportunity to engage in entrepreneurship and more generally market activity, and through these become further respected and empowered.

The effects of MC on other human development outcomes appear less pronounced. Our findings support proponents' claims about potential beneficial effects on health and nutritional outcomes and on educational outcomes for their children. However, the meta-analysis revealed both effects to be relatively small, which could indicate that the benefits from MC may be partially offset by detrimental effects. For example, some parents may take their children out of school so that they can work in the family business (Morduch, 1999; Wydick, 1999).

Overall, our results support theorizing by Sen (1999) that development instruments such as MC can have a broad positive impact that goes beyond immediate outcomes and covers a range of development goals (Austin et al., 2006; Miller et al., 2012). This is an important contribution to the literature as we previously lacked substantive empirical evidence about whether and how specifically MC can facilitate development goals. Our findings suggest that immediate outcomes relating to the funded venture are positively affected, while simultaneously – and following Sen's theorizing – in an interwoven fashion development progress also extends to other areas including health, education and empowerment. Hence, an intervention aiming at giving people at the base of the pyramid the opportunity to become entrepreneurs can foster development in such contexts (Mead and Liedholm, 1998; Parker, 2009).

A further contribution relates to the exploration of the way in which the context affects MC-development outcome relationships. Any instrument that aims at enhancing entrepreneurship and development may require specific conditions in order to increase its effectiveness. The theoretical debate highlighted that on the one hand MC could have more positive performance effects in benign environments because entrepreneurs have more options to develop their ventures. On the other hand, MC could be more beneficial in challenging environments where it may provide the only chance for individuals to improve their financial situation and subsequently gain access to education, healthcare and nutritious food. The literature provides theoretical arguments for both views (Cohen and Winn, 2007; Mair et al., 2012; Santos, 2012; Sen, 1999) yet empirical evidence was lacking.

Our findings illustrate that the vast majority of the moderating effects tested are negative, indicating support for a complementary fit. In other words, in most cases MC is more beneficial in hostile environments. We conjecture that in these hostile environments MC serves as a means to overcome the lack of access to alternative developmental opportunities. MC increases options where a low degree of instrumental freedoms leads to market failures and therefore a lack of alternative choices for people at the base of the pyramid (Cohen and Winn, 2007; Mair and Marti, 2009; Mair et al., 2012; Santos, 2012). This finding can refine prior literature theorizing a positive moderating effect of strong institutions for entrepreneurial outcomes (De Soto, 2003; Portes and Haller, 2005). In particular, under conditions which are generally detrimental for entrepreneurship (Anokhin and Schulze, 2009), MC may act as a substitute for institutional voids, essentially creating semi-formal institutions that drive development outcomes (Mair and Marti, 2009; Mair et al., 2012).

Nevertheless, there are exceptions to this general pattern, including the moderating effects of economic facilities on the relationships between MC and venture growth as well as financial well-being of clients. These positive moderator effects indicate that MC-funded venture growth and personal financial outcomes are higher under favorable economic conditions. This result is in line with previously conducted research which shows that environmental munificence facilitates the success of entrepreneurial ventures (Rosenbusch et al., 2013). Better economic conditions increase opportunities for entrepreneurs to take risks, be pro-active and innovative and in turn, to increase sales and profits (Rosenbusch et al., 2013). The MC-empowerment link constitutes another exception. The rather strong relationship between MC and empowerment of women seems to apply more universally, compared to MC's relationships with other development outcomes. Only one of the instrumental freedom dimensions has a significant moderating influence — political freedom. In a political system where women can more easily voice their opinion and exercise individual decision-making and agency, MC can be expected to have an even stronger effect on empowerment than in other contexts.

Our findings can also contribute to our understanding of the positive synergetic contextual considerations stressed by Sen (1999). It appears that greater development at the societal level does not imply that interventions such as MC will necessarily improve their effectiveness. Rather, certain types of interventions such as MC can actually become less relevant in the presence of more traditional market-based means such as conventional loans. Thus, a careful consideration of the respective instrument and the level of development in a given context is warranted (Schreiner and Woller, 2003). With respect to MC, it appears that it is a tool that can influence outcomes that go beyond strictly financial ones, especially when other financing forms are missing and the societal context is characterized by market and government failure. At a more general level, our results call for a greater consideration of contextual effects in theory development. With respect to the extant empirical research in this domain our results caution that empirical results have to be interpreted with care, especially if they are based on specific settings. As results are likely context dependent, they may not be generalizable beyond the specific setting, so further research needs to scrutinize specific findings in other contexts. This further supports the need of replication research to substantiate our knowledge in this domain (Banerjee and Duflo, 2008).

6.2. Practical implications

Our findings suggest that MC has a positive impact on the financial and human development outcomes of poor individuals in challenging contexts. Thus, MC may be considered an overall positive instrument. However, given that its effects on some outcomes are moderate, proponents should be more cautious and avoid overly enthusiastic claims regarding its potential. As Morduch (1999: 1609) foresaw, "the promise of microfinance should be kept into context". From a policy point of view, the impact of MC for the economic and human development of people at the base of the economic pyramid should best be evaluated in comparison to alternative interventions, and not in absolute numbers. For instance, the overall effectiveness of development aid programs has been estimated through meta-analysis to be close to zero (Doucouliagos and Paldam, 2008). In comparison, even programs with small expected effectiveness would be preferable. The effect sizes resulting from our study are, however, comparable to those of other meta-analyses investigating determinants of entrepreneurship and entrepreneurial outcomes. For example, Zhao and Seibert (2006) obtained effect sizes between $r = -.16$ and $r = .19$ for the relationships between personality traits and entrepreneurial status. Unger et al. (2011) reported a correlation of $r = .12$ for the link between human capital and entrepreneurial performance in developing contexts. Different social capital dimensions produced correlations between $r = .04$ and $r = .19$ with entrepreneurial performance in developing contexts (Stam et al., 2014). Hence, the strength of the effects of MC for entrepreneurship and entrepreneurial outcomes appears to be similar to those of other resources such as human and social capital. It is important to note though, that the development context of the other meta-analyses is markedly different. Further, when deciding if a particular program is desirable for a specific context, global estimates should be complemented with context-specific insights (Whittington et al., 2012). Finally, given the overall low development impact, a search for additional and novel intervention instruments and a more specific analysis of the effectiveness of different MC programs might be warranted.

In terms of human development outcomes, policymakers should be aware that MC appears to have beneficial effects on a number of outcomes. However, due to the relatively small magnitude of the detected effects, we would caution against using MC as the primary solution for non-financial problems, especially in the fields of health and education, where estimated effects are small. As with financial outcomes, a comparison of the effect of MC to those of traditional health and education interventions should form the basis for decision-making on appropriate programs.

In turn, MC appears to be a promising instrument for fostering women's empowerment, supporting prior literature (Mair et al., 2012; Sanyal, 2009). This is an important finding that lends credibility to the practice of MC providers to emphasize women

entrepreneurs as MC recipients in contexts where their rights are constrained. As both practitioners and academics have pointed out, women might be more likely than men to invest the credit in productive endeavors, and to distribute the earnings generated towards the well-being of their entire families (Armendariz and Morduch, 2007; Littlefield et al., 2003). While some critics have argued that women do not always retain the ultimate control of these loans and might sometimes be pressured to repay loans their husbands are managing (Goetz and Gupta, 1996), our study supports the view that for the greater part women can be expected to benefit from MC involvement (Kabeer, 2001). Especially in traditional societies where their mobility and market participation are extremely constrained, the activities they engage in due to MC provisions have the potential to improve their status in their families and communities (Sanyal, 2009). In sum, we consider MC as one of an array of possible facilitators of development in poor economic environments; other instruments such as social safety, educational, health directed instruments, as well as property rights and law enforcement should also be considered (Hulme, 2000).

With respect to conditions that improve the effectiveness of MC our findings suggest that MC adds most value in deprived contexts with low instrumental freedom. However, if the growth of the MC-financed ventures is the goal of the intervention, MC needs to be supplemented with instruments facilitating the economic development of the poor in broader terms (Kabeer, 2005), as ventures require economic conditions with opportunities for growth and access to resources. If an environment lacks such conditions, MC's influence on venture development and personal financial well-being of the recipients may be limited.

6.3. Limitations and future research

Several limitations are present in the primary studies on MC. First, some concerns have been raised in the MC literature regarding issues of selection and self-selection effects leading to endogeneity concerns. Experimental research designs may be less prone to suffer from such problems, yet these designs are rarely employed as they are extremely costly and complete randomization is rarely feasible or ethical (Hermes and Lensink, 2011; Roodman and Morduch, 2009). However, even if treatments are not entirely randomized, most MC studies employ a treatment and a control group that have been chosen to be similar, and results reported reflect the differences between treatment and control group, post treatment. The use of similar control groups thus enables us to have reasonable confidence in our findings. Additionally, we have controlled for varying methodologies used in the primary studies, and reported the effect of method-selection, which can further guide future research towards more rigorous practices.

Second, a key constraint in relevant research is the lack of a clear theoretical model (Hermes and Lensink, 2007) that distinguishes between direct and indirect effects, and the temporal stages of the impact of credit on different dependent variables. As Sen (1999) highlighted, key development variables can operate both as means to and ends of development, and be linked in an intricate web of interrelationships. Thus, untangling these cause and effect relationships can lead to extremely complex models (Duvendack and Palmer-Jones, 2011) that are difficult to test. Primary studies rarely test mediation models or agree on a common theoretical framework. Given Sen's (1999) theorizing, we selected certain development outcomes. We hope that our findings point to more fertile ground for future research that aims to identify key effects and distinguish more clearly between immediate and ultimate effects. At the same time, we should bear in mind Sen's (1999) warning that establishing clear causalities might be a challenge difficult to resolve in this area.

Third, further limitations result from the challenging context of poor communities where transactions are usually minuscule and rarely reported in written form, while funds are used interchangeably for a multiplicity of purposes (Portes and Haller, 2005). This challenge is evident in the relative lack of precision in the description of the individuals and the measurements used in primary studies (Hermes and Lensink, 2007). While economic studies tend to use rigorous research designs, they sometimes define variables with limited precision and frequently rely on rough proxies. Additionally, in practice MC organizations rarely track the actual use of the loans, thus limiting our understanding of the exact process between the provision of the MC and the resulting outcomes. In fact, MC often serves as a line of credit for the informal venture and the client. It is issued as a personal loan and frequently serves to finance immediate expenses related to the individuals and their families (Collins et al., 2009). Furthermore, the requirement to save during receipt of MC loans prevents us from untangling the effect of the savings component of MC loans. While we partially account for most of these issues in our robustness checks, further research should be directed at distinguishing these effects more concisely.

Fourth, most studies we located originated from the field of economics, and thus typically focus on macro-level characteristics to a much greater extent than they focus on individual or venture-level characteristics. This limitation restricts the conclusions that can be drawn about the applicability of MC to specific ventures or individuals. For instance, it is scarcely reported whether loans are provided to new or established ventures, a difference that might, however, affect the outcomes resulting from these loans. Furthermore, with the exception of a study by Bradley et al (2012), we know little about the motivation behind specific ventures. Yet, as these authors suggest, variables such as experience, business expertise or the type of entrepreneurship (e.g. necessity vs. opportunity entrepreneurship) can additionally determine the outcomes of MC. In general, MC research rarely investigates the impact of the characteristics, strategies and actions of individual entrepreneurs (Bruton et al., 2013; Frese, 2000).

As our research depicts the limitations of extant literature, it can also serve in guiding future research. First, we would like to encourage researchers to explore the intermediate relationships between MC, specific entrepreneurial activities and financial as well as non-financial outcomes with greater rigor. Researchers are advised to use clearly defined constructs, and theoretical models that aim at disentangling direct and indirect effects of MC. While many variables are expected to be interrelated, individual studies

commonly focus on a limited set of variables and primarily focus only on financial effects. We advise entrepreneurship researchers to include non-financial outcomes that transcend the strictly financial measures, as complex development phenomena cannot be reduced to financial variables alone (Sen, 1999). In terms of methodology, researchers in entrepreneurship can build on but also extend current analyses on MC from the economics field (Bruton et al., 2013). The extant literature suggests that when financial and temporal considerations allow it, experimental designs should be given precedence, and if this is not a possibility then a longitudinal design employing a comparable control group is strongly recommended.

Entrepreneurship researchers can also add greater nuance to the study of MC, by incorporating the great wealth of insights and variables pertaining to the individual, the opportunity or the venture level of analysis. By considering the personal characteristics, motivation and actions as well as strategies employed by the individuals, we can better prescribe MC to specific entrepreneurs that are more likely to make good use of the instrument. Additionally, the age of the venture and the nature of the industry or the opportunity might be critical factors. For instance, an attention to the type of entrepreneurship can help researchers better conceptualize and specify phenomena such as MC entrepreneurship or entrepreneurship in developing contexts, as necessity entrepreneurship is more likely to persist in the absence of alternatives and is not necessarily an indicator of success (Acemoglu and Robinson, 2012; Baker et al., 2005). Further, researchers can also build on work exploring the impact of specific characteristics of the MC programs on overall success. For instance, Karlan and Valdivia (2011) examined whether entrepreneurship training influences the outcomes of MC, but found little or no evidence that such training affected revenues, profits or employment. In contrast, training seems to have a positive effect on entrepreneurial outcomes in other contexts (for a review of the literature on entrepreneurial training see Glaub and Frese, 2011). However, the strength of the effect largely depends on the type of training and on the methodology used to assess training outcomes (Glaub and Frese, 2011). Linking this general finding to MC research, questions arise on whether training might also enhance the effectiveness of MC on different outcome dimensions. Further, future research on the impact of MC could identify types of training that might increase the effectiveness of MC.

Finally, researchers could further scrutinize the mechanisms behind our finding that more deprived and hostile environments tend to moderate MC's impact positively. One of the puzzling questions that arise from our findings regards the specific mechanisms through which MC can add value despite difficult environmental conditions such as corruption and a lack of democratic structures.

Far from being the final word on the topic of MC's impact, we hope that our meta-analysis provides a comprehensive snapshot of extant literature and points to productive avenues for future research. As entrepreneurship research increasingly penetrates debates around development, we see a fruitful opportunity for two previously unconnected streams of research to engage in greater dialogue. Debates around MC and other forms of development entrepreneurship stand to gain both from the long-standing tradition of development economics and from the specific insights that entrepreneurship scholarship can contribute. We hope that our study provides guidance and encouragement for researchers wishing to explore this important, ambitious and fascinating new frontier.

Appendix A

Table A.1
Overview of studies.

Education				
Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Abera (2010)		361	0.20	0.05
Aideyan (2009)		281	0.28	0.08
Anyango et al. (2007), Brannen (2010)		170	0.14	0.07
Barnes et al. (2001a)		453	0.14	0.19
BIDS study Khandker et al. (1998), (2008), Khandker (2001), Nanda (1999), Pitt and Khandker (1998), Pitt et al. (1999), (2003), Pitt (2000)	Sample 1	1280	0.01	0.03
BIDS study Khandker et al. (1998), (2008), Khandker (2001), Nanda (1999), Pitt and Khandker (1998), Pitt et al. (1999), (2003), Pitt (2000)	Sample 2	752	0.01	0.04
Casabonne (2006)		5901	0.01	0.02
Chen and Snodgrass (2001)		600	−0.07	0.13
Coleman (1999)		294	−0.06	0.06
Enterprising Solutions Global Consulting (2004)	Sample 1	346	0.15	0.14
Enterprising Solutions Global Consulting (2004)	Sample 2	542	0.23	0.12
Enterprising Solutions Global Consulting (2004)	Sample 3	471	0.27	0.10
Hiatt and Woodworth (2006)		318	0.00	0.06
Kondo et al. (2008)		2200	0.00	0.02
Maldonado & Gonzalez-Vega (2008)	Sample 1	355	−0.04	0.05
Maldonado & Gonzalez-Vega (2008)	Sample 2	135	−0.07	0.08
MkNelly & Dunford (1999)		157	0.02	0.08

Table A.1 *(continued)*

Education

Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Nanor (2008)		710	0.09	0.04
Nawaz (2010)		176	0.09	0.11
Pronyk et al. (2006)		843	0.02	0.03
Rahman & Ahmad (2010)		994	0.12	0.02
Setboonsarng & Parpiev (2008)		2881	0.00	0.02
Shimamura & Lastarria-Cornhiel (2010)		248	−0.02	0.08
Todd (2000)		242	0.15	0.09

Empowerment of women

Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Amin & Pebley (1994)	Sample 1	250	0.25	0.09
Amin & Pebley (1994)	Sample 2	250	0.22	0.09
Amin et al. (1995)		3443	0.22	0.02
Amin et al. (1998)		2364	0.15	0.02
Barnes et al. (2001a)		453	−0.03	0.09
Chen and Snodgrass (2001)		600	0.13	0.10
Dunn and Arbuckle (2001)		480	−0.10	0.15
Fofana (2009), Fofana (2011)		394	0.14	0.04
Garikipati (2008)		291	0.15	0.09
Haque et al. (2011)		50	0.19	0.09
Hashemi et al. (1996), Schuler and Hashemi (1994)	Sample 1	626	0.44	0.06
Hashemi et al. (1996), Schuler and Hashemi (1995)	Sample 2	599	0.64	0.05
Hiatt & Woodworth (2006)		318	0.00	0.07
Holvoet (2005)		597	0.30	0.08
Maldonado & Gonzalez-Vega (2008)		135	0.00	0.09
MkNelly and Dunford (1998)		200	0.05	0.09
MkNelly and Dunford (1999)		157	0.19	0.13
Nwanesi (2006)		83	0.47	0.18
Osmani (2007)		84	0.62	0.09
Pronyk et al. (2006)		843	0.16	0.07
Puhazhendi & Badatya (2002)		115	0.59	0.08
Raftus (1998)		120	0.01	0.11
Rahman et al. (2009), Rahman (2010)		571	0.35	0.14
Setboonsarng & Parpiev (2008)		2881	0.01	0.02
Sharif (2004)		483	0.12	0.05
Zeller et al. (2001)		221	0.22	0.10

Financial well-being

Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Abera (2010)		326	0.08	0.06
Aideyan (2009)		281	0.04	0.06
Al-Mamun et al. (2011)	Sample 1	151	0.50	0.06
Al-Mamun et al. (2011)	Sample 2	182	0.48	0.05
Amin et al. (1998)		2364	0.15	0.02
Anyango et al. (2007), Brannen (2010)		279	0.12	0.07
Bali Swain & Wallentin (2009)		961	0.14	0.03
Bali Swain et al. (2008)		89	0.20	0.13
Barnes et al. (2001a)		453	0.12	0.06
Barnes et al. (2001b)		965	0.19	0.08
Benson et al. (2011)		54	0.01	0.06
BIDS study Khandker et al. (1998), (2008), Khandker (2001), Nanda (1999), Pitt and Khandker (1998), Pitt et al. (1999), Pitt et al. (2003), Pitt (2000)		1073	0.04	0.04
Buckley (1996)		120	0.36	0.22
Chan & Ghani (2011)		72	0.38	0.17
Chen and Snodgrass (2001)		600	0.10	0.04
Chowdhury et al. (2005)		909	0.47	0.05
Coleman (1999)		294	0.03	0.06
Copestake et al. (2005)		500	0.00	0.06
Deininger and Liu (2009)		2406	0.04	0.02
DeLoach and Lamanna (2009)		3316	0.05	0.02
Dunn and Arbuckle (2001)		480	0.03	0.03
Dunn (2005)		2015	0.09	0.06
Edgcomb & Garber (1998)		143	0.03	0.10
Enterprising Solutions Global Consulting (2004)	Sample 1	346	0.06	0.08
Enterprising Solutions Global Consulting (2004)	Sample 2	542	−0.04	0.06
Enterprising Solutions Global Consulting (2004)	Sample 3	471	0.16	0.08

(*continued on next page*)

Table A.1 *(continued)*

Education

Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Fofana (2009), (2011)		394	0.20	0.05
Garikipati (2008)		291	0.26	0.08
Hiatt & Woodworth (2006)		318	0.09	0.06
Hossain (1988)		280	0.28	0.07
Hulme et al. (1996)		144	0.13	0.07
Imai & Azam (2010)		2617	−0.01	0.01
Khandker et al. (2010)		3488	0.02	0.02
Kondo et al. (2008)		2200	0.14	0.04
Lhing et al. (2010)		162	0.15	0.08
Li et al. (2011)		424	0.07	0.05
Maldonado & Gonzalez-Vega (2008)	Sample 1	355	0.00	0.06
Maldonado & Gonzalez-Vega (2008)	Sample 2	135	−0.17	0.10
MkNelly & Dunford (1998)		200	0.14	0.07
MkNelly & Dunford (1999)		157	0.17	0.09
MkNelly & Lippold (1999)		61	0.33	0.17
MkNelly et al. (1996)		128	0.51	0.11
Mosley (2001)	Sample 1	60	0.42	0.10
Mosley (2001)	Sample 2	55	0.34	0.12
Mosley (2001)	Sample 3	35	0.44	0.13
Mosley (2001)	Sample 4	25	0.37	0.17
Mustafa et al. (1996)	Sample 1	191	0.04	0.07
Mustafa et al. (1996)	Sample 2	649	0.05	0.04
Nanor (2008)		710	0.12	0.04
Nawaz (2010)		176	0.06	0.09
Nwanesi (2006)		83	0.02	0.11
Owuor (2009)		400	0.23	0.06
Pisani & Yoskowitz (2010)		279	0.10	0.14
Pronyk et al. (2006)		843	0.20	0.05
Puhazhendi & Badatya (2002)		115	0.31	0.08
Rafiq et al. (2009)		253	0.31	0.08
Rahman & Ahmad (2010)		994	0.34	0.01
Setboonsarng & Parpiev (2008)		2881	0.48	0.01
Shirazi & Khan (2009)		3000	0.01	0.06
Takahashi et al. (2010)		200	0.24	0.13
Tesfay (2009)		351	0.33	0.05
Zaman (2000)		547	0.01	0.06

Health & nutrition

Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Abera (2010)		361	0.09	0.05
Ahmed et al. (2000), Ahmed et al. (2001)	Sample 1	2973	0.06	0.04
Ahmed et al. (2000), Ahmed et al. (2001)	Sample 2	1705	−0.05	0.08
Ahmed et al. (2003)	Sample 1	711	0.08	0.05
Ahmed et al. (2003)	Sample 2	729	−0.11	0.07
Aideyan (2009)		281	0.40	0.05
Anyango et al. (2007), Brannen (2010)		170	0.38	0.10
BIDS study Khandker et al. (1998), (2008), Khandker (2001), Nanda (1999), Pitt and Khandker (1998), Pitt et al. (1999), (2003), Pitt (2000)		1869	0.05	0.05
Coleman (1999)		294	0.00	0.06
Copestake et al. (2005)		500	−0.01	0.07
Deininger & Liu (2009)		2406	0.02	0.02
DeLoach & Lamanna (2009)		3316	0.02	0.02
Diagne (1998)		252	−0.13	0.09
Doocy et al. (2005)	Sample 1	340	0.04	0.07
Doocy et al. (2005)	Sample 2	612	0.04	0.13
Edgcomb & Garber (1998)		143	0.22	0.12
Enterprising Solutions Global Consulting (2004)	Sample 2	542	0.26	0.08
Enterprising Solutions Global Consulting (2004)	Sample 3	471	0.52	0.13
Fernald et al. (2008)		109	0.06	0.16
Hadi (2001)		376	0.26	0.08
Hamad & Fernald (2010)		1593	0.03	0.03
Hashemi et al. (1996), Schuler & Hashemi (1994)	Sample 1	626	0.12	0.04
Hashemi et al. (1996), Schuler & Hashemi (1994)	Sample 2	599	0.30	0.04
Hiatt & Woodworth (2006)		318	0.00	0.06
Kabeer & Matin (2005)		401	−0.02	0.07
Kondo et al. (2008)		2200	−0.01	0.05
MkNelly & Dunford (1998)		200	0.06	0.10
MkNelly & Dunford (1999)		157	0.04	0.13

Table A.1 *(continued)*

Education				
Authors, year	Subsamples	*N*	Average *r*	Average *SE*
MkNelly & Lippold (1999)		61	0.51	0.25
MkNelly et al. (1996)		128	0.49	0.13
Mohindra et al. (2008)	Sample 1	1564	−0.14	0.05
Mohindra et al. (2008)	Sample 2	796	−0.18	0.07
Mustafa et al. (1996)	Sample 1	191	0.00	0.07
Mustafa et al. (1996)	Sample 2	649	0.04	0.04
Nawaz (2010)		176	0.18	0.12
Pisani & Yoskowitz (2010)		279	0.10	0.06
Pronyk et al. (2006)		843	0.08	0.09
Rahman & Ahmad (2010)		994	0.08	0.02
Setboonsarng & Parpiev (2008)		2881	0.02	0.02
Strobach & Zaumseil (2007)		96	0.36	0.11
Todd (2000)		242	0.14	0.09
Zeller et al. (2001)		221	0.11	0.09
Venture growth				
Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Abera (2010)		326	0.09	0.06
Adekunle (2011)		283	0.13	0.07
Amin et al. (1998)		2364	0.00	0.02
Anyango et al. (2007), Brannen (2010)		170	0.09	0.08
Bali Swain & Wallentin (2009)		961	0.05	0.03
Bali Swain et al. (2008)		89	0.28	0.10
Barnes et al. (2001a)		453	−0.02	0.06
Barnes et al. (2001b)		965	0.15	0.05
BIDS study Khandker et al. (1998), (2008), Khandker (2001), Nanda (1999), Pitt and Khandker (1998), Pitt et al. (1999), (2003), Pitt (2000)		1537	0.04	0.01
Buckley (1996)		120	0.07	0.16
Chen and Snodgrass (2001)		600	0.08	0.06
Coleman (1999)		294	0.03	0.06
Dunn and Arbuckle (2001)		480	0.03	0.02
Edgcomb & Garber (1998)		143	0.30	0.11
Enterprising Solutions Global Consulting (2004)	Sample 1	542	0.06	0.06
Enterprising Solutions Global Consulting (2004)	Sample 2	471	0.18	0.12
Hossain (1988)		975	0.35	0.02
Kabeer & Matin (2005)		401	0.08	0.05
Kondo et al. (2008)		2200	0.05	0.03
Lhing et al. (2010)		162	0.10	0.12
Maldonado & Gonzalez-Vega (2008)	Sample 1	355	0.00	0.05
Maldonado & Gonzalez-Vega (2008)	Sample 2	135	0.00	0.09
MkNelly and Dunford (1998)		200	0.06	0.07
MkNelly & Lippold (1999)		66	0.42	0.21
Mosley & Steele (2004)		45	0.37	0.17
Mustafa et al. (1996)	Sample 1	191	0.00	0.07
Mustafa et al. (1996)	Sample 2	649	0.08	0.04
Pisani & Yoskowitz (2010)		279	0.16	0.06
Raftus (1998)		120	0.10	0.11
Rahman & Ahmad (2010)		994	0.05	0.02
Setboonsarng & Parpiev (2008)		2881	0.37	0.01
Shimamura & Lastarria-Cornhiel (2010)		248	0.12	0.06
Todd (2000)		242	0.37	0.05
Zaman (2000)		547	0.07	0.06
Venture profits				
Authors, year		*N*	Average *r*	Average *SE*
Adekunle, 2011		283	0.06	0.06
Barnes et al., 2001b		965	0.09	0.04
Edgcomb & Garber, 1998		143	0.17	0.08
MkNelly & Dunford, 1998		200	0.29	0.07
MkNelly & Dunford, 1999		157	0.00	0.08
MkNelly & Lippold, 1999		94	0.00	0.10
Venture survival				
Authors, year		*N*	Average *r*	Average *SE*
Barnes et al. (2001b)		965	0.06	0.04
Chen and Snodgrass (2001)		600	0.19	0.05

(*continued on next page*)

Table A.1 *(continued)*

Education				
Authors, year	Subsamples	*N*	Average *r*	Average *SE*
Dunn (2005)		2015	−0.02	0.05
MkNelly and Dunford (1998)		200	0.40	0.07

N: sample size
Average *r*: averaged-out Pearson correlation
Average *SE*: averaged-out standard error.

Table A.2
Operationalizations and frequency of dependent variables.

Dependent variable	Operationalization	Frequency	Example of operationalization
Venture survival	**Total**	**4**	Enterprise survival from 1997–1999
Venture growth	**Total**	**91**	
Measured as:	Employment creation	8	Average number of paid employees
	Production	4	Value of annual production
	Productive assets	63	Value of average change in enterprise fixed assets
	Sales	14	Average weekly business sales
	Expansion of activities	2	
Venture profits	**Total**	**8**	Average monthly enterprise profit
Financial well-being	**Total**	**214**	
Measured as:	Assets	90	Household consumer durables
	Expenditures	31	Monthly consumption expenditure per capita
	Income & Savings	61	Per capita income level change
	Poverty reduction	22	% poverty status (under poverty line or not)
	Vulnerability reduction	10	Diversification of household income sources
Health & nutrition	**Total**	**112**	
Measured as:	Health	13	% reporting illness
	Health knowledge	10	% knowledge of prenatal care (medical check-up)
	Health practices	8	% with at least one immunization per child
	Health treatment	13	% women who sought formal care in the event of illness
	Medical expenditures	8	Monthly healthcare expenditure per capita
	Mental health	7	% reporting emotional stress
	Nutrition	53	Energy intake (Kcal/day)
Empowerment of women	**Total**	**96**	
Measured as:	Independence	96	% allowed to make decisions regarding purchase of assets
Education	**Total**	**32**	
Measured as:	Adults education	3	Cumulative years of schooling of family workers
	Childrens' school attendance	20	Schooling attendance ratio (%)
	Education expenditures	9	Spending on school fees & materials in last year

Appendix B

Table B.1
Detailed results of effect of country-level moderators on MC outcomes.[1]

	Model including controls	Model including controls, economic facilities	Model including controls, social opportunities (education)	Model including controls, social opportunities (health)	Model including controls, political freedom	Model including controls, transparency guarantees
Financial well-being						
Constant	−0.092	−0.816**	0.416†	−0.202	0.203	−0.160
Study length (cross-sectional)	0.366**	0.351**	0.381**	0.361**	0.411**	0.212*
Study design (non-experimental)	−0.102	0.030	−0.153	−0.084	−0.525**	−0.270
Study design (no control group)	0.247	0.255	0.300†	0.235	−0.086	−0.360†
Study design (non peer-reviewed)	0.629**	0.587**	0.702**	0.630**	0.248**	0.483**
Region (other than Asia)	−0.346**	−0.286**	−0.268**	−0.326**	−0.525**	−0.343**
Economic freedom		1.536**				
Social freedom (education)			−1.286**			
Social freedom (health)				0.140		
Political freedom					−0.983**	
Transparency guarantees						−0.592**
R-squared	0.237	0.269	0.285	0.237	0.575	0.286
Adjusted R-squared	0.084	0.086	0.106	0.046	0.468	0.107

Table B.1 *(continued)*

	Model including controls	Model including controls, economic facilities	Model including controls, social opportunities (education)	Model including controls, social opportunities (health)	Model including controls, political freedom	Model including controls, transparency guarantees
Venture growth						
Constant	−0.224	−1.041**	0.113	−0.549	−0.037	−0.389†
Study length (Cross-sectional)	0.204*	0.196*	0.180*	0.211*	0.302**	0.233**
Effect change (no change)	0.227*	0.228*	0.297**	0.219†	0.311**	0.254*
Study design (non-experimental)	−0.042	0.113	−0.067	−0.002	−0.559**	−0.369†
Study design (non peer-reviewed)	0.612**	0.577**	0.656**	0.618**	0.337**	0.585**
Region (other than Asia)	−0.284*	−0.215*	−0.185†	−0.216†	−0.423**	−0.173†
Economic freedom		1.719**				
Social freedom (education)			−0.989**			
Social freedom (health)				0.411		
Political freedom					−1.005**	
Transparency guarantees						−0.540**
R-squared	0.232	0.275	0.263	0.234	0.602	0.290
Adjusted R-squared	0.072	0.085	0.070	0.034	0.498	0.105
Women's empowerment						
Constant	0.350**	0.456**	0.371**	0.477**	0.149	0.360**
Study length (Cross-sectional)	−0.059	−0.057	−0.062	−0.054	0.097	−0.107†
Study design (non-experimental)	−0.082	−0.118	−0.087	−0.068	−0.014	−0.108
Study design (no control group)	0.278**	0.270**	0.272**	0.259**	0.288**	0.259**
Study design (non peer-reviewed)	−0.161**	−0.148**	−0.160**	−0.156**	0.004	−0.193**
Region (other than Asia)	−0.150**	−0.137**	−0.142*	−0.160**	−0.081	−0.142**
Economic freedom		−0.212				
Social freedom (education)			−0.044			
Social freedom (health)				−0.222		
Political freedom					0.192**	
Transparency guarantees						−0.092
R-squared	0.521	0.536	0.521	0.535	0.600	0.534
Adjusted R-squared	0.387	0.372	0.352	0.371	0.458	0.369
Education						
Constant	−0.053	0.306**	0.116†	0.306**	−0.030	−0.073
Study length (cross-sectional)	0.006	0.091*	0.039	0.116**	−0.009	−0.031
Study design (non-experimental)	0.038	−0.138†	−0.038	−0.040	0.011	−0.008
Study design (no control group)	0.132	0.179*	0.161*	0.291**	0.113	0.031
Study design (non peer−reviewed)	0.013	0.037	0.039	0.060†	0.004	0.009
Region (other than Asia)	0.064*	0.078**	0.096**	0.042*	0.070**	0.100**
Economic freedom		−0.604**				
Social freedom (education)			−0.311**			
Social freedom (health)				−0.589**		
Political freedom					−0.050†	
Transparency guarantees						−0.118**
R-squared	0.192	0.615	0.407	0.702	0.249	0.377
Adjusted R-squared	−0.061	0.461	0.170	0.583	−0.051	0.128
Health & nutrition						
Constant	−0.040	0.164**	0.072	0.256**	0.013	−0.065†
Study length (cross-sectional)	−0.010	0.013	−0.002	−0.004	−0.003	0.080
Study design (non-experimental)	0.052	−0.008	0.026	0.061	−0.012	−0.151*
Study design (non peer-reviewed)	0.053*	0.067**	0.068**	0.052*	0.020	0.010
Region (other than Asia)	0.129**	0.157**	0.159**	0.104**	0.117**	0.158**
Economic freedom		−0.440**				
Social freedom (education)			−0.268**			
Social freedom (health)				−0.448**		
Political freedom					−0.065*	
Transparency guarantees						−0.213**
R-squared	0.174	0.265	0.235	0.246	0.201	0.358
Adjusted R-squared	0.087	0.165	0.132	0.144	0.093	0.271

n/s: non-significant relationship.
† $p < .10$.
* $p < .05$.
** $p < .01$.
[1] For the dependent variables of venture survival and venture profits there were not sufficient observations to include them into the moderator analysis.

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